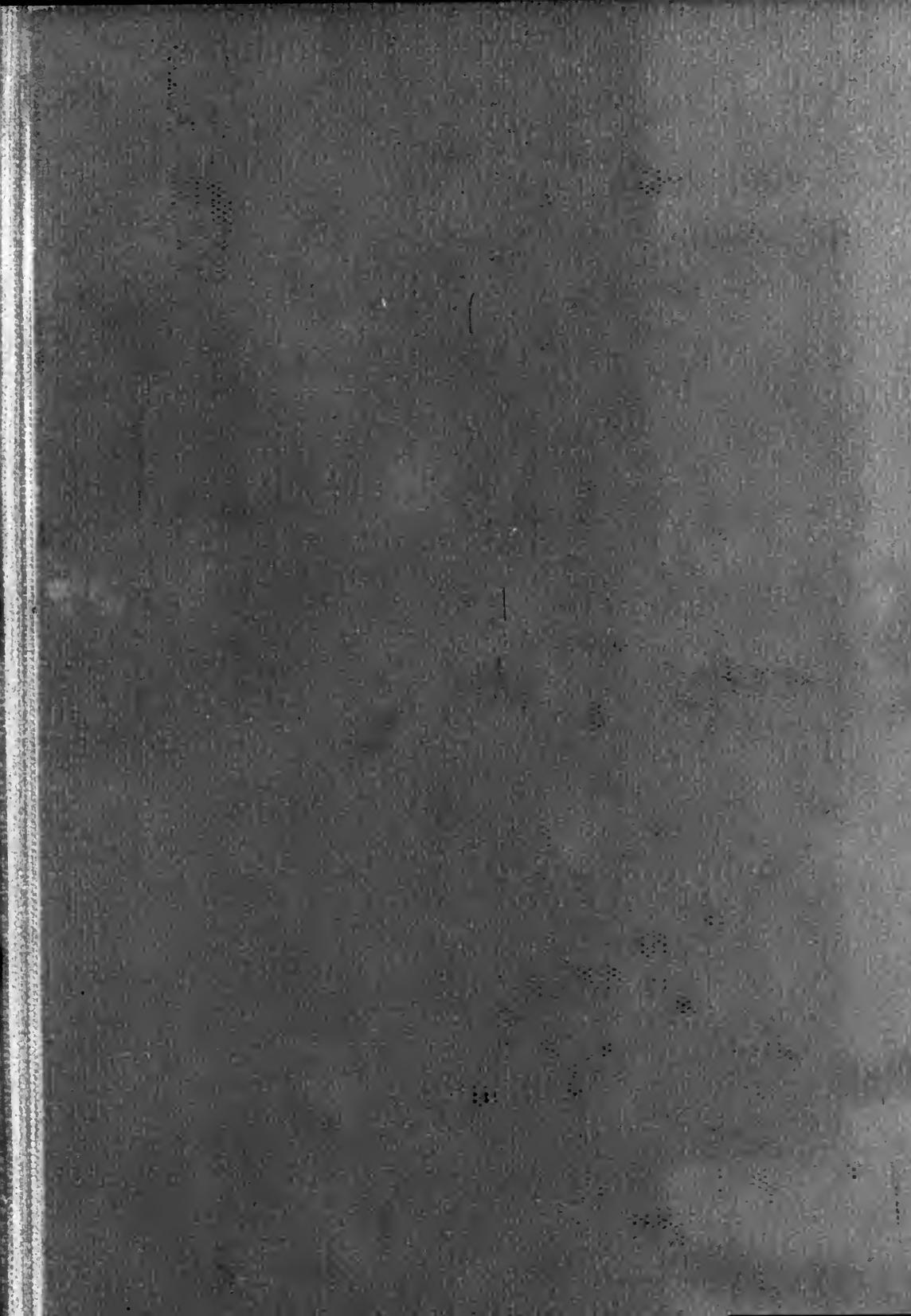
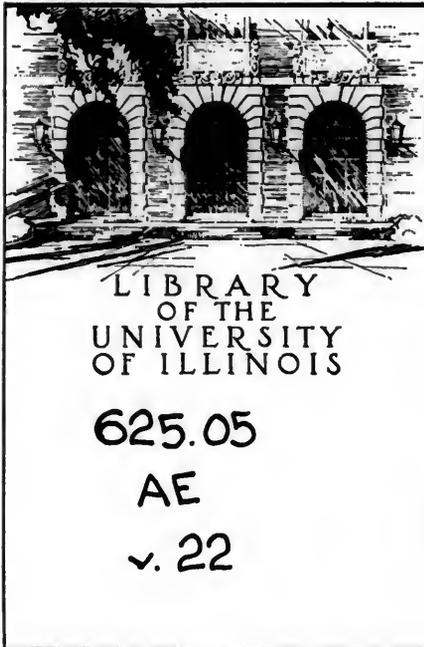


**AMERICAN
RAILROAD JOURNAL**

NEW YORK [ETC.]

V. 22, 1849





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A M E R I C A N

164
RAILROAD JOURNAL.

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HENRY V. POOR, *Editor.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 98 NASSAU STREET, NEW YORK.

Saturday, January 6, 1849.

CHANGE OF LOCATION.

The RAILROAD JOURNAL will be hereafter published, as formerly, in the city of NEW YORK—it is therefore desired that all letters, communications and exchange papers, designed for the editor, should be hereafter sent to New York.

MISSING NUMBERS OF THE JOURNAL.

As the volume of the Railroad Journal for 1848 is now completed, and as it may not long be in my power to furnish missing numbers to its subscribers—some of whom have kindly accompanied me thro' a long journey of eighteen years—through good report and through evil report—I am desirous to furnish all who wish to complete their volumes, with missing numbers, if they are now on hand. Every subscriber, desirous to obtain missing numbers, should make out a list, and forward it immediately, and as far as it is in my power, it will be attended to at the end of January.

D. K. MINOR,
Editor Railroad Journal.

The removal of the office from Philadelphia to New York, and the preparation of the accompanying Map, have delayed this number. The same causes have also delayed the Index for the last Volume—which will be forwarded at an early day.

A press of matter, in the two last numbers, compelled us to omit some of the long advertisements, but we shall endeavor to make ample amends for our sins of omission.

Iron Trade in England.

The London Mining Journal, of December 9th, quotes rail at £5 a £5 10s, average—and says that there has been no improvement during the past week, but rather a downward tendency—at these prices English rails may be delivered in New York at about \$47 per ton, duty and all expenses paid, which is not very encouraging to the American manufacturer, though it may be so to some of the railroad companies.

Good American iron can be got here at \$55 per ton.

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person to

JAMES HERRON,
Civil Engineer, Navy Yard.

Jan. 1. 10:

Iron Bridges, Bridge Bolts, etc.

We desire to call attention to the following advertisement of Messrs. Starks & Pruyn, of Albany, who are largely engaged in the construction of iron bridges, and other iron work in general use. We recently examined some of their work, a bridge over the Albany basin, with which we were much pleased, and of which we intended to speak, but it has, with some other matters deserving notice, been omitted.

The names accompanying the advertisement, as references, will, however, be more useful than anything we can say, therefore we will merely ask the attention of those who desire such work to read the

advertisement, and then to enquire of the gentlemen referred to.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentleman:

Charles Cook,	} Canal Commissioners of the State of New York.
Nelson J. Beach,	
Jacob Hinds,	
Willard Smith Esq.,	} Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris	
Mr. Wm. Howe,	} Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,		} Engineer & Bridge Builder, Utica, N. Y.

January 1, 1849.

American Railroads.

We are much indebted to a devoted and able friend of railroads, for the following interesting communication with its accompanying map. It shows the writer well posted up in such matters, and will well repay those who read it; and ought to arouse the people of Virginia to the appreciation of their surpassing natural advantages, and to the development of their boundless resources, and thus become, as they ought to be, second to no state in the Union.

We could say much more on this subject, but nothing more to the point than is said in the article of Mr. Clark, therefore we prefer to refer our readers, and especially those in Virginia, to his language—and to urge them to the furtherance of the noble enterprise to which he is devoting himself, mainly for their prosperity. We cannot however omit to call their attention to his remarks in relation to "sectional interests," and to urge them to unity of action. It appears however, that there is new life in Virginia, in favor of railroads. Mr. Burwell, a member of the Legislature, is agitating the subject in various parts of the state, and we hope to hear that more of her able men are aroused to the importance of immediate, concentrated, and energetic action.

Lynchburg and Tennessee Railroad.

The memorial of the stockholders of this road, says the Richmond Republican, is a document of considerable force. It urges the importance of developing the resources, mineral and agricultural, of the state, and insists that this line promises more certain and greater benefits than any other. It is presented as "a part of that great scheme which suggested itself to the comprehensive mind of Washington." This, it is stated, "will not only insure a connection with the Mississippi at Memphis, but insure the connection contemplated by the central line of improvements with the waters of the Ohio—thus securing to the state, by the shortest and most direct routes, the two great outlets of western and south-western trade and travel—the benefits of which, in a social, civil, and commercial point of view, cannot now be well calculated."

The memorialists, referring to the works of other states, urge that, "the entire trade and travel of the west must be irretrievably lost to the state, unless prevented by prompt and energetic action."

For the purpose, therefore, of bringing into the bosom of this state the immense treasures from other and distant states—and of developing the "resources of her own soil, and filling her own markets with the production of a section richer in mineral wealth than any other in the union," it is contended that this "will give reward to labor, and stimulate individual industry, skill and enterprise; and at the same time add to the resources of the state, by greatly increasing the receipts from investments already made, and hitherto affording no adequate remuneration."

The memorial asks a subscription on the part of the state, of three-fifths of the capital stock.

To Mr. W. M. Burwell of Bedford, and Mr. Francis B. Deane of Lynchburg, the friends of this scheme are much indebted for the impulse already given to it.

The Philadelphia North American states that the viaduct across the Susquehanna river, for the passage of the Pennsylvania Railroad, is advancing rapidly and will be completed so as to allow the opening of the railroad, in the ensuing Spring, from Harrisburg to Lewistown, on the Juniata.

The Annual Report of the Winchester and Potomac Railroad Company, made on the 29th October, shows that the resources from freight, passengers and mails during the year, was \$81,927.23, caused principally by the reduced quantity of Flour transported, there having been only 115,907 barrels of Flour carried over the Road during the year. The whole road is now thoroughly renewed with substantial iron rails. The report says that the business of the Company has been conducted with a damage and loss account of only one hundred and forty-seven dollars, and with one exception, in which no material damage was sustained nor injury suffered by any one, the whole business of the year has been conducted with perfect regularity and with perfect safety.

Improved Railway Joints.

We observed, when recently at Buffalo, N. Y., a new (to us) mode of keeping the ends of rails at the joints on a level. Holes of a $\frac{1}{4}$ inch diameter were drilled into the ends of the rails and a cast steel pin inserted.

The following description of a mode of effecting the same object is from the London Mining Journal:

"The many inconveniences attending the original mode of laying the rails, has been attempted to be avoided, either by a perpendicular lap-joint instead of a butt-joint, or by a different arrangement in the system of keying. None of the numerous patents taken out have, however, remedied the dangers attending that position of the ends when one is raised above the other, and which invariably happens on the rail in front of the locomotive being higher than the other—from the back rail being de-

pressed by the passing weight. Mr. L. D. B. Gordon has patented a rail with a lap-joint, by which means it is next to impossible for the loaded rail to sink below the one directly in front of it on the approach of the train, as the joint is underlapped; and, whatever advancing pressure there is, acts equally on both rails and the chair. There are a number of modifications of this arrangement—all of which appear well calculated to effect the object in view, and they are stated to be the most economical, as well as safe, of any now in use."

**New York and Erie Railroad.
Opening to Binghamton.**

On Wednesday, the 27th of December, this road was opened from Port Jervis, on the Delaware river, 127 miles to Binghamton; and, in company with a large party of gentlemen from this city, from Newburgh and other places, we had the pleasure of being in the first train that passed over it.

To those who were among the *earliest* advocates of this important work—and conspicuous among that number we noticed one in the party, *William C. Redfield, Esq.*, who deserves great credit for his early efforts—this was an interesting day.

It is now more than eighteen years since this Journal took ground in favor of the New York and Erie Railroad, as the *most important* Railroad in the country; and it has often urged the people of this city to adopt it as *their* road, and carry it through, by a tax upon their property, if they could not do it otherwise; and we are *still* of the opinion that it would be true economy for the city to raise the means to complete it to the lake in *two* years—by a tax payable in *five* years—rather than to have its completion deferred until 1854. The people cannot afford to have its construction delayed so long, and therefore they should adopt early and efficient means for its completion.

We recollect to have seen the engineers engaged in locating the road at Binghamton in October, 1831, or *fourteen* years ago, and *then* believed that we should be able to pass over the *entire* line, to Lake Erie, in less than *ten* years—but such have been the *prejudices*, and *doubts* of capitalists, and such the sectional opposition that it has been delayed many years longer than it should have been, and until the *business* men of New York have been obliged, in *self defence*, to take it in hand. It is not the capitalists, the large owners of real estate, as a body, who have completed this work to Binghamton; but the active business men, who have, not only, in the main, furnished the money, but also the *mind*, the *energy*, the *indomitable perseverance* to level the hills, to fill up the *valleys* and to bridge the *rapid* streams and deep ravines; and to them do we award the credit.

We do not hesitate to say—indeed we said it to one of them two years ago—that if the present Board of Directors could have foreseen, when they were first elected, the difficulties, the vexations, the delays to be encountered, they would not have undertaken the labor, and the responsibility; but, *having* accepted and entered upon their duties they were not the men to retreat—but the very men to *advance*, just in proportion to the difficulties to be overcome.

And they *have* advanced and surmounted by far the greatest obstacles overcome on any road constructed in this country, as the following description of some of the works will show; yet with the most accurate description, no man can form a just idea of the difficulties without passing leisurely over the line and making a careful examination of the work; nor, indeed even then, as many of them were encountered in the Legislative halls of New York and Pennsylvania, to obtain a location.

We will only allude to the deep cut through; and passage down the Shawangunk mountain—though it is a herculean work—because it has been completed a year, and thousands have passed over it, and have been delighted with the beautiful views of the valley below, and the mountains beyond. It is the peculiar features of the *new* line of which we would now speak—and in doing so we cannot do better than to adopt the language of a writer in the Journal of Commerce, which is as follows, viz:

"After leaving Port Jervis, nature seems to have set her veto upon all internal improvements, and to have said "so far shalt thou go, and no farther."—Rapid rivers, barriers of solid rock, chasins and precipices, were all presented as obstacles to try the energy of man, and nobly has that energy been brought into requisition. Three miles west of Port Jervis, the road crosses the Delaware river and Delaware and Hudson Canal, on the Saw Mill Rift Bridge. This structure is 500 feet long, and the grade line is 40 feet above low water. The arches are 160, 150, and 140 feet span, sustained on piers of masonry, of a superior character, which rise from the rapids above the glass-house rocks, presenting a massive and imposing appearance. This work cost \$75,000, and was not put under contract until July last, owing to some uncertainty about the location. The 85th, 87th and 86th miles, or sections, distant from Piermont, are remarkable for the immense amount of rock excavation required upon them; 195,000 yards of rock have been removed to make way for the rails. At the 89th, the track is laid on a shelf 100 feet above the river. On one side is a sustaining wall 90 feet high, containing 16,000 yards of stone work, and on the other a precipice. A face of rock has been cut down on the 86th section 115 feet. The cost of these three miles has been \$300,000.

"Schohola Creek, on section 90, is crossed by a bridge 75 feet above the stream; the abutments, and all the work about it, are of the most substantial character.

"On section 95, the road crosses the Lackawanna river, on a bridge 450 feet long, with piers and abutments of great strength and excellent workmanship.

"At the 102d section, the road, after a short turn in Pennsylvania, comes back to its own state, by recrossing the Delaware on a bridge 500 feet long or four spans. The two centre are 160 feet.

"The masonry here will stand the test of the severest action. At Calicoon creek, 119th section, there is a bridge over the east branch of the Delaware. On section 163 there is another; and a third bridge over the main Delaware river at Deposit. All these are solid and fine specimens of building.

"On section 170, is the summit between the Delaware and Susquehanna river, and here we have the great and formidable cut. The line passes through a singular notch in the dividing ridge; and since the earth has been cleared from the face of the mountain, the cut presents to the eye a rock excavation of 200 feet deep! This is the most costly work on the route, the amount paid for it being nearly \$200,000. The 174th mile deserves the soubriquet of the picturesque section. Here the road crosses the Cascade Ravine, 170 feet above the bottom of the gulf, on a bridge of a single arch, of 275 feet span, with a rise of 50 feet. This arch is built of eight ribs of white oak timber, each two feet square in the centre, and two feet by four at the abutments; the whole interlaced in the most thorough manner with wood and iron braces, thus insuring the requisite stiffness. The width of the roadway is 34 feet; and for sustaining the lateral pressure, the arch is sprung from the solid rock on each side. The great stone Viaduct over the Starucca Valley is on the 176th section, or about 25 miles east of Binghamton. The fine work is 1200 feet long, and rises about 100 feet above the Starucca creek. There are 17 semi-circular arches of 50 feet span, supported by appropriate piers and abutments. Some idea may be formed of the character of this structure, from the fact of their being in it 22,000 yards of masonry, 20,000 yards of which were put up in a single year, in a thorough manner—a most wonderful performance. The body of the viaduct is 24 feet, and the space between the iron railings at the

top will be 30 feet, giving ample room for a double track. The design of this, as well as of all the other works on this road, is simple; but the correctness of the proportions and the solid masonry carried to such an immense height, will class this among the most imposing. There is another viaduct at the 177th section, constructed of wood, 450 feet long, and between 50 and 60 feet above Canawacta at Lanesborough. At the 179th section is a bridge 800 feet long, over the Susquehanna. One of the spans of this bridge is 186 feet in the clear; there are four others of 150 feet each. The masonry is solid and of good workmanship.

"The above are the most prominent works to be found on the route. Their magnitude may seem incredible at first to those who have not watched the onward march of this great enterprise. The number of rivers, creeks and valleys passed over, mountains chipped down, and ravines spanned, the details of which are given here, will enable our readers in some measure to appreciate the undertaking. The energy shown in the prosecution of this work, has never been surpassed in the history of Railways, either in this or any other country. The viaducts and bridges are built entirely with a view to strength, all ornaments being dispensed with; and notwithstanding they may not equal in point of finish the costly and elegant structures of Europe, devoted to similar purposes, it is believed that in respect to permanence and utility they will not suffer in comparison.

"The completion of these 127 miles is an important event to those interested in the success of the Erie Railway: for apart from the blessing it will prove to those long locked up counties, it cannot fail to produce a very great increase of revenue.

"The amounts expended may at first seem large, but the cost per mile will not exceed \$15,000, and that in a country abounding with complication of difficulties. The aim of the able managers has been to get a revenue as speedily as possible; and what they have taken two years to perform, would have occupied three under ordinary circumstances. If doubts had existed as to the receipts, the incentive for pushing on, would in a measure have been lost; but all knew they would be great, and the great and ruling object has been quickly to get possession of them."

The writer of this description has not overstated the difficulties, nor has he done more than justice to those who have had the work in charge. There has been a devotion of all parties, the Directors, the officers, the Engineers, and the contractors, all to their respective duties, which entitles them to the respect and confidence of the community.

Compare the extent and cost of the "starrucca viaduct" with that on the Shrewsbury and Chester, (English,) Railway over the Dee, in the vale of Llangollen, as referred to in the Railway record of 7th October. That is 50 feet higher, but only 850 feet long and cost £100,000; while that over the starrucca is 1200 feet long, 100 feet high and cost only \$216,000—less than half—that over the Dee.

The most vivid description, however, will not give an accurate idea of the beauties of the line to those who are fond of the picturesque, therefore we will omit that part, and speak of the moving stock, or engines and cars, and of the prospects of the road.

The locomotives and cars assigned to the party were all new. The leading engine was from the manufactory of Messrs. Rogers, Kelchum & Grosvenor, and the other from the works of Messrs. Swinburn, Smith & Co., both of Patterson, N. J.—Of the engines of Messrs. R. K. & G. nothing need be said by us, as they have *working certificates* on most of the railroads in the country, except in New England, and a few there. It is not saying too much, certainly, when we say that they are not surpassed in the quality of their work, nor in the efficiency of their engines, by any of their numerous competitors in this country. They are filling, we understand, a large order for this company.

Of the work of Messrs. Swinburn, Smith & Co. we know very little—having seen but two of their engines—yet from the specimen here exhibited we are disposed to think favorably of it. We shall endeavor to know them better.

The cars were from the manufactory of Eaton, Gilbert & Co., of Troy, and from Gould & Co., of Albany—also a new concern to us. The cars from the shop of Eaton and Gilbert are as well known as their post coaches, which may be found sometimes even in the *midst* of the *Guerrillas* of Mexico; and, like the engines of R. K. & G., are in use all over the country. Those on the New York and Erie road are the most comfortable they ever made, because they have a wider track—6 feet—to build upon.

The cars from the shop of Gould & Co., have the high back—or *sleeping*—seats, and were therefore much sought for by some of the party who are fond of an easy time, when on a pleasure excursion. In workmanship, and finish, they are not quite equal to those of E. G. and Co. They are, however, good, substantial and easy riding cars.

We were pleased to find all the new cars on *India rubber springs*—and even one of the locomotives has springs of the same kind, showing how rapidly this new improvement in springs is coming into use.—Those on these cars and engine were from the works of the "New England Car company," and we have little doubt but that this kind of spring will come into general use. They are easier, and will, we doubt not, be found cheaper, and less difficult to adjust.

The facility with which the trains passed through the snow, from 6 to 9 inches deep, must have convinced those of the party who have feared the deep snows in the highlands, that the locomotive, in intelligent hands, can perform wonders.

Owing to various causes, the train was delayed on the way until a late hour, yet the people of Binghamton were ready to receive us with open arms, and welcomed us with music, bonfires, and the firing of cannon. A sumptuous repast, and good beds, were in readiness for us. In short, it was a cordial meeting between the people of the great city, and those of the interior—a meeting long looked for, now happily consummated.

After a good night's rest, the people and the guests interchanged opinions and views in relation to what had been accomplished, and what was *to be accomplished*, within the year 1849; and it was announced that *eighty* miles more, to Corning, would be completed by 1st October, 1849. This is *well*—so far—but it is not enough. The work should be pushed beyond Corning—and it *ought* to be completed to lake Erie in the year 1850. The *people* of New York ought not to lag behind those of Philadelphia, who will open their line to Pittsburgh within two years; and within four years they will have a railroad communication with Cincinnati, via Columbus; also with *Indiana*, and *Illinois*, and *Missouri*, in five, six and eight years.

New York then should not *linger*. The line should be completed to lake Erie in *two* years; and then to *Erie* in Pennsylvania, and to *Cleveland* Ohio, in two more; and there a connection will be formed with a line to Columbus, and Cincinnati—also connecting with the line to Indiana, and Illinois and Missouri.

In this way New York may retain, and greatly extend, her present business associations in the west, and far off region, to which this line of railroad will lead her.

Thus far the Mississippi river is the boundary of railroads. We are not aware of a *mile* of railroad

in use, or a *locomotive*, with steam up, west of that noble stream. It will not, however, long remain so. The time is *at hand* when a railroad will be commenced on the west bank of the Mississippi, which will cross the Rocky mountains at the "south pass," and, at a suitable point branch off, one line to *San Francisco*, and the other to the *Columbia river*.

To many persons this will seem a visionary and wild scheme. So did the whole plan of railroads twenty years ago. Yet there has been, within that period, a *thousand millions* of dollars invested in them, and over *fifteen thousand* miles put into use, and as *much more* commenced. And within the next quarter of a century a trip to the Pacific will be less difficult, and require less time than the journey from New England to Ohio in the year 1809—or forty years ago. And many of those who are now on their way to, or preparing to start for California, will *live to return by railroad*. And we *hope* to be one of the number to return in the *first* train. We will not, however, commit ourselves, as did many who, in 1817, only desired to live until the *Erie canal* should be completed. We are not willing to commute for a lease of life until a train of cars shall pass from New York to the Pacific. We *hope* to make several trips back and forth upon a railroad, the *legs* of which shall rest on the *Atlantic* at Portland, Boston, New York, Philadelphia, Baltimore, Norfolk, Charleston and Savannah—while its arms grasping the Pacific one at the mouth of Columbia river and the other at the Bay of San Francisco—serving as bonds and bolts of union between the eastern and western States, binding them in a *fraternal* embrace with the vast interior, between the *lakes* and the *Rocky mountains*. With such a *future*, and such a *prize* ahead, can the people of New York—and especially her men of capital—her men who live upon the *interest* of their money—allow this noble work to linger? It *seems* to us not—as they may, if they will but reason from the past to the future, see it paying its *ten*, or *twelve*, or *fifteen* per cent. dividend—upon stock now below par—though receiving six per cent. interest. What was the condition, and estimated value of the stock of the Delaware & Hudson canal Jan. 1, 1832? It then sold for 65 per cent.!! What is it now? It is now valued at \$145 per cent., and pays 17 per cent. dividend!! What will be the condition of the Erie railroad in 1850, if the citizens of New York do their duty?

Will those editors who have favored us with an "exchange," please direct their papers hereafter to New York? and *also oblige* us by saying in their papers that the Journal will be hereafter published in that city?

Niagara Suspension Bridge.

We have recently noticed a report in the newspapers that the unfortunate controversy, between the Engineer and Directors of this company, had been compromised by the payment of a certain sum of money by the latter to the former. It is to be hoped that this report may have better foundation than many other newspaper reports, as we have a strong desire to know that a bridge—and a *railroad bridge*, for heavy trains—will be built over the Niagara river, as there may be with entire safety.

We published all Mr. Elletts preliminary reports in relation to the work—after their appearance in the newspapers; and once made personal application to him for facts in relation to the work, and its progress; but he never furnished them, nor gave us the materials from which to make an article for the Journal, therefore we have seldom alluded to the work, though always taking a lively

interest in its progress—its completion, and its eminent success—and just in proportion to that interest have we regretted the disagreement between those in charge of the work, and the consequent delay in its construction.

Of the causes of that disagreement we have no disposition now to speak—as no good would probably result from it; but of the probable resumption, and progress of the work, we should like to be able to speak understandingly and we therefore respectfully call upon the president of the American board, Mr. Lot Clarke, for information in relation to it. Will he please let us hear from him soon?

Viaducts and Bridges Extraordinary.

In the London Railway Record, of October 7th, we learn that there is a Viaduct over the Dee of 850 feet long and *one hundred and fifty* feet above the water—or to use the language of the Record; "The Shrewsbury and Chester railway, about 60 miles long, passing through Oswestry, Ruabon, and Wrexham, is to be opened on the 12th. The viaduct over the Dee, in the Vale of Llangollen, is 150 feet above the level of the river, has cost 100,000*l.* is 850 feet long, and surpasses anything of the kind in England."

This is a high bridge but not quite equal to the suspension bridge at Niagra Falls, which is 240 feet above the water, and 750 feet between the banks.

Erie, Pa. and Ohio Railroad.

The Philadelphia Ledger of 5th inst. says, that "In the select council last evening, Mr. Tyson offered a preamble and resolutions instructing the Presidents of Councils to memorialize the Legislature against a bill becoming a law which was passed last session. It authorised a company to lay out a railroad from Erie to the Ohio line. This was passed upon the representation of the members from Erie county that it was a mere local measure, in which the state generally was not interested.

"In order to show the importance of this matter, it is necessary to state that by a previous law, a railroad had been authorised from Erie to Northeast, a town upon the boundary of Erie county and the state of New York. The bill authorising a railroad to the Ohio line would connect with the railroad to Cleveland and other places. So important was this link in the communication with the west to the New York and Erie railroad company, that in three days after the bill authorising the road from Erie to the Ohio line was passed, a bill was passed by the New York Legislature, authorising a road from Buffalo, through Dunkirk, to Northeast. This would complete the road from New York to Ohio, taking it through Erie county, and diverting the rich trade of the west from Philadelphia for the benefit of New York and Boston. The importance of this matter to the city can be easily seen. Under the false representations of those who introduced the bill it passed both houses, but was not signed by Governor Shunk. It was in his hands at the time of his death, and it now remains to see what Governor Johnston will do with it. The resolution to memorialise against the passage of the bill was unanimously called."

This may be wise policy to prevent the construction of a railroad from an important town in Pennsylvania, to connect with the railroads of Ohio, because another road, already chartered from the same town to the New York line, may be there met by a road from Buffalo and thus make a *continuous* line of railroad from Portland, Boston and New York, to Cleveland, Cincinnati and all the western states. Would it not be more liberal, and also more beneficial to Philadelphia, to construct a line of railroad connecting that city *directly with Erie* and thus draw the business from the proposed road to the Ohio line—where it would connect with the network of railroads in Ohio—directly to itself? It seems so to us, and we hope the Councils of Phi-

ladelphia will think better of the matter, and recommend an early movement in favor of a railroad to the Lake, at Erie—and thus avail of the immense fall between Lake Erie, and tidewater at the city, to increase her manufactures, instead of adopting measures which will prevent an easy flow from these rich sources. To us, that policy appears wise which *directs* the current of trade, instead of stopping it.

Pennsylvania Railroad.

The Philadelphia Ledger says: "The Pennsylvania Railroad has been opened for travel four miles west of Harrisburg. As soon as the bridge over the Susquehanna is completed, which will be by next spring, the road will be opened to Duncan's Island, 16 miles from Harrisburg."

And we learn from the same source that: "W. K. Huffnagle, the superintendent of the Delaware Division of the public improvements of that State, has furnished the Editors with the following exhibit of the receipts, expenditures, and profit of this division of the same for the financial year ending Nov. 30, 1848:—

RECEIPTS.	
Amount of tolls received, (being an increase over 1847 of \$2,910 69,	\$175,101 84
EXPENSES.	
Repairs and supervision,	23,598 87
Pay of lock tenders,	5,184 00
Pay of collectors, weigh-	
masters, &c.,	4,228 71
	33,011 58
Receipts over expenses	\$142,090 26
Annual interest on cost of canal,	69,206 81

Surplus fund, - - - - \$73,883 42
The length of this division is 60 miles, extending from Easton to Bristol, and cost the Commonwealth \$1,384,136 26.

This exhibit is even more satisfactory than that furnished a few days ago of the comparative business done over the Columbia Railroad the present and past year, and affords a most satisfactory proof of the value and importance of our public works. Though the increase over the last receipts is small, that there is an increase at all this year, when we remember the causes abroad that contributed to swell the business of the two years of 1846 and 1846-47, is most encouraging."

Weight of Locomotives.

By the following extract from a work entitled "Railway property as it is," which we find in the Railway Chronicle, it will be seen that there is a disposition to change the policy of very heavy engines.

"Mr. Samuels has a patent for a locomotive and carriage combined, for working lines of small traffic. The whole weight of one I saw making (for the broad gauge,) I am told, will not exceed ten tons, and will be worked at a very small cost. If successful (of which there is but little doubt,) it will be peculiarly adapted for branch lines. The difference in wear and tear, and maintenance of permanent way with such engines, would be enormous. Eight tons to ten tons, in place of the ponderous engines now in use, absolutely rolling out the rails, would form an incalculable saving in the wear and tear. The destruction of rails in the manner I have mentioned is not ideal. I have lately seen rail 75 to 80 pounds to the yard, in use only six or seven years, literally crushed and destroyed by the heavy weights passing over them. However, that effect need not be wondered at, when we reflect that railways generally were constructed for and adapted to locomotives weighing from 15 to 20 tons, travelling at the rate of 25 to 40 miles an hour, whereas, the locomotives now in use vary from 20 to 35 tons and upwards, travelling 50 and often 60 miles an hour.—By such an unwarrantable use of railways (a use to which they are not adapted,) the wear and tear of permanent way becomes enormous (much more so than those most interested in it can conceive;) and if directors were thoroughly conversant with the effects on the road, I cannot think they would sanction such a misapplication of it."

English Steamers vs. Railways.

The "slow coach," is made fast, by a rival on the same road—so a slow mail line, by losing its mail, finds out that it is possible to increase their speed—as in the case of the Liverpool and Dublin steamers.

Chester and Holyhead Railway—the Irish Mails.—The Lords of the Admiralty have given notice to the Directors of the city of Dublin steam-packet company, that their contract for conveying the Irish mails will cease six months hence. The cost of this service to the government is 6,000*l.* a year. The contract with the company commenced in 1839. The intention of the government is to send the whole of the Irish mails *via* Holyhead. The company are about, it is said, to place on the line between Dublin and Liverpool steamers of a power and speed far beyond anything we have ever heretofore had in operation. They thus hope to land their passengers in Liverpool with such speed as will enable them to reach Chester in time for the same train which carries up to London passengers proceeding *via* Holyhead.

Ryder's Iron Railway Bridge.

There is so much truth in the following remarks from the London Mining Journal that we copy them.

"The expensive nature of bridge-building, particularly on our railways, and the great importance of the necessity which exists of their possessing a combination of strength, durability, and economy, renders it a duty on the part of engineers in connection with such works, to scrutinize every system coming within the scope of their experience; and, if they would publicly express their opinions, they would, doubtless, tend to a full investigation of the subject. We inserted in our last a short communication on the subject of 'Ryder's Railway Bridge' from 'A Railway Shareholder,' and in which he expresses similar views. Practical economy in these expensive undertakings is 'much needed;' and had it fortunately been somewhat more heeded in the establishment of the system, there would have been less of that fluctuation in the share market, which has been the ruin of hundreds, and swelled to a plethora the pockets of the wealthy jobber. If our professionals would take a fair and unbiased view of the works and opinions of others, and less prejudiced in favor of their own productions, engineering science would make more rapid strides, and tend more to the general good of the public."

Tubes for Locomotives.

From Newton's London Journal, the following specification is taken.

[Specification of patent granted to T. Potts, Birmingham, brass tube maker, for improvements in the manufacture of tubular flues of locomotive and other steam boilers.]

"The patentee states that he has observed the brazed or soldered joints of the tubular flues of locomotive and other steam boilers (when the tubes are made of copper or brass) to be less prejudicially acted upon by the friction of the sharp grit which escapes from the fire-box, than the copper or brass surface of the tubes; he therefore proposes to line the tubes with a similar description of metal to that now used for brazing or soldering the joints.

"The patentee takes what is called 'bath metal,' composed of three parts of best selected copper and two parts of foreign zinc, and adds 10 ozs. of refined tin to each hundred weight of the metal; he then rolls the metal into a plate or strip, and forms the same into a tubular shape, of the size required (the edges butting together;) after which, he anneals the tubes and stretches them, so as to straighten them and bring the edges correctly together. On each of these tubes he places a tube formed of copper, or an alloy of copper; and the compound tube he puts on to a steel mandril, made with a taper of 1-16th of an inch into its whole length, which not only facilitates the withdrawal of the mandril, but also gives additional thickness to that end of the tubular flue which is fixed to the fire-box of the steam boiler. The compound tubes, each having a mandril within them, are drawn through dies or drawplates. The patentee says, he has not found it necessary to solder together the edges of the inner tube or lining of

bath metal, as it will be sufficiently strong without this being done; and the water cannot pass through because the outer tube is perfect. He prefers to make the lining twice as thick as the outer tube.

Great Northern Opening for Traffic.

In speaking of the opening of this line the Editor of the Chronicle says:

"But the view in which the Great Northern opening is of the greatest consequence to the railway community is that of its influence on the adjacent railway property. A new and direct line from London to Hull, through the eastern counties of England, that communication being forty miles shorter, is sure to exercise a material influence on all adjacent lines. This influence will be most deeply felt from one circumstance especially. The line which the Great Northern traverses from Peterborough by Boston, Louth, Great Grimby and New Holland to Hull is unparalleled in the cheapness of its first cost, in its straightness and its general excellence. It has cost little to make, and will be economical to work. Possessing the great virtue of a small capital this line can afford to run at cheap fares, and will be remunerative with a revenue and traffic on which more expensive lines could not be worked.

From London to Hull the traveller can now be carried in a first class train for 32s., a distance hitherto of above 210 miles; 1 cwt. of fish can be taken from Hull to London in eight or ten hours, for 2s. 6d.; a parcel of 56 lb. is taken from Hull to London at less than 1d. per lb. for the whole distance. These are fares which must invite traffic, and which the smallness of the capital expended can alone justify. It is also plain that a line constructed at such small cost must for the future occupy an important place among the avenues of northern traffic.

The mode of construction is thus described:

"The timber bridges are specimens of good carpentry and iron bracing, and as such are worthy of Mr. Cubitt's reputation. The line, however, is in good order; its rails are well laid; the rail is a heavy one, about 74 lb.; the line has the peculiarities of Mr. Cubitt's usual works,—triangular sleepers and chairs close together at the joints, with joint chairs of unusual length, and the sleepers placed throughout at three feet spaces. There is a want of sidings at the stations, and the station accommodation seems small: but perhaps this is the safe side to err upon in these days of economy."

Patterson and Hackensack N. Y. Railroad.

It appears from the following paragraph, from the Patterson Intelligencer of the 6th Dec., that there is some difficulty between the People of Patterson and the Railroad Company. We are not very familiar with the management of the Patterson Railroad, but have drawn our own conclusions, from an occasional excursion over it some years since, which were that there was room for improvement.

If the statement of the Intelligencer is correct, that the company will not commute, we think the people have grounds for complaint. It says:—

"We learn that petitions are out and will be extensively circulated in this and Bergen Counties, for a Railroad from Patterson to Hackensack, and thence to some point on the Hudson river, somewhere in the neighborhood of Jersey city. A new railroad between this and New York is loudly called for by the community, and we believe the people of Patterson are almost unanimous in favor of the project. There is perhaps nothing which so much facilitates the increase, and adds to the wealth of a town, situated as Patterson is, as a cheap and easy mode of transportation; and the want of this has, no doubt, much retarded the growth of this town.—We know that many business men of the city of New York have long been desirous of locating among us, and have even gone so far as to select places, and bargain for them—but after ascertaining that the Patterson and Hudson river railroad company utterly refused to commute for a fair compensation, they abandoned all idea of coming among us, and the consequence is that many of them have selected places of residence in Newark, Elizabeth-

town, Rahway, and other places along the New-Jersey railroad, which company has adopted a much more liberal policy in this respect. We can see no reason why Patterson should not enjoy similar advantages with Newark, and other places along that line, and if it is desired that it should, the only way to bring it about, is by a little wholesome competition with the present railroad. Another road to N. York, by the way of Hackensack, would reduce the fare to a rate which all would be able to pay, and would increase the travel between the two places ten fold at least, and at the same time pay the stockholders a handsome interest upon their capital invested. We go in for a new road."

Rates of Fare on the New-York and Erie Railroad.

The question of rates of fare upon this important line of railroad has excited the attention of many besides its shareholders and those who are likely to be its immediate supporters. Those interested in other railroads, on which the high rate policy prevails, have been not a little solicitous to be sustained in their policy by the managers of this mighty work; yet, notwithstanding the numerous arguments used, by able and enlightened men, we are gratified to learn that, on the extension of the road, the original and uniform policy of this company, viz., low rates of fare and freight, is to be adhered to. And why should they not be? Is it not well known that the uniform tendency of railroad charges is downward? Have not nearly all the roads terminating in Boston reduced their charges, nearly one half, within the last ten years? and where is the instance, upon any important railroad, that charges once reduced have been raised again to the original mark? During the early history of the Boston railroads the average rates of fare exceeded 3½ cents per mile, whereas they are now less than two cents—but a fraction over 1½ cents per mile. Why is this if not found remunerative to the shareholders and beneficial to the business of Boston? Why then should the managers of the New-York and Erie-railroad refuse to profit by the experience of such men as manage the Boston road, the best managed railroads in the country?

It is with no little diffidence that we differ in opinion with some of the gentlemen who sustain the policy of high charges; but we have learned to discard theory when we have proof in practice, and in all directions, and in nearly all departments of business, to sustain us in a policy, or system.

It is needless for us to repeat, for we have often said, that our favorite charge, both for fare and freight, is that which will give to the shareholders the best returns upon their investment; because we are sure that the people who do not own stock in railroads—or who do not aid directly in their construction, by subscribing to their stock—are more benefited by their use than those who own the stock are by their dividends; of course we wish

to have that policy prevail which will give the best returns. Therefore with us, the important question is, what rates will give the best returns? To this question answers are given by the parties directly interested according to their particular views, or wishes, or prejudices; not, it seems to us, generally in accordance with the experience of well managed railroads either in this country or Europe. In referring to the results of experience, we desire to be understood as referring to those railroads that have been constructed with their capital stock, and loans, without having been obliged to use up their net earnings to complete, or equip, the road, as many of our railroads have necessarily done.

No better maxim was ever adopted by a railroad company than the following, which we found some years since in a report of the Dublin and Kingston directors: This road is about as long as the Harlem road was before it crossed into West Chester, viz., six miles, and it cost about three times as much as that road, £59,500, or near \$300,000, per mile. It paid, the first year after its completion, only about 3 per cent, and the desire was to increase the dividend, and a committee was appointed to devise a policy by which it would be done. After proper enquiry, and consideration, a policy was adopted by which, in about four years, the directors were able to divide 9 per cent in the year 1844, if we recollect correctly,—or nearly threbled in four years. And how, it may be asked, was this done? To use the language of the report, it was done by "giving the people the greatest amount of accommodation for the least amount of money"—or in other words "by running frequent trains at high speed, for low rates of fare;" and by this course they divided nine per cent. in 1844, and ten per cent. in 1845, upon a road costing more than twice as much as any road of equal length in this country.

It is no argument against the correctness of this policy, that in 1816 the dividend of this company was only 9 per cent., and in 1847 only 8 per cent., because other and remarkable influences operated in those years, upon the entire railroad interest in Europe. Let peace, quiet, and ordinary plenty pervade those countries again, and we shall see the railroad interest flourish again, and former returns equalled, and surpassed even, from reduced rates of charge.

We hope to be able to give some important facts on this question soon, which will sustain our position on the subject.

But we have dwelt longer upon this subject than we intended when we commenced, with the view of giving, and recommending,

the following rates of fare. of *two cents a mile*, which have been adopted by this company. They are as follows, viz.:—*Through* trains leave New-York at 8 A.M., and the rates of fare are from New-York to

Piermont	\$0 25
Ramapo Station	65
Chester	1 05
Goshen	1 15
Middletown	1 25
Port Jervis	1 75
Barryville	2 20
Laekwaxen	2 30
Narrowsburg	2 50
Cochecton	2 75
Callicoon	2 90
Equinunk	3 25
Stockport	3 35
Chehocton	3 40
Deposit	3 65
Summit	3 85
Lanesboro'	4 00
Great Bend	4 20
Conklin	4 40
Binghampton	4 50

With these rates of fare the company may rely upon drawing to their line passengers for *three fourths* of the distance towards the northern line of railroad, while at three cents they would not draw half way, because old habits lead people the other way.

Nashville and Chattanooga Railroad.

We find in the Nashville Union, of December 18th, the following notice of the *first annual* meeting of the stockholders of this company. From this notice we learn that there is unity, harmony, and energy in the management; which, with the ability of Col. Garnett, the chief, and his subordinates in the engineer corps, will ensure rapid progress, superior construction, and the early completion of this important work. Its commencement seems to have aroused the people of Tennessee, and to have given them new *railroad* life. They are now planning branch railroads, and new turnpike roads, as feeders to this main line that is to extend through the state, from Georgia to the Mississippi.

In relation to their proposed *turnpike* roads, we wish to say a word, and to call their attention to *plank* roads instead of turnpikes for the reason that we believe they are *cheaper* than turnpikes covered with stone. They are much better, and will cost less for repairs—*therefore* they are *altogether* preferable. We do not desire that our word, or estimate, should be taken on so important a subject, and we will therefore refer those who feel an interest in the matter, to a gentleman whose investigations and experience enable him to speak with confidence;—and whose opinions and character are a guarantee where he is known. We refer to the Hon. *George Geddes*, of Geddesburgh, Onondaga Co., N. York—now a member of the state senate. Mr. Geddes, some years since, went to Canada, to examine the plank roads there, and on his return he induced the people of Salina to build a few miles—8 we believe—in a northerly direction from that village, as an experiment. It was built under the direction of Mr. Geddes, and the first built in the states. It was of course laughed at by some, and applauded by others. It was finished, and soon became the favorite road for pleasure rides, and the *admiration* of all those

with heavy loads. There are *hundreds* of miles of plank road now in use in the state of New York, which will—judging from present appearances—be more than doubled within the year 1849. We have enjoyed the pleasure—*next* to that of riding on a good railroad at *thirty miles an hour*—of a ride in a stage coach, full of passengers, forty miles in *six* hours, including stops—after having been *eight* hours in getting 23 miles, the day and night previous.—That is the way to make converts to plank roads.—Though we are digressing from the subject under consideration—the Nashville railroad—we feel that we are promoting the interest of the people of Tennessee, and others who cannot have railroads, by directing their attention to plank roads.

First Annual Meeting of the Stockholders of the Nashville and Chattanooga Railroad—Election of a new Board.

The first annual meeting of the stockholders of the Nashville and Chattanooga Railroad Company was held at Murfreesboro, on the 13th instant. Reports were submitted by the President, Chief Engineer, and Treasurer, which exhibited the affairs of the company in a most satisfactory condition. These reports were received by the stockholders with strong marks of approbation and gratification, and were ordered to be published.—Their publication will make a decided impression on the public mind. Besides showing the energy with which the Board of Directors have prosecuted the grand enterprise, the report of Col. Carnett will satisfy every one of his eminent qualifications for the responsible duties devolved upon him as Chief Engineer; whilst all will concede the eminent ability of Mr. Stevenson in the office of President of the Company. When these reports were read to the stockholders, they immediately adopted a resolution of thanks to the Directors and Engineer, for their fidelity and energy in the prosecution of the work.

The election of the new Board of Directors took place on the same day; and, upon counting the ballots, it was found that every vote was cast for the re-election of all the old board who would consent to serve. We understand with regret that two of the old board (viz., Messrs. Robert I. Moore and J. J. Gill) declined re-election, on account of bad health; their places were filled by the election of Samuel D. Morgan and Arthur M. Rutledge, Esqrs. These were the only changes made in the board; so that the friends of the great undertaking will now feel satisfied that the work will go forward to completion with all possible despatch. The following is a list of the new Board of Directors, viz.: Messrs. V. K. Stevenson, John M. Bass, A. O. P. Nicholson, F. B. Fogg, Alexander Allison, E. H. Ewing, Samuel D. Morgan, Arthur M. Rutledge, Levi Wade, James C. Moore, W. S. Watterson, Jeremiah Cleveland, John Eakin, P. S. Dechard, and James A. Whiteside.

We hope soon to have the pleasure of laying Mr. Stevenson's and Col. Garnett's report before our readers. They will not fail to impress the public mind with the great importance of this enterprise, and to give a new impulse to the spirit of Internal Improvement throughout the State. We may remark that a branch of the Chattanooga railroad is to be

constructed to Shelbyville—the arrangements for this branch are fully made. We understand that the stock for a turnpike from Shelbyville to Fayetteville has been taken, and that the work will soon be begun. It is understood also, that it is in contemplation to build a Turnpike from Shelbyville through Lewisburg, in the direction of Columbia.—At the late meeting of the Board of Directors, a resolution was adopted directing the Engineer to survey a route for a branch of the railroad from the mouth of Bellbuckle creek to McMinnville. We allude to these projects to show what a strong impulse will be given to individual enterprise by the construction of the Chattanooga railroad. All doubts as to the early completion of this work is now removed, and we soon expect to hear of new projects for extending and multiplying its benefits.

Railroad Items.

A letter in the N. Y. Tribune, describing the feat, says: "The road has been run to North Yarmouth, a distance of 12 miles, since July 4th, and to-day has been opened 2½ miles further, a distance of 33½ miles in all. From the point of embranchment in Danville the Montreal railway turns to the northwest and is in rapid progress to Paris, 47 miles from Portland the Androscoggin and Kennebec railway turning to the east passes to Lewiston Falls, thence to Waterville, on its way to Bangor, and is rapidly progressing as far as Waterville, 62 miles from Portland.

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"From Longueuil, opposite Montreal, to St. Hyacinthe, 30 miles, there are only six curves in the whole distance, and these so slight as to be scarcely noticeable. Fifteen miles in one tangent runs upon a level, or a grade of scarcely two feet to the mile.

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"Within two years 300 miles of railway have been actually undertaken in Maine, and as many more chartered, that will, in due time, be built. Already the influence of the railway is beginning to be felt upon the business of the place. New life, new energy, new impulses are felt in every movement of the people.

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"The board of directors of the above company met on the evening of the 4th inst., at the office of

the company, and organized by electing Wm. Larimer, Jr., president, Walter Bryant, treasurer, and H. D. King, secretary.

"On motion of Dr. E. T. Gazzam, the following resolution was passed unanimously:

"Resolved, That the proposed Slackwater Navigation on the Youghiogony river, as far up as Conneltsville, is a work which the friends of the Pittsburg and Conneltsville railroad company ought to encourage and support."

The Passumpsic road, says the Boston papers, was opened to Wells river on the 6th of November. The amount received for passengers and freight to the 15th of November, a period of nine days, was \$17,000. The receipts were nearly equal from passengers and freight. Both have since been constantly increasing.

Thus we see the most sanguine anticipations of the friends of this road more than realised—on the opening of the first section. What then may we not anticipate when the road shall have been completed to a connection with the Portland and Montreal road, as it will be by the early completion of that noble work?

**Camden and Amboy Railroads.
Is Privilege and its Abuses.**

In number 43, or for October 21st, we published a long article on this subject, making considerable extracts from the letters of "a citizen of Burlington," and also from an able correspondent of the Home Journal, over the signature Q. We intended to continue our strictures upon the policy and acts of the company; but—understanding that, in consequence of the charges made by "a citizen of Burlington," a committee of investigation had been selected by the company to examine their books, and to make a report upon their doings—having entire confidence in one of the committee whom we know, we have abstained from all remarks in relation to the matter during the investigation, in the hope that they might be able to show that they were not chargeable with *all* the sins alleged against them. Enough, however, we think, may be easily established to show that they have knowingly evaded the fair construction of the law, and thereby taking, under shadow of law, what they knew they were not entitled to take. We have now waited more than two months for the report of that committee—but it has not come to hand, nor been made that we are aware of—and therefore we have concluded to take the subject up again, that it may not be forgotten by those of our readers who do not often travel between New-York and Philadelphia—those who do require no other remembrance than what they receive at "the Captain's office."

As the Legislature of New Jersey will be likely to have their attention called to the subject this winter, we must endeavor to aid them in their investigations, and to give them facts by which a comparison may be made with other railroads.

If the allegations of the citizen of Burlington are true, the Legislature ought to remove the incubus upon the people, and upon business—if *not* true, then ought their author to be punished for his slanders.

In his letter of 8th December he says that "Last year the company owned at least seventeen boats; and I believe the number was still greater. Of these, the Stevens, Potter, and Trenton, were employed in transporting the passengers whose fare is included in the above account. The Burlington and the Transport were employed in transporting the merchandise to and from the railroad, and they were capable of doing twice the work *that is accounted for*, and they were kept busy.

"There remains now, the Raritan, Independence, New Philadelphia, Swan, New York, New Jersey, Thistle, Amboy, Camden, Rainbow, Princeton, and Washington, twelve boats, each of which must have earned, *of gross earnings*, at the lowest estimate \$25,000, making in the whole \$300,000, not one dollar of which can be found in the above accounts—although nothing would be easier than to find the whole sum of \$300,000 charged as expenditures on account of these boats, whose earnings never reach the company's treasury."

"It appears that in the Canal report there is a deficiency of receipts from the business admitted to have been done, and without taking into consideration the merchandise smuggled through the Canal, of \$128,000

"That on the railroad there is a deficiency of receipts from the business admitted to have been done, and without taking into consideration 42,000 through passengers, or any of the smuggled freight, of 77,000

"And that there is no place in any of the accounts for the earnings of twelve steamboats, the gross receipts of which cannot have been less than 300,000

\$505,000

"It is impossible that any man should examine this statement and hesitate to admit that it seems as if there were a very large deficiency, even admitting as true the managers' report of the number of passengers and weight of merchandise, and that they are not true, abundant evidence may be found in their own reports, and in the records of the Custom House. If there is no deficiency—if there has been no embezzlement of the funds of the companies—it is full time that they should place their books before a committee of men whose report would be received by all the world as true, instead of selecting a committee of their own particular friends, or perhaps waiting until the Legislature shall be organized, with a view to see if they can obtain a packed committee of investigation, and then to ask an examination of the books. Honest men do not act in this way, nor would they do so, if they dared to permit their books to see the light."

Depreciation of Stock, &c.

The editor of the Chronicle has these further remarks on this subject, in addition to those given in a previous number:—

"To illustrate the principle of depreciation, which we explained in our last number, (as distinguished from the vague, and, as it appears to us, fallacious views on the subject,) let us regard the case of a railway that has provided itself on the opening with 100 small engines, at £1,500 each, and that at the end of five years the traffic was found to require new and larger engines in order to keep up the receipts of the railway to the amount to which they had attained during the last year, but which receipts under the circumstances of the time (such as lower charges and consequently increased quantity of traffic to make up the same receipts, increased competition as to speed, and so on,) could only be maintained by the aid of these new engines—and this is the actual position of most railways at some period of their existence. The 100 original engines if they had been liberally kept up would not now be worth, at market value, more than £125,000, although they had cost £150,000. The 10 new engines required at £2,500 each, would cost £25,000. Is capital or revenue to pay for these 10 new engines? We say revenue, because these 10 new engines only suffice to keep the stock up to the £150,000 at which it stands in the capital account. Oh, but, say the shareholders clamouring for a dividend, you have now 110 engines in lieu of 100 as you had a year ago, and these 10 additional engines have cost £2,500 each.—Therefore, these 10 new engines should be paid for out of capital, or at any rate, the £1,000 each, by which they exceed the old ones in cost, should go to capital.

"This brings the question between us to an issue. We say, if you charge any portion of these new engines to capital, you are paying part of your dividend out of capital, and are on the road to ruin. You are doing, in fact, precisely what a landowner does when he pays for the repairs of farm-houses, not by deducting it from his rent but he spends his income, but by raising the money on mortgage of his estate—a course which must at last make him a bankrupt. Railway proprietors must either consider themselves permanent owners of their railways, or occupiers of permanent owners; then you must keep up the property in such a state as that it shall be able to earn as much when you leave it as when you entered it.

"We appeal to any mercantile man, to say if our principle—that of keeping up all the perishable stock of a railway to its market value—is not the only correct one; the only possible way of adjusting the account fairly between the present and future shareholders of a railway. The practical application of this principle would be to lay aside such an average sum out of revenue as shall be sufficient to pay for all replacements, so that the actual stock at the market value, together with the balance in hand, if any, of this fund, should at any moment be equal to the sum at which the stock stands in the capital account.

For the American Railroad Journal.
Railroads in the United States, with a Map,
 by Peter Clarke, Esq., of Virginia.

Guyandotte, Va., December 10th, 1848.

I have prepared with some care, a railroad map, in which I have endeavored to lay down the principal railroads projected, in progress and completed, in the United States. In the main I think it correct, and beg leave to submit it to your disposal with a few remarks.

On looking at the map, it will be seen, that many of the states have commenced and carried out, to a greater or less extent, a state system of roads, concentrating at some important point within their own territory.

In the second place, these state systems may be grouped into more general systems, having for their foci the principal seaports of the Atlantic coast; and in the third place, I may be pardoned if I attempt to show that the great system, which terminates at Norfolk holds a pre-eminent rank in point of natural advantages.

Before I proceed to these remarks, in the order here indicated, it may not be amiss, to refer to the geographical fact, that between New York and Norfolk, there is a great extent of sea coast, without any good harbor; and the same remark will apply to the coast between Norfolk and Charleston; thus indicating these cities, as proper cities for great commercial towns. It will be seen also, that the great line of railway along the Piedmontese region of the United States, crosses the principal rivers, at the head of navigation. Below this line, it is probable that no parallel railroads will be constructed, or if constructed, that they will be unprofitable; since the numerous rivers emptying into the Atlantic, will afford abundant facilities for carrying the trade of this tide-water belt of country to the Atlantic.—There is an exception to this remark, in North Carolina, where from the want of harbors parallel lines of railway may be necessary to carry off the trade of the interior, each way to Charleston and Norfolk.

But to return to the state systems of railways. In Maine, Portland is the nucleus of internal improvements; and the great Atlantic and St. Lawrence railroad will undoubtedly become the avenue of a vast trade not only from the mineral and grazing regions of New Hampshire and Vermont, but more especially from Montreal; from which as a commercial centre, this great railway will give the most direct outlet to the Atlantic. Notwithstanding the coast of Maine is indented with so many fine harbors inviting the trade of the country immediately interior, yet the people are aroused to the importance of railroads, and have chartered over 650 miles mainly terminating in Portland—thus connecting most of the principal towns with that noble harbor.

New Hampshire and Vermont can hardly be said to have any state system of railways, being geographically dependent upon Boston and New York. A fine spirit however prevades these states now, in regard to opening several important lines of railway through them, and the development of immense wealth with their social and physical improvements, will be the immediate consequence.

Massachusetts small in territory, but great in all that nobles mankind, has done more to perfect her state system than any other state, and has effectually opened avenues for concentrating not only her own trade, but that of nearly all New England upon her enterprising capital. More than this, she has, through the liberal policy of the adjoining states, already entered into competition with New York, and Pennsylvania, for the trade of the lakes and the

North West; and her unexampled prosperity is a practical comment upon the wisdom of her noble efforts in the cause of internal improvements.

Rhode Island, hemmed in by her neighbors, can hardly have a system of her own. Providence however with its capacious harbor, will, by its connection with the railways of Massachusetts and Connecticut, continue a port of great activity, and stimulate the numerous manufacturing establishments in its vicinity.

Connecticut, also falls under the controlling influence of her more powerful neighbors. Stonington, Allyn's Point, New Haven and Bridgeport are rather points of connection between New York and Boston, than centres of the trade of the interior. With the four roads terminating at these points, in addition to her beautiful river, Connecticut has great commercial facilities. In addition to all these, the important highway recently opened between New York and New Haven will greatly increase the facilities of intercourse between the former city and Boston, and more especially, when the road as now contemplated shall be extended coast-wise from New Haven to Norwich!

New York, by her geographical position, naturally concentrates all her commercial energies upon her great emporium, and this is, the secret of her supremacy. In obedience to this law, all her railways are constructed. With one line of railway extending northwest to Lake Champlain—to be extended with the Vermont railroads—another through the centre of the state to Buffalo, throwing off branches to Cape St. Vincent and Niagara, and the New York and Erie, 450 miles in length, extending along the whole south border to Lake Erie at Dunkirk, she seems prepared not only to gather in her own domestic trade, but also to draw in an immense foreign business.

New Jersey will probably never have a great commercial focus within her own borders, being by her geographical position under the overshadowing influences of New York and Philadelphia. She possesses however, great natural facilities for commerce, for although she has few if any good sea-ports of her own, the northern and central portions of the state are immediately connected with the great cities above referred to, while the southwestern part of the state is accommodated by the Atlantic and the Delaware bay, and should the road laid down on the map extending from near Amboy, southwesterly through the state, be constructed, every portion of this state would be opened to the best markets in the Union.

Pennsylvania not so well situated as New York, for perfecting a state system of railways, has nevertheless put forth gigantic efforts for this purpose. In the eastern part of the state her vast mineral wealth has been developed, by her wise policy. Her numerous railways wind among her everlasting hills, and pour into Philadelphia a rich and rapidly increasing trade. In the west, Pittsburg is well situated for collecting the trade of the western section of the state, and when the great central railway from Philadelphia to Pittsburg, shall have been completed, Pennsylvania will have secured the most of her own domestic business, and opened an avenue for the vast trade of the west. The contemplated extension to Erie, will enable her to contend for the trade of the great lakes.

Delaware, by means of the great lines crossing the north part of the state, and with the line opened from Seaford to the Breakwater as delineated upon the map, would have all needed facilities for trade. Her natural advantages for commerce are very

great, having the noble Delaware bay and river on the east, and indented by one or more navigable waters of the Chesapeake on the west.

Maryland comes next, with the state system so well arranged as to concentrate upon Baltimore the trade of the western portion of the state, and like that of New York admirably calculated to draw in trade from abroad. Her great Baltimore and Ohio railroad stretches through her whole extent westward and looks out upon the great valley of the west. On the north of this great trunk, she has three great lines connecting with Philadelphia, Lancaster and Harrisburg, and on the south, two reaching to Washington and Winchester. This admirable arrangement is well designed to make the monumental city the centre of a great and growing trade.

Virginia has a system of railroads projected, and partially completed, which if carried out will secure to Norfolk, her great commercial centre, a larger domestic trade, than that of any other state. The trade of the northwest part of the state will naturally flow down the Ohio, and thence over the Richmond and Ohio railroad to Richmond and Norfolk, or eastwardly over the Baltimore and Ohio railroad to Baltimore. But with a system of railways completed as spread upon the map, the trade of the whole middle and southern portions of this great state will naturally centre upon Richmond and Norfolk—and the state will have the means of drawing in an immense foreign trade. The map shows all this. On the north the system is somewhat imperfect; and unless the great central, and southwestern and southern lines are completed, the two lines leading off to Winchester and Alexandria will, instead of enriching the state, only tend to draw off her trade to Baltimore, and keep the Old Dominion in an impoverished state, dependent upon the commercial enterprise of the north; but with this system perfected, all the parts will harmonize and advance the best interests of the Commonwealth. The Portsmouth and Roanoke road, the Danville road, the Lynchburgh and Tennessee, and the Richmond and Ohio roads, the Richmond, Fredericksburgh and Potomac road, and the Louisa road, as well as the Gordonsville and Alexandria rail road, are all important parts of one grand system of railways, all needed to perfect the great Virginia system. It is a system, it would seem, that need only be seen, delineated on the map, to secure the hearty and zealous co-operation of every enlightened mind in Virginia,—and hence the folly of disunion, and local prejudice, in regard to the rail road policy of this State, which has hitherto retarded her progress. It may be said of each of the four great roads first above mentioned, that they open into a larger field of business, without the fear of rivalry, than can be said of any other roads in the Union. The northwestern section of the State by its geographical position comes under the influence of the Baltimore road, and the trade of that interesting portion of the State will continue for some time to flow in that direction. Could a route be obtained, however, in the direction from Staunton to Parkersburg, it would perfect the great State system of Virginia. And I venture to predict that the time is not far distant when this will be accomplished.

North Carolina has no State system of rail ways, for the reason, that she has no good sea ports, and hence, the rail roads of this State take the direction calculated to carry off her trade to the adjoining States.

South Carolina, having the best port, on the south-



RAIL ROAD MAP
OF THE
UNITED STATES

H. R. Robinson Lith: J. H. Park & Son, A. York

west Atlantic coast, has done nobly in framing her railways so as to terminate at Charleston. The map will show how admirably fitted her State system is, not only for her domestic trade, but also to gather in a large foreign business. The three great arms of her system are the South Carolina road, the Manchester, and Wilmington road, and the road from Columbia towards Knoxville.

Georgia can build up an important State system of railways. Her great Central railroad, between Savannah and Decatur, is a noble work, and enjoys a monopoly of the trade of a large section of country; and, with energy on the part of Savannah this great road, will form the basis of an important State system. From Decatur this line is to be extended to Nashville, but much of the descending trade, will be likely to turn off from Decatur, on the Georgia railroad, to Charleston, and southwesterly to New Orleans.

Alabama has the means of building up a great trade at Mobile, and by a judicious prosecution of her contemplated lines, she will make that city an important focus of a large domestic trade.

Mississippi comes entirely under the influence of New Orleans by means of the New Orleans and Nashville road.—Natches and Vicksburg are both important towns but are too much under the overpowering influence of the Crescent City to become, either of them, the centre of a State system of railways.

Tennessee has Memphis, Nashville, and Knoxville, each an important point, which will divide the domestic business of the State. It will be seen, however, that none of the interior States, with the exception perhaps of Ohio and Missouri, have any one commercial centre.

Kentucky has Louisville, a most important city for commercial and manufacturing business, but it can never concentrate the trade of a large portion of Kentucky, but will rather draw her support as well from Indiana and Illinois.

Missouri has done little or nothing, as yet, with railroads, but should the great Pacific railway come down the Missouri, or Kansas river, to St. Louis, instead of terminating at Galena, it would be difficult to comprehend the commercial greatness of that city. That St. Louis should be the terminus of the great Pacific road, appears from the considerations—that as low a point as practicable on the Mississippi should be selected, so as to concentrate as large a trade as possible upon it,—and that from such a point this trade should be thrown off upon the most direct line to the Atlantic. In both these respects St. Louis possesses great advantages over Galena. As it is, she is one of the most important business centres in the west; and with the advantages of rail roads superadded, she would rise proudly pre-eminence among the cities of the Valley.

The trade of Illinois will be divided between Chicago, Galena, Alton, Warsaw, Quincy and Cairo, at the junction of the Ohio and Mississippi. The former is by far the most important point, and will draw a large portion of the trade of Northern Illinois. Its back country is larger and richer than that which comes immediately under the influence of Boston and her future prospects are full of promise.

Indiana also, must divide her trade among the lines of railway crossing her territory from east to west,—and the same remark will apply to Michigan.

Ohio forms an exception to most of the western and inland States. The commercial greatness of the Queen city exerts an influence, not only upon

Ohio, but upon large portions of the adjoining States, and her grand system of railways is calculated to maintain this influence. She is in the midst of a large surrounding country exceedingly rich and highly cultivated. Whether the eastward tendency of trade by railways, will take more from her than it will give, may be problematical; but she will continue the great commercial centre of the West north of the Ohio, and east of the Mississippi, and form a most attractive point for railway connexions with the Atlantic cities. It is an important fact that great railways, are in progress of construction to her, from every considerable city on our tide waters. The second remark, that the railways of the United States may be grouped into general systems, having for their foci the principal Atlantic cities is made evident by the map. The delineation of these great railways presents the strongest proof of the untiring energy and enterprise of our citizens and should make every American feel proud of his common country. They not only improve our social and physical condition, but constitute the strongest bonds of union and are the very sinews of our national strength. A few years since the eastern shores of the great lakes, and the head waters of steamboat navigation upon the Ohio, were the Ultima Thule of rail road enterprize. These barriers are already overleaped,—the lakes are being encircled with these iron bands, and as if impatient of the tardy steamer, the rapid car will soon traverse the whole valley of the Ohio, and Galena and St. Louis will only for a while oppose a limit. Still, westward, like a foaming steed will it press on till its fiery breath shall be seen curling over the crest of the Rocky Mountains, and mingling with the spray of the broad Pacific. From each of the great sea ports of the Atlantic the eye will readily trace continuous lines of rail way connecting them with Cincinnati, and more remotely, with Galena and St. Louis. I need not particularize, for the map speaks the plainest language upon this subject, and addresses to the eye an argument which cannot be gainsayed.

It is worth remarking, however, that the four cities, Boston, New York, Norfolk and Charleston, seem, upon the map, to be the most prominent foci of these great railways.

Boston is the commercial centre of New England; and, if she were not so geographically, the sagacity of her citizens, by a wise railroad policy, has made her so. Not content with securing her own legitimate field of enterprize—her enlightened and enterprising business men are seen encircling the lakes and constructing railways through New-Hampshire, Vermont, New York, and Michigan, and, in common with the latter state, contending for the trade of the West. Under their wise energies it would be difficult to say, what she will not accomplish.

If we look at New York, in this connexion, it will be seen that when her railways are completed, she will possess great advantages over Boston and also over Philadelphia and Baltimore. In the first place, the most feasible line of communication between Boston and the west, is through the heart of New York, and the advantage of New York will appear from the fact, that from Albany, the point where the western trade will divide between Boston and New York, the route is some fifty miles nearer the latter city, besides having the advantage of a far easier grade. This is a fearful odds against Boston, and will tax all her energy and capital to overcome it. On the south, it will be seen, that from Philadelphia to the Ocean—the great level to which trade tends—it

is farther than by railway to New York; and the same remark will hold, in relation to the Monumental city. Thus New York would seem from her geographical position, to possess advantages for engrossing the lion's share of the whole northwest of the Union, extending in width from Baltimore to Albany, and from the Atlantic to the Mississippi. How far her great rivals will encroach upon her natural advantages, remains to be seen. The Empire city however, if true to herself, will always hold the pre-eminence, for the simple reason, that on the Atlantic coast of this broad belt, just referred to, there is no other important sea port.

Again, if we look at the map, we shall see that another broad belt, in width nearly double that of the former, extending from Baltimore to Charleston, has no good sea port except Norfolk; and could we, for one moment, give to Norfolk the capital and population of New York, there would be no extravagance in asserting that her great natural advantages had made her the commercial emporium of the Union. The natural dependence of Baltimore upon Norfolk would then be seen and acknowledged and the latter would exert a preponderating influence, upon Cincinnati and St. Louis—by means of the central road through Virginia from her tidewaters to the Ohio. Charleston as a great focal point on the seaboard, though important, is nevertheless subordinate to the others, not only because her harbor is not so good, but because the belt of country, coming under her immediate influence, is much less than the former. Besides, it will be seen on the map, that about one-half of this belt, must be yielded to Mobile and New Orleans; and that, if we trace into the interior, the great trunk of her railroad system, the eye will rest upon Decatur, Chattanooga and Nashville, as points where the trade, which would otherwise go to Charleston, will be drawn off both to Norfolk and New Orleans.

In addition to these desultory remarks, upon the railways of the United States, I shall be pardoned if I say a few things in relation to the railways of the Old Dominion. The map will fully justify all that has been said of her state system, and of Norfolk as a great centre of a general system. In an article published in the Railroad Journal, October 31, 1846, I ventured the assertion that from her great geographical advantages, the eye would rest upon Norfolk, as the commercial emporium of the Union—and I feel gratified that the same view has been taken in the able and spirited letter of Lieutenant Maury, recently published in your Journal in relation to the Lynchburg and Tennessee railroad.

Possessing such an advantage in the site of her commercial capital it would seem incredible, that Virginia had as yet, done so little, to secure the commercial pre-eminence which so naturally belongs to her. Her great railroad system as delineated upon the map, embraces and harmonizes all her sectional interests. And yet partial views have been so generally entertained, by the friends of internal improvement in our state, that these sectional interests have been arrayed against each other. To an intelligent mind, unacquainted with this remarkable fact, it would appear unaccountable that the friends of either of the great lines delineated on the map, should be opposed to the rest; for they all look out from the state in different directions, having each large and rich sections of country under their immediate influence, and tending severally to great commercial centres in other parts of the United States. For instance, the Portsmouth and Roanoke and the Petersburg and Richmond lines com-

mand the trade of the eastern portion of North Carolina, and tend ultimately to Charleston. The Danville road looks out upon the central part of North Carolina, and coursing through the upper parts of South Carolina and Georgia, and the southern portion of Alabama, and Mississippi, offers almost an air line connection with New Orleans. The Lynchburg and Tennessee road will command the trade of the interior portions of North Carolina and Tennessee and will pass on to Nashville and thence to Memphis. The Richmond and Ohio railroad extending northwest, through the geographical centre of the state, takes the Ohio at Guyandotte, the most feasible point for securing the trade of that noble river, and thence, by one branch coursing on in the same direction, reaches Cincinnati, and still onward to Chicago and Galena; and from Guyandotte by another proposed route, it passes through Frankfort and Louisville in a direct line to St. Louis.

The intrinsic merits of these great lines, are sufficient to recommend them to public favor, and could a proper spirit prevail, private enterprise would be aroused in favor of them, and with a small public patronage they would all succeed. Let Virginia but manifest an interest in these great lines, and by her credit, aid, to some extent, in their construction, and water would no sooner seek its level, than wealth and prosperity would flow in upon her, from every direction, invigorating every part of her vast territory, and raising Richmond and Norfolk to a proud rank among the cities of the Union.

Look for one moment at the map, and for once imagine the whole continent west of the Mississippi blotted out of existence, still the vast resources of the eastern portion of the great valley, fully justifies all the gigantic efforts made by the Atlantic cities to monopolize and centralize its trade. For this splendid prize, it has been admitted again and again, by all considerate men in Virginia, and by the advocates of rival lines elsewhere, that Virginia might successfully contend; and by opening the Richmond and Ohio railroad, would have the best outlet for the business of this wonderful region. If we look to the southwest, she would by means of the three great arms of her state systems before referred to, enjoy almost an independent monopoly of the business of a large portion of the whole southwestern section of the Union.

But, again, on the west bank of the Father of Waters, and in the geographical centre of a country larger than the whole Union east of the Mississippi, stands St. Louis, possessing natural advantages, and facilities for a system of rail ways concentrating upon her, unequalled upon the globe. From this important point Virginia still offers the best outlet to tide water, whether the route be taken thence, via Cincinnati, or Louisville, to Guyandotte, and thence to Richmond and Norfolk.

I have ventured to propose a new route between both Richmond and Norfolk and New York, which would greatly increase the facilities of intercourse between these cities, and give to the latter great inducements to make Norfolk and Richmond the gateways for much of her western trade. To effect this new route, nothing is wanting, so far as Norfolk is concerned, but to construct a short railway from Seaford at the head of steamboat navigation on the Nanticoke river, to Lewistown, at the Delaware Breakwater. If I am rightly informed, this distance is only about thirty miles. By this means a new route would be opened between New York and Norfolk, about sev-

enty-five miles nearer than the present railroad route. The whole route could be accomplished in ten or twelve hours and would be the pleasantest trip in the Union. To give Richmond the advantage of increased facilities for intercourse with New York, all that is wanting would be to extend the Elkton road to the mouth of the Rappahannock, which was recently chartered, from Richmond to the head of the York river. If, instead of taking the route via Camden, a new line of railway were opened through the whole length of New Jersey, the line would be still more direct and the whole of New Jersey brought into immediate communication with New York and Norfolk.

If these greater facilities of intercourse were opened between New York and Norfolk and Richmond, Virginia would be the gainer. Indeed in whatever direction we look, whether north, south or west, Virginia still fills up the field of vision, and we almost involuntarily cry out to her, to open her territory, and let trade and commerce flow in upon her from every direction. Nay more, if we look out upon the Atlantic, Norfolk is still in the eye, as the best point of commercial connexion with Europe, the West Indies, and the South American Republics. If we look to the revolutions going on in the east, and reflect upon the increasing implications of business between Europe and Asia, and the tendency of trade to flow through the Levant in the direction of the Indies and China—still further, if we turn again to the rapid extension of our institutions westward, and to the probable opening of the great Oregon railroad, Virginia still lies in the way, and *yield she must* to the necessity of opening her borders, so as to give free course to the swelling current of business, which is destined, at no very distant period to encircle the globe.

I must beg your pardon for troubling you with so long a letter, and subscribe myself,

Most Respectfully,
Your Obt. Servt.
P. CLARK.

NORWICH CAR FACTORY, NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS,
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
Orders executed with promptness and despatch.
Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,
Will meet with immediate attention. 1y8

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents,
17 Burling Slip, New York.
October 30th, 1848.

DIRECT ACTION ENGINES FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES, of Messrs. Mauldsley, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.,
23 Platt street, New York.

May 6, 1848.

WILLIAM JESSOP & SONS, CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—Square, flat & octagon. Best warranted Cast Steel—Square, flat & octagon. Best Double and Single Shear Steel—Warranted. Machinery Steel—Round. Best and 2d gy. Sheet Steel—for Saws and other purposes.

German Steel—flat and sq., "W. I. & S." "Eagle" and "Goat" Stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms, by W. M. JESSOP & SONS,
91 John Street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce St., Philadelphia.
Alex'r Fullerton, & Co., 119 Milk St., Boston.
Stickney & Beatty, South Charles St., Baltimore.
May 6, 1848.

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactory.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington.

SIZER & CO.
Springfield, Mass.

January 29, 1848. 1f

RAILROAD IRON AND LOCOMOTIVE

Tyres imported to order and constantly on hand by
A. & G. RALSTON
Mar. 20th 4 South Front St., Philadelphia.

TO MACHINISTS & MANUFACTURERS.

The Subscribers have taken the **READING CAR AXLE MANUFACTORY**—and are prepared to execute orders for *Axles of every description*, and Wrought Iron Shafts for Steamboats, Mills, etc., made from superior material, at short notice. Address *Reading, Pa.*

ANDREW TAYLOR & CO.
August 5, 1848—3in*

RAILROAD IRON—SHEET IRON—BRASIER'S RODS—HOOPS—SCROLL—BANK'S BEST—& OTHER GOOD MAKES OF ENGLISH IRON.

100 Tons Railroad Iron—Staffordshire make—56 pounds per yard—shipped from Liverpool 20th July, expected to land on wharf from 10th to 20th September.

Also have Invoices of Sheet Iron, Brasier's Rods, Hoops, Scroll, and Band Iron, Banks best, and other good makes of English Rolled Iron, to arrive, suitable for Railroad Axles, etc., etc., equal in quality to American Rolled Iron. I have agency of several best makers in England and Wales, and can import for Railroad Companies, and others, on best terms, and at much less prices than they can be supplied from American Mills.

DAVID W. WETMORE,
218 Water street.
New York, Sept. 9, 1848. 1w*

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.—These Springs have been in use for nearly four years, with most complete success, and they are now in use upon most of the principal roads in this country. They are made of the best material, are economical, light, and very easy in their motion—all persons using them are guaranteed against adverse claims.

Offices 78 Broad street New York, and Jas. Lee & Co., 18 India wharf, Boston.

Railroad companies are cautioned against the statements made by the New England car company. The India rubber used by the patentee is the best that can be made, and does not conflict with any existing patent. The ridiculous statement that a patentee may not vend his own invention needs no remark.

The patent for these springs was granted to W. C. Fuller, in Oct., 1845, in the United States and in England; A Mr. Ray claims to have invented another spring, which counsel advise, is a mere evasion of Mr. Fuller's patent, and proceedings are being taken to stop that infringement.

"The New England Car Company" have published an article from the pen of Mr. Hale, president of the Boston and Worcester railroad, expressing his opinion concerning these springs—but they have forgotten to publish the whole of that article; it is therefore given in full now, and the portion omitted by the New England car company is printed in italics, that the public may judge of the manner in which this "company" pervert Mr Hale's meaning.

G. M. KNEVITT, Agent,
78 Broad St., New York.

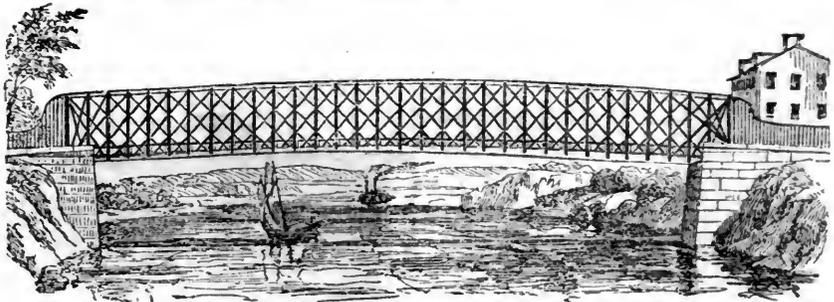
September 30, 1848.

[From the Boston Advertiser of the 7th June.]

INDIA RUBBER SPRINGS FOR RAILROAD CARS.
"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New-ton special train of the Boston and Worcester railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers or rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic at almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Kaeritt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

SPRING STEEL FOR LOCOMOTIVES,
Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1 1/4 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

**TUBULAR BOILERS,
FROM 1 1/2 TO 8 INCHES DIAMETER.**

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

**ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.**



No 23 Pear street,
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below Walnut,
Philadelphia.

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

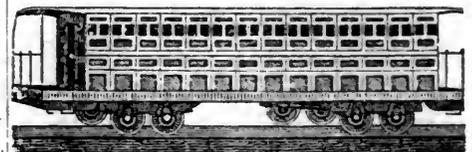
The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

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**CAR MANUFACTORY,
CINCINNATI, OHIO.**



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally. Cincinnati, Ohio, October 2, 1848. 411

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
Mount Savage Iron Co., Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md

November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
ly45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. THOMAS & EDMUND GEORGE, 245 N. E. cor. 12th and Market sts., Philad., Pa.

JAMES HERRON, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.
The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

TO CONTRACTORS.

OFFICE NASHVILLE & CHATTANOOGA R.R. Co. }
Nashville, 9th November, 1848. }

PROPOSALS WILL BE RECEIVED AT this office on 20th December next, for the Graduation and Masonry of forty miles of road, viz: twenty miles next to Nashville, ten miles crossing the Barran fork of Duck river in Bedford county, Tennessee, and ten miles on the northwest side of Tennessee river, in Jackson county, Alabama.

Profiles and plans may be seen at this office after 12th December. By order of the board.

C. F. M. GARNETT,
Chief Engineer.

N. B. Twenty-five miles of road (including the Tunnel,) and six miles heavy mountain work are under contract. Seven Hundred Laborers are wanted by the Contractors. 1*48

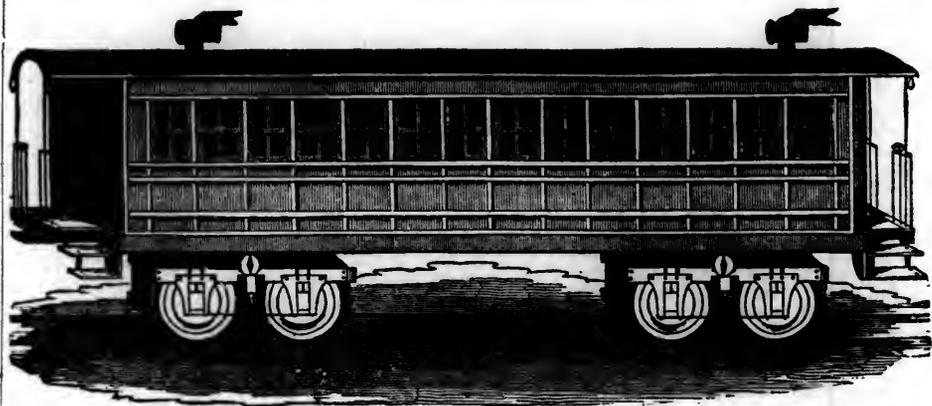
NOTICE.

RAILROAD LINE BETWEEN ALBANY AND BUFFALO, N. Y.
1848.—SCHEDULE FOR RUNNING.—1848.

Going west.	1st train.	2d train.	3d train.
Leaves.... Albany....	7½ A.M..	2 P.M..	7 P.M.
Pass..... Utica.....	1 P.M..	7½ P.M..	1½ A.M.
Pass..... Syracuse....	4½ P.M..	11 P.M..	5 A.M.
Pass..... Auburn.....	6½ P.M..	1 A.M..	7 A.M.
Pass..... Rochester..	12½ M.N..	7 A.M..	1 P.M.
Arrives at Buffalo....	5½ A.M..	12 M....	6 P.M.
Going east.	1st train.	2d train.	3d train.
Leaves.... Buffalo....	7½ A.M..	2 P.M..	7 P.M.
Pass..... Rochester..	12½ M.N..	7 P.M..	12 M.N.
Pass..... Auburn.....	6½ P.M..	1 A.M..	6 A.M.
Pass..... Syracuse....	8½ P.M..	3½ A.M..	8 A.M.
Pass..... Utica.....	12 M.N..	7 A.M..	11½ A.M.
Arrives at Albany....	5 A.M..	12 M....	4½ P.M.

Adopted February 18, 1848, in convention at Albany.
(Copy.) T. Y. Howe, Jr.,
Secretary of the Convention.

DAVENPORT & BRIDGES' CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes. 10f

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO.,
Philadelphia.
ROBERT NICHOLS, Agent,
No 79 Water St., New York.

RAILROAD IRON, PIG IRON, ETC.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartshrorie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. BALSTON & CO.
No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norris town Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartoid and New Haven Railroad; W. R. McKee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliou, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabeth town and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chitenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

FRENCH & BAIRD.

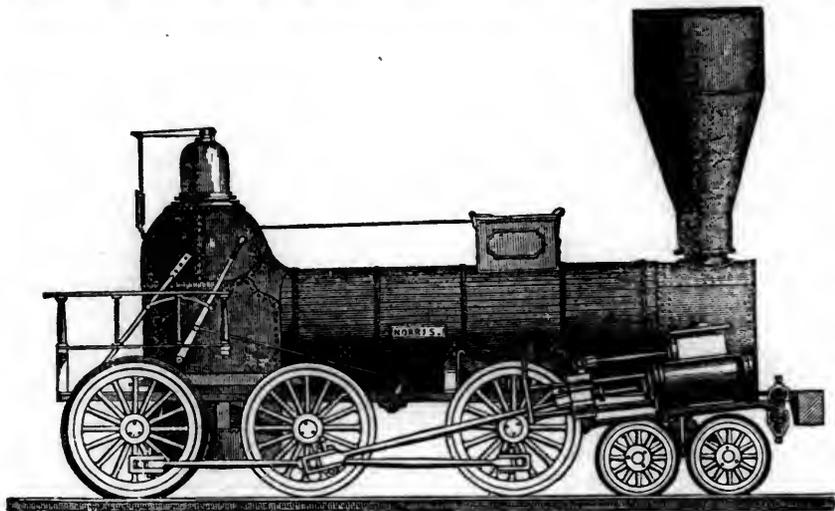
N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

Philadelphia, Pa., April 6, 1844.

*. The letters in the figures refer to the article given in the Journal of June, 1844.

ja45

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA.



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality. Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N.B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO.,

68 Broad street.

New York, Sept. 16. 1848,

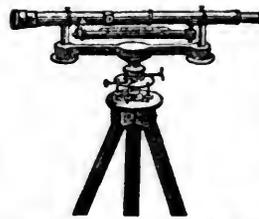
39tf

Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 West St. below 13th,

Nov. 10, 1847. [tf.] Philadelphia, Penna.



THE SUBSCRIBER has on hand a good assortment of his best Leveling and Surveying Instruments, among them his improved Compass for taking angles without the needle—also Bells, suitable for Churches, Rail-

road Depots, etc. **ANDREW MENEELY.** 1y*21
 West Troy, May 12, 1847.

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

* * Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand. ja45

THE LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufacture and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 1t

CHILLED RAILROAD WHEELS.—THE undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS.

Point Pleasant Foundry,

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T
 Kensington, Philadelphia Co., }
 March 12, 1848. }

11tt

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.
AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class.	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 85
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 70
	Molasses, per hogshead.....	8 50	13 50
	" " barrel.....	2 50	4 25
	Salt per bushel.....	0 18	
	Salt per Liverpool sack.....	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows....	0 75	1 50

German or other emigrants, in lots of 25 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS,

Sup't. of Transportation.

Augusta, Ga., July 15, 1847.

BALTIMORE AND OHIO RAILROAD. MAIN STEM. The Train carrying the

Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances.

BALTIMORE AND SUSQUEHANNA Railroad.—Reduction of Fare. Morning and

Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows: Leaves Baltimore at.....9 a.m. and 3½ p.m. Arrives at.....9 a.m. and 6½ p.m. Leaves York at.....5 a.m. and 3 p.m. Arrives at.....12½ p.m. and 8 p.m. Leaves York for Columbia at..1½ p.m. and 8 a.m. Leaves Columbia for York at..8 a.m. and 2 p.m.

FARE.

Fare to York.....\$1 50
" Wrightsville.....2 00
" Columbia.....2 12½
Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....\$9
Or via Lancaster by railroad.....10
Via through tickets to Harrisburg or Gettysburg.. 3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at.....5½ p.m. Returning, leaves Owning's Mills at.....7 a.m.
D. C. H. BORDLEY, Sup't.
31 1y Ticket Office, 63 North st.

NEW YORK & PHILADELPHIA.

NEW JERSEY RAILROAD & TRANSPORTATION CO.—6 O'CLOCK, A. M.

Accommodation Line from New York to Philadelphia, via Jersey City, New Brunswick, and Camden.

Fare for 1st class cars, \$3; for 2d class, \$2 50; children under 12 years, half price.

Leaving every morning, (Sundays excepted) at 6 o'clock, from foot of Courtlandt street, and passing through Newark, Elizabethtown, Rahway, New Brunswick, Kingston, Princeton, Trenton, Bordentown, Burlington and Camden, and arriving at Philadelphia at 11½ A. M.

Leave New York 6 o'clock A. M.; Newark, 6h. 30m.; Elizabethtown 6h. 40m.; Rahway, 7 A. M.

DAILY EXCURSION TO PHILADELPHIA. Excursion Tickets will be furnished, entitling the passengers to return by the 4½ o'clock P. M. Mail Line the same day, or next morning by the 6 o'clock A. M. Mail Line, for FIVE DOLLARS.

RAILROAD IRON—2500 TONS HEAVY

Rail, now landing, and expected shortly to arrive, for sale on most favorable terms by DAVIS BROOKS & CO. July 19th, 1f 68 Broad street, New York.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after

Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m. Freight train at 1 p.m.

Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 28 and 8 p.m.

Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m. Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m. Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m. White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m. Pleasantville, 8 15 a.m. and 5 15 p.m. Newcastle, 8 a.m. and 5 p.m. Mechanicsville, 7 48 a.m. and 4. 48 p.m. Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m. Returning, leave Croton Falls 10 a.m. and 9½ p.m.

ON SUNDAYS, the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m. 4 p.m. Croton Falls for City Hall, 7 30 a.m., 4 30 p.m. Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m. White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st. A car will precede each train 10 minutes to take up passengers in the city.

Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87½c., to Newcastle 75c., to Pleasantville 62½c. to White Plains 50c. 251f

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.

Accommodation Trains daily, (Sundays excepted.) Leave Norwich, at 6 a.m., 12 m. and 2½ p.m. Leave Worcester, at 6½ and 10 a.m., and 4½ p.m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a.m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars. S. H. P. LEE, JR., Sup't. 32 1y

BOSTON AND MAINE RAILROAD.

Winter Arrangement. Commencing Nov. 13, 1848.

Trains leave Boston as follows, viz: For Portland at 7 A.M. and 2½ P.M. Great Falls at 7 a.m., 2½ and 3½ p.m. Haverhill at 7 and 11½ a.m., 2½, 3½ and 5 p.m. Lawrence, at 7, 9, 11½ a.m., 2½, 3½, 5, 6 p.m. Reading 7, 9 & 11½ a.m., 2½, 3½, 5, 6, 7½ & 10 p.m.

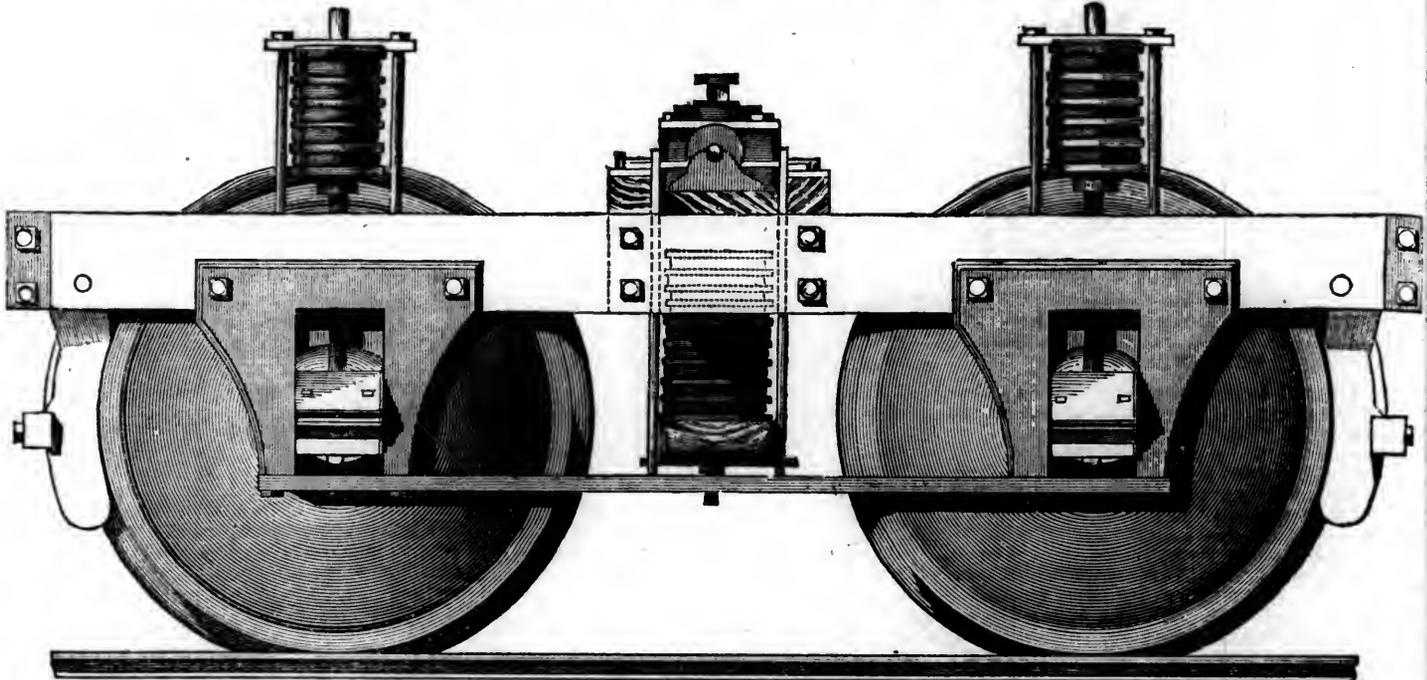
Trains leave for Boston as follows, viz: From Portland at 7½ a.m., and 3 p.m. Great Falls at 6½ and 9½ a.m., and 4½ p.m. Haverhill at 7, 8½ and 11 a.m., 3 and 6½ p.m. Lawrence at 6½, 7½, 8½, 11½ a.m., 12½, 3½, 6½, p.m. Reading at 6½, 7, 7½, 9½, 11½ a.m., 1½, 3½, 7½, 9 p.m.

MEDFORD BRANCH TRAINS.

From Medford at 6½, 8, 10½ a.m., 2, 4, 6, 9 p.m. From Boston at 7½, 9½ a.m., 12½, 2½, 5½, 6½, 10 p.m. The Depot in Boston is on Haymarket Square. CHAS. MINOT, Sup't. Boston, Nov. 7, 1848.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under the same, remain in force.

The New England Car Company are now prepared to answer orders for a quantity that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are so fitted to receive at your hands.

EDWARD CRANE, Agent,
Office 49 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent, 100 Broadway, N. Y.

The following article, from the pen of Mr. Hale, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New Orleans and Mobile Railroad, and Worcester Railroad. It is there used not only for the springs on which the cars rest, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advance or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn that during the period in which it has been used, any defect in it has been discovered. It renders the movement of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt Car Building, B. & W. R. R.
Boston, June 10, 1848

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the road, with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders,
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of iron is solicited by
A. WRIGHT & NEPHEW,
121st
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office, No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 281f

AMERICAN RAILROAD JOURNAL.
OFFICE AT No. 98 NASSAU STREET,
(Opposite the Herald Buildings.)
NEW YORK.

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING:

One page per annum.....	\$125 00
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One square ".....	15 00
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One page, single insertion.....	8 00
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Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
D. K. MINOR.

AMERICAN RAILROAD JOURNAL,

AND

IRON MANUFACTURER'S AND MINING GAZETTE.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 98 NASSAU STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 2]

SATURDAY, JANUARY 13, 1849

[WHOLE No. 665, VOL. XXII.]

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 98 NASSAU STREET, NEW YORK.

Saturday, January 13, 1849.

CHANGE OF LOCATION.

The RAILROAD JOURNAL will be hereafter published, as formerly, in the city of NEW YORK—it is therefore desired that all *letters, communications and exchange papers*, designed for the editor, should be hereafter sent to New York.

MISSING NUMBERS OF THE JOURNAL.

As the volume of the Railroad Journal for 1848 is now completed, and as it may not long be in my power to furnish missing numbers to its subscribers—some of whom have kindly accompanied me thro' a long journey of eighteen years—through good report and through evil report—I am desirous to furnish all who wish to complete their volumes, with missing numbers, if they are now on hand. Every subscriber, desirous to obtain missing numbers, should make out a list, and forward it immediately, and as far as it is in my power, it will be attended to at the end of January.

D. K. MINOR,

Editor Railroad Journal.

To Engineers and Contractors, a good suggestion.

We think the following suggestion an excellent one, and thank the gentleman who has felt the want of such information, for giving us the hint. We will endeavor to profit by it. He says:—

"Would it not be a good thing to publish a list of engineers and contractors, with the public works upon which they are engaged, charging so much per annum for each name? This will give the members of the profession an opportunity to know where their brothers are engaged, and their address;

also where an engineer can find an old well-known contractor, should he be in want of a good man to do some important piece of work in a hurry. Such a list would be of great service to me at this very moment. Assistant engineers would do well to advertise in the same way.

There is no doubt but that great convenience to some, and profit to others, would result from the constant publication of such a list of engineers and contractors, on the different lines of railroad, and especially to those out of, but *desiring, employment*. We therefore offer to insert the names of engineers, contractors, draughtsmen and others in responsible positions on railroads, and in machine manufactories, on reasonable terms, especially regarding those who are subscribers to the Journal, provided the suggestion meets with general favor. Will those interested look at the matter, and let us hear from them.

Institution of Civil Engineers.

It is scarcely a third of a century since *civil engineering* was first known as a profession in this country. We do not wish to be understood as intimating that there were not learned men in those sciences which are requisite to constitute an accomplished engineer; but the instances were very rare, previous to the commencement of the *Erie canal*, in which those learned in the science of engineering, had the opportunity of being practically engaged in the profession. In this department of science—as in most others, and perhaps more than in any other—important advances have been made within the last thirty years; and where there were, in 1818, only here and there one who made any pretensions to the honor and skill of an engineer, there are now hundreds employed on the numerous works of our country—some of whom, though not as far famed, would not suffer by a comparison with Stephenson, or Brunel, or Lock, or Cubitt, or Poussin; many of whom will, in good time, elevate the reputation of their ennobling profession—yet with all their science, activity and enterprise, they have not yet even laid the *foundation* upon which to erect a superstructure for an "AMERICAN INSTITUTION OF CIVIL ENGINEERS!"—Is this right? Have the leading members of the profession done their duty to their juniors in this matter? We think not, and therefore feel it our duty to call their attention once more to it—a subject to which, in years gone by, we devoted both labor and space in the

Journal, as will be recollected by many of our readers, or ascertained by others who will consult the volumes of 1839, 40, and 41.

We merely allude, in this number, to the subject, and shall refer to it again, in our next, more at length; and perhaps give the outline of a plan of organization devised by us in the summer of 1846—and to develop which we took an important *preliminary* step, but were prevented, by untoward circumstances, from giving it publicity, and a trial. We may also give extracts from some of the articles heretofore published in the Journal in relation to such an institution, as we think the present an auspicious period to make another effort to establish an *American Institution of Civil Engineers*; and we shall be obliged to any member of the profession who will give us his views on the subject.

Philadelphia, Wilmington, and Baltimore Railroad.

It is a source of real pleasure to us to learn that the affairs of this important road are assuming a more prosperous position. It is one of the most important links in the *great Atlantic chain* of railroad, and ought to be one of the most flourishing; and the time will come when it will be so, especially when they throw a bridge—a *suspension bridge*—across the Susquehanna, at Havre de Grace, and thus avoid disturbing those who sleep in the cars, which may, must, and will be done in a way to remedy the obstruction to navigation—as there is, it appears to us, ample elevation on both sides for a suspension bridge. We learn, in relation to the affairs of this company, from the Philadelphia Bulletin, that—

There has been a recent movement had in relation to the affairs of the Philadelphia, Wilmington, and Baltimore railroad company, which renders some exposition of its condition due to those whose energy and practical management have brought about its present satisfactory state, when compared with what it was some three years since, when they undertook its management. At that time its prospects were far from being flattering as to any ultimate value on the capital stock, unless some decided change could be made by which its obligations could be provided for. Let us look for a moment at the obligations existing three years ago. We find \$2,167,000 as a first mortgage, and \$900,000 as a second mortgage, together with a floating debt of \$500,000, making the aggregate of fully three and a half million of dollars. In this state of financial affairs, the then officers of the company found themselves with a road in bad order throughout, and with but slender, if any, means to procure the necessary stock and

fixtures to do the work then absolutely forcing itself upon the line. Some idea of this state of things might be formed from the fact of there being at that time but one locomotive engine weighing over ten tons! And that now, under the new arrangement, all the locomotives required for the effective service of the road are of the first class. The time of transit previously had between Philadelphia and Baltimore was 7½ hours; it is now but 5½ hours, and thus materially obviates a chance for a missing mail under the old schedule.

The result of this working efficiency has been mainly brought about by a subscription of stock equal to the amount of the second mortgage, by which that mortgage was cancelled, and a further subscription of stock, about half a million of dollars, applied to the payment of the floating debt, which previously had crippled the company and rendered it unable to procure the necessary materials, running stock, and the local fixtures of the road. After this negotiation was made for the subscription to the capital stock, the executive officers commenced improving the road, and immediately relaid the whole track, between Philadelphia and Wilmington, with a heavy "T rail," and also, entirely relaid the route of the Newcastle and Frenchtown railroad. The result was mainly obtained from the earnings of the road itself, a very small portion of which was anticipated.

In addition to these most essential improvements, the company has reconstructed, on different portions of the route, all the railroad bridges and viaducts required, and has purchased the necessary locomotives, cars, and the increased amount of land necessary for depots, &c. This has all been done in a season of most extraordinary pressure for money, for business purposes, and that, too, we feel glad to state, without having cost its stockholders or creditors a single dollar in the way of any extra interest or commission for the negotiation of loans.

Additionally to this, the revenue has been equal to all the expenses of the road, and to the payment of the interest on the whole indebtedness of the company, except an amount of about \$120,000, which has been provided for by arrangement made by the directors last November, by which not only has this floating debt been provided for, but the additional sum of about \$200,000 is now on hand, as an efficient cash working capital on the first of January. This has been done by an additional subscription of stock—with a view to have a portion of the expenses or construction account represented by capital.—This stock was subscribed for by those now interested in the company at par, and produces the result above stated.

We cannot close this brief but highly satisfactory summary of the present condition of this important incorporation, without bearing testimony to the active practical skill of its president, Mr. Dale, and to Mr. Charles P. Fisher, of this city, to whom, we are informed, this result is mainly attributable. We can congratulate both bond and stockholders in this association, that their interests tell in such good hands. The object of making these remarks at this time, is to do justice to the efforts so successfully made to put this company's affairs upon its present prosperous footing, ere the contemplated change in the officers takes place, and that due credit should attach where it belongs."

And we will bear our testimony to the efficient and untiring efforts of another gentleman connected with this road—we refer to Col. Trimble, the superintendent.

Railroad receipts on the S Carolina R. road.

The following statement, from a Charleston paper, together with the annexed extract from a letter, was received in December, while the Journal was published in Philadelphia, and it is to the merchants of that city that allusion is made by our correspondent.

SOUTH CAROLINA RAILROAD.—We have been favored with the following statement of the receipts of the South Carolina Railroad for the months of July, August, September, October and November, 1847, compared with the same months, 1848:

1847—July, August, September and October—For Freight, Passage,

Mails and minor sources as previously published, - - -	197,515 96
NOV.—Passage up	11,569 93
Passage down	7,963 39
	19,533 32
Freight up	14,906 59
Freight down	13,290 15
	28,195 74
(Total P. & F.)	47,730 06
Mails - - -	3,358 33
Minor sources	376 42
	3,734 75
Total, m. & m. s.	51,464 81
Months' total,	- - 248,980 77

1848—July, August, September and October—For Freight, Passage, Mails and minor sources as previously published, - - -	231,277 66
NOV.—Passage up	11,558 09
Passage down	9,029 49
	20,587 58
Freight up	19,943 33
Freight down	37,211 04
	57,154 42
(Total P. & F.)	77,742 00
Mails - - -	2,413 54
Minor sources	531 21
	3,944 75
Total, m. & m. s.	81,585 75
Months' total,	- - 362,964 41

Difference in favor of 1848, - - \$113,983 64
The comparative receipts for four months, as given in this statement, show to advantage, and the writer may well say that,

"This is encouraging, and the prospect ahead, on the completion of the Western and Atlantic lake, to Chattanooga, and from thence up the Nashville and Chattanooga lakes to Nashville, is bright indeed. Both those works are being pushed forward with the utmost energy; the former is to be finished, as per contract, in Oct. '49. We shall then draw to this place from 70 to 80,000 bales cotton per annum, which formerly found its way to New Orleans, by the way of the river. And, also, an immense quantity of produce. Your merchants are, therefore, acting wisely in the building of fine steamers to run between the two ports."

It is, indeed, true wisdom in the merchants of Philadelphia to build steam packets for the trade with Charleston. They ought also to do the same with Savannah, and New Orleans. They will be obliged to do it, by and by, in self preservation—if it shall be long delayed—therefore better lead than be driven.

Panama Railroad.

The question of crossing the Isthmus between the Gulf of Mexico and the Pacific ocean, has attracted the attention of able men, for near half a century. We well recollect to have been confided with on the subject—whether a canal or a railroad would be most useful, under all circumstances, as long ago as the first year of the publication of the Railroad Journal, 1832; and in relation to this important work, as to that of the Illinois canal, from lake Michigan to the Mississippi river, we were then, as now, decidedly in favor of a railroad.

There are positions, and this may be one of them, where a canal would be preferable—if one could be constructed, and used, when constructed—as for instance at the *Sault St. Marie*, by which a connection between two great bodies of water—lake Huron and lake Superior—would be made. In that case, there is an abundant supply of water—from lake Superior, and the canal will be less than three miles long, therefore a canal will be made, an abundance of water can always be relied upon—whereas at the isthmus of Panama, the elevation to be overcome, is so great, 337 feet—and the supply of water so small on the summit, that it is very doubtful, whether a supply could be relied upon, without an enormous outlay for reservoirs, and therefore we are now, as eighteen years ago, decidedly in favor of a railroad, and especially because by a railroad, a route can be taken which will obviate in a good measure, the objections in regard to health, which must, inevitably, attend the line of a canal.

It is well however, to those who have investigated the matter, that Chagres, and its immediate vicinity, is famed for its unhealthy climate—yet a canal must have one of its termini at, or near, that especial depot of Malaria—whereas a railroad may terminate at some other point, where there is better anchorage, a healthy position, and ample space for business; and such appears to be the views of those who now have the matter in hand, as we are informed by one of the gentlemen who has a grant for constructing the work.

From the map before us, prepared from a preliminary survey of a part of the route, by Messrs. Tracy & Baldwin, under the direction of J. L. Stephens, Esq., the far-famed traveller; it appears that it is proposed to commence the road, on this side, at some point in "Navy Bay," south of Chagres, and to cross the river Chagres, near Gorgona—and near the summit level, and to terminate it at Panama, on the Pacific; but we are led to believe, that a more feasible route may be found by crossing the river Chagres at some point not far above the mouth of the river Trinidad, and striking the line indicated on this map at, or near Brujo, or near the summit level,

With the information now before us, it is difficult to speak of the line in a manner satisfactory, but we are informed that a corps of engineers consisting of four parties, under the direction of Col. G. W. Hughs, the Topographical engineers, is to leave this port, on, or about the 20th inst., for the purpose of making a thorough exploration and survey of the route; and we therefore anticipate more accurate, and useful information on this subject, at an early day, when we shall again refer to it—as we may also, in our next.

Reduced Rates on the Vicksburg Railroad.

We some time since noticed the reduction of the rates of charge on this road—they were formerly as follows. See R. R. Journal, page 490, vol. of 1848: "Vicksburg and Jackson, 46 miles—sugar, coal, iron, and manure, 40 cts. per 100 lbs.; salt, 60 cts. per sack; corn and grain, 10 cts. per bushel; dry-goods, 8 cts. per cubic foot; cotton, 87½ cts. per bale of 400 lbs.; horses and carriages, 12 cts. per mile each; passengers fare, \$3, or 6-38 cts. per mile;" and the highest rates of charge, we believe, in this country—adopted probably under the belief that a less rate would not enable them to work a short road, in that location. In July last the rates were reduced nearly one-third, to take effect on 1st August, and we are now enabled to give a comparative statement for August and September of the years

1847 and 1848. By this statement there was, during those two months, a slight falling off in the aggregate receipts; and such a result might have been anticipated, as the influences of the change would not be so soon felt; but the year will, we have no doubt, show a different result. Its influences will, however, be more felt during the second than the first year.

The statement is as follows:—

Passengers.—Vicksburg and Jackson Railroad, August and September, 1847.

Rate 6.52 per mile, whole & half tickets sold at	August, 1847.		Sept., 1847.		Total Aug. & Sept. 1847.	
	Number of Tickets.	Amount.	Number.	Amount.	Number.	Amount.
Jackson.	199	503 15	231	500 50	430	1003 65
Clinton.	140	220 35	139	204	279	424 35
Boltons.	83	119 25	82	118 95	165	238 20
Edwards.	72	86 15	43	49 65	115	135 80
Vicksburg.	570	1,088 70	669	1,099 20	1,239	2,187 90
Total.	1,061	2,017 60	1,164	1,972 30	2,225	3,989 90

August and September, 1848.

Rate 4.35 per mile, whole & half tickets sold at	August, 1848.		Sept., 1848.		Total Aug. & Sept. 1848.	
	Number of Tickets.	Amount.	Number.	Amount.	Number.	Amount.
Jackson.	335	544 40	301	453 45	636	997 85
Clinton.	196	220 70	256	265 55	452	486 25
Boltons.	103	122 95	137	133 10	240	256 05
Edwards.	176	137 55	147	105 80	323	243 35
Vicksburg.	751	915 55	752	1,004 80	1,503	1,920 35
Total.	1,561	1,921 15	1,593	1,962 70	3,154	3,883 85

Aug. & Sept., 1847, 2228 Tickets \$3989 90
 " " 1848, 3154 " 3883 85

Increase of Number, } 926
 41.5 per cent. } Decrease of income } \$106 05

J. ROACH, Cashier.

Vicksburg and Jackson Railroad,
 10th October, 1848.

New-York and Erie Railroad.

We referred in our last number to the opening of this road to Binghamton.—That was an important day to this city, and to the sequestered region through which it passes, as well as to the beautiful valley and village in which its locomotives are for a time—a short time only we trust—arrested. In looking at the subject, during a leisure moment, we could not refrain from following it out in its various ramifications—and contemplating it in all its bearings—we could not avoid asking our "three-legged stool" how much the people along its line—those who never paid a dollar towards its construction, but asked damages for its passing through their lands—would be disposed to charge "damages" if its location were to be changed to the first proposed line through Sullivan county—or to any other line? When it has been in use one year the entire property along its line, from Port Jervis to Binghamton, will be estimated worth 50 per cent. more than it was the day before the commissioners decided upon its present location; and the increase upon its present value, or its present growth, will be twice as rapid as it would have been on its value before that decision. In short, the value of the road, to the region through which it passes, cannot be justly estimated until it shall have been some years in use, and then thrown out of use, by some convulsion, by which its working shall cease for a time.

To Binghamton, from every direction, will the people centre with produce for New-York direct.—Fifteen hours for passengers, and twenty-four to thirty hours for freight, will be common time.—Fresh butter, eggs, fruits, and meats will now reach the people of this city from a region never before represented in this market by such articles. And the seekers of pleasure in beautiful scenery, in trout brooks, in shooting, and in hunting game worth seeking, will take this line of railroad, and not be disappointed in their favorite pursuit. And when it shall be extended to the Lake, and its numerous branches, northwardly and southwardly, be completed—as they surely will be—then will the Erie railroad become like another Hudson river to this city; and then, also, will the doubters, and croakers, and selfish—who have refused to give a helping hand in its construction—begin to see and feel its influences; and then—as with the Erie canal—will those people claim to have been its best friends, and probably claim credit for its construction; while those who actually bore the burthen of the work, in its dark days, will be thrust aside and be forgotten.—Such is mankind, and such will men be until some time after the completion of the New-York and Erie railroad.

But that we may do our part in causing to be remembered those who have been immediately instrumental in completing this last and longest section of the work, we give annexed a list of the officers, directors, engineers, and principal contractors, that we may be able, on our return from California,—a few years hence,—to ascertain who were, in truth, the men who aided in so noble a work. This is the only way in which the history of the work can be written ten years hence—as a people benefited by their fellow-men are sure to forget, and never to forgive, those who labor most devotedly for the public good, unless in so doing they become wealthy—and we are sure that no man will get very wealthy who has recently been, or is now, engaged on the New-York and Erie railroad.

We are not disposed to be partial in recording the names of those only who have been connected with the last section completed; as we would, if we could get a list of them, with great pleasure give a list of all those who, in by-gone days, were prominent in aiding the work, but as it would be difficult to get a correct list of them; and, rather than to seemingly do injustice to any one, by omission, we omit all for the present, except those who have been so recently engaged that they are not yet forgotten.

First in order we give the directors, then the officers, engineers, and principal contractors, as follows:—

DIRECTORS—Benjamin Loder, Silas Browne, H. Sheldon, Daniel S. Miller, Henry Suydam, Jr., Wm. E. Dodge, Shepherd Knapp, Samuel Marsh, John Wood, Cornelius Smith, Thomas J. Townsend, Homer Ramsdell, (of Newburgh), William B. Skidmore, Marshall O. Roberts, Thomas W. Gale, Charles M. Leupp, Theodore Dehon.

OFFICERS—Benjamin Loder, President; Samuel Marsh, Vice-President; Thomas J. Townsend, Treasurer; Nathaniel Marsh, Secretary; H. C. Seymour, Superintendent of the road in operation.

ENGINEERS—Major T. S. Brown, Chief Engineer; Horatio Allen, Consulting Engineer; Silas Seymour, W. H. Sidell, W. H. Morell, and J. W. Adams, Superintending Engineers; J. P. Kirkwood, Engineer in charge of Starucca Viaduct; W. W. Morris, Engineer and Agent for obtaining supplies of rails, castings, etc.; J. K. Ford, T. A. Emmet, Jr.,

E. F. Jones, W. R. Kingsley, F. Hubbard, and F. C. Cunningham, Resident Engineers; W. S. French, I. S. Beggs, D. Hardenburg, Irving Camp, John May, George Wolcott, H. J. Barker, H. Riddle, J. R. Knight, J. A. Case, F. W. Beebe, N. A. Gurney, R. N. Browne, W. L. Storke, G. H. Bellden, Philip Harry, J. H. Morley, Edwina McNeil, Peter A. Dey, E. L. Weutz, Assistant Engineers.

WEST OF BINGHAMTON—L. D. Stancliffe, Superintending Engineer; P. P. Dickinson, W. P. Innis, A. C. Archibald, Assistant Engineers.

ON NEWBURGH BRANCH—McRee Swift, Superintending Engineer.

CONTRACTORS.—Thomas King, —Malone, McEvoy & Co., Michael Burke, Martin & Freeland, Dougherty & Lauman, Story & King, Carmichael & Stranahan, Flannery & Healy; King, Fuller & King; Becker, Gros & Co.; Becker & Dutcher, Wilkes & O'Garrah, Hegarty & Demon, Calvin, Carmichael, J. & C. Collins; Thomas, Edsall, & Storrs; David H. Lockart, J. D. Wheeler, George Rowley, Uriah Gregory, Timothy Ives; Richard McGrann & Co.; P. McMahan, Case; Baker & Co., Ewers & Co., Eldredge & Jones; Barker, Denton, & Co.; Brayton & Gouder; Dimmick, Cook, and Co.; John Fowler, (builder of Cascade and other structures); William J. Marlett, Dougherty & O'Rourke, Hubley & Hamersley, George M. Lauman, Philip Dugherty; McGrann, Reilly, & Co.; Ford & Crandall, Fowler & McCallum, (bridge builders), Hazard Lewis, M. M. White, (builder of iron bridge, and agent for Rider's plan); Story & King, Carmichael & Stranahan, and Boody & Thatcher, (track layers.)

Railroad to Albany—Oliver Evans—Col. J. Stevens—J. Fitch—The first Locomotive.

Few men, if any, in this country, are more familiar with the history of our internal improvements, and the pioneers in the cause, than the writer of the following communication. For many years he was actively engaged in the effort to convince the capitalists, and business men of this city, of the importance of a railroad from here to Albany, but with all the energy and effort brought to bear on the subject during a ten years' campaign, up to 1844, capital, sufficient to construct a good road, could not be relied on; whereas now, such has been the advance of the age, and the progress of intelligence on this subject, that we are to have two lines of railroad to Albany,—one of which, is to be the model road of the country.

There are few men in the country better able than J. E. B.—looking on as he does from his quiet retirement—to correct the errors into which we may fall in our sometimes hasty allusions to men, times, and things by gone, in connection with the origin, rise, and progress of the improvements of our country; and his communication ought therefore to have had an earlier insertion, as it is designed to give credit where it is justly due—without in the least detracting from the merits of others—and least of all from Col. Stevens—in vindication of whose claims to being the pioneer of Railroads, he has often wielded his pen.

"Give honor to whom honor is due."—I am led to make this remark, as I perceive a correspondent 'B,' in the Courier & Enquirer of the 15th Nov. introduces a letter of John C. Stevens, Esq., who gives credit to his father as the projector of a railway on "the margin of the Hudson" and "the astounding accuracy with which he describes the first locomotive." The latter is true, the former doubtful.

The late Col. John Stevens, of Hoboken, has

fixtures to do the work then absolutely forcing itself upon the line. Some idea of this state of things might be formed from the fact of there being at that time but one locomotive engine weighing over ten tons! And that now, under the new arrangement, all the locomotives required for the effective service of the road are of the first class. The time of transit previously had between Philadelphia and Baltimore was 7½ hours; it is now but 5½ hours, and thus materially obviates a chance for a missing nail under the old schedule.

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The following statement, from a Charleston paper, together with the annexed extract from a letter, was received in December, while the Journal was published in Philadelphia, and it is to the merchants of that city that allusion is made by our correspondent.

SOUTH CAROLINA RAILROAD.—We have been favored with the following statement of the receipts of the South Carolina Railroad for the months of July, August, September, October and November, 1847, compared with the same months, 1848:

1847—July, August, September and October—For Freight, Passage,

Mails and minor sources as previously published, - - -	197,515 96
NOV.—Passage up	11,569 93
Passage down	7,963 39
	<u>19,533 32</u>
Freight up	14,906 59
Freight down	13,290 15
	<u>28,196 74</u>
(Total P. & F.)	47,730 06
Mails - - -	3,358 33
Minor sources	376 42
	<u>3,734 75</u>
Total, m. & m. s.	51,464 81
Months' total,	- - 248,980 77

1848—July, August, September and October—For Freight, Passage, Mails and minor sources as previously published, - - -	231,277 66
NOV.—Passage up	11,558 09
Passage down	9,029 49
	<u>20,587 58</u>
Freight up	19,943 38
Freight down	37,211 04
	<u>57,154 42</u>
(Total P. & F.)	77,742 00
Mails - - -	2,413 51
Minor sources	531 21
	<u>3,944 75</u>
Total, m. & m. s.	81,585 75
Months' total,	- - 362,961 41

Difference in favor of 1848, - - \$113,983 61

The comparative receipts for four months, as given in this statement, show to advantage, and the writer may well say that,

"This is encouraging, and the prospect ahead, on the completion of the Western and Atlantic lake, to Chattanooga, and from thence up the Nashville and Chattanooga lakes to Nashville, is bright indeed. Both those works are being pushed forward with the utmost energy; the former is to be finished, as per contract, in Oct. '49. We shall then draw to this place from 70 to 80,000 bales cotton per annum, which formerly found its way to New Orleans, by the way of the river. And, also, an immense quantity of produce. Your merchants are, therefore, acting wisely in the building of fine steamers to run between the two ports."

It is, indeed, true wisdom in the merchants of Philadelphia to build steam packets for the trade with Charleston. They ought also to do the same with Savannah, and New Orleans. They will be obliged to do it, by and by, in self preservation—if it shall be long delayed—therefore better lead than be driven.

Panama Railroad.

The question of crossing the Isthmus between the Gulf of Mexico and the Pacific ocean, has attracted the attention of able men, for near half a century. We well recollect to have been conferred with on the subject—whether a canal or a railroad would be most useful, *under all circumstances*, as long ago as the first year of the publication of the Railroad Journal, 1832; and in relation to this important work, as to that of the *Illinois canal*, from lake Michigan to the Mississippi river, we were then, as now, decidedly in favor of a railroad.

There are positions, and this may be one of them, where a canal would be preferable—if one could be constructed, and used, when constructed—as for instance at the *Sault St. Marie*, by which a connection between two great bodies of water—lake Huron and lake Superior—would be made. In that case, there is an abundant supply of water—from lake Superior, and the canal will be less than three miles long, therefore a canal will be made, an abundance of water can always be relied upon—whereas at the isthmus of *Panama*, the elevation to be overcome, is so great, 337 feet—and the supply of water so small on the summit, that it is very doubtful, whether a supply could be relied upon, without an enormous outlay for reservoirs, and therefore we are now, as eighteen years ago, decidedly in favor of a railroad, and especially because by a railroad, a route can be taken which will obviate in a good measure, the objections in regard to health, which must, inevitably, attend the line of a canal.

It is well however, to those who have investigated the matter, that *Chagres*, and its immediate vicinity, is famed for its unhealthy climate—yet a canal must have one of its termini at, or near, that especial depot of Malaria—whereas a railroad may terminate at some other point, where there is better anchorage, a healthy position, and ample space for business; and such appears to be the views of those who now have the matter in hand, as we are informed by one of the gentlemen who has a grant for constructing the work.

From the map before us, prepared from a preliminary survey of a part of the route, by Messrs. Tracy & Baldwin, under the direction of J. L. Stephens, Esq., the far-famed traveller; it appears that it is proposed to commence the road, on this side, at some point in "*Navy Bay*," south of *Chagres*, and to cross the river *Chagres*, near *Gorgond*—and near the summit level, and to terminate it at *Panama*, on the Pacific; but we are led to believe, that a more feasible route may be found by crossing the river *Chagres* at some point not far above the mouth of the river *Trinidad*, and striking the line indicated on this map at, or near *Brujo*, or near the summit level,

With the information now before us, it is difficult to speak of the line in a manner satisfactory, but we are informed that a corps of engineers consisting of four parties, under the direction of Col. G. W. Hughs, the Topographical engineers, is to leave this port, on, or about the 20th inst., for the purpose of making a thorough exploration and survey of the route; and we therefore anticipate more accurate, and useful information on this subject, at an early day, when we shall again refer to it—as we may also, in our next.

Reduced Rates on the Vicksburg Railroad.

We some time since noticed the reduction of the rates of charge on this road—they were formerly as follows. See R. R. Journal, page 490, vol. of 1848: "Vicksburg and Jackson, 46 miles—sugar, coal, iron, and manure, 40 cts. per 100 lbs.; salt, 60 cts. per sack; corn and grain, 10 cts. per bushel; dry-goods, 8 cts. per cubic foot; cotton, 87½ cts. per bale of 400 lbs.; horses and carriages, 12 cts. per mile each; passengers fare, \$3, or 6-38 cts. per mile;" and the highest rates of charge, we believe, in this country—adopted probably under the belief that a less rate would not enable them to work a short road, in that location. In July last the rates were reduced nearly one-third, to take effect on 1st August, and we are now enabled to give a comparative statement for August and September of the years

1847 and 1848. By this statement there was, during those two months, a slight falling off in the aggregate receipts; and such a result might have been anticipated, as the influences of the change would not be so soon felt; but the year will, we have no doubt, show a different result. Its influences will, however, be more felt during the second than the first year.

The statement is as follows:—

Passengers.—Vicksburg and Jackson Railroad, August and September, 1847.

Rate 6.52 per mile, whole & half tickets sold at	August, 1847.		Sept., 1847.		Total Aug. & Sept. 1847.	
	Number of Tickets.	Amount.	Number.	Amount.	Number.	Amount.
Jackson.	199	503 15	231	500 50	430	1003 65
Clinton.	140	220 35	139	204	279	424 35
Boltons.	83	119 25	82	118 95	165	238 20
Edwards.	72	86 15	43	49 65	115	135 80
Vicksburg.	570	1,088 70	669	1,099 20	1,239	2,187 90
Total.	1,064	2,017 60	1,164	1,972 30	2,228	\$3,989 90

August and September, 1848.

Rate 4.35 per mile, whole & half tickets sold at	August, 1848.		Sept., 1848.		Total Aug. & Sept. 1848.	
	Number of Tickets.	Amount.	Number.	Amount.	Number.	Amount.
Jackson.	335	544 40	301	453 45	636	997 85
Clinton.	196	220 70	256	265 55	452	486 25
Boltons.	103	102 95	137	133 10	240	236 05
Edwards.	176	137 55	147	105 80	323	243 35
Vicksburg.	751	915 55	752	1,004 80	1,503	1,920 35
Total.	1,561	1,921 15	1,593	1,962 70	3,154	3,883 85

Aug. & Sept., 1847,	2,228 Tickets	\$3,989 90
" " 1848,	3,154 "	3,883 85

Increase of Number, } 926 Decrease } \$106 05
41.5 per cent. } of income }

J. ROACH, Cashier.

Vicksburg and Jackson Railroad,
10th October, 1848.

New York and Erie Railroad.

We referred in our last number to the opening of this road to Binghamton.—That was an important day to this city, and to the sequestered region through which it passes, as well as to the beautiful valley and village in which its locomotives are for a time—a short time only we trust—arrested. In looking at the subject, during a leisure moment, we could not refrain from following it out in its various ramifications—and contemplating it in all its bearings—we could not avoid asking our "three-legged stool" how much the people along its line—those who never paid a dollar towards its construction, but asked damages for its passing through their lands—would be disposed to charge "damages" if its location were to be changed to the first proposed line through Sullivan county—or to any other line? When it has been in use one year the entire property along its line, from Port Jervis to Binghamton, will be estimated worth 50 per cent. more than it was the day before the commissioners decided upon its present location; and the increase upon its present value, or its present growth, will be twice as rapid as it would have been on its value before that decision. In short, the value of the road, to the region through which it passes, cannot be justly estimated until it shall have been some years in use, and then thrown out of use, by some convulsion, by which its working shall cease for a time.

To Binghamton, from every direction, will the people centre with produce for New-York direct.—Fifteen hours for passengers, and twenty-four to thirty hours for freight, will be common time.—Fresh butter, eggs, fruits, and meats will now reach the people of this city from a region never before represented in this market by such articles. And the seekers of pleasure in beautiful scenery, in trout brooks, in shooting, and in hunting game worth seeking, will take this line of railroad, and not be disappointed in their favorite pursuit. And when it shall be extended to the Lake, and its numerous branches, northwardly and southwardly, be completed—as they surely will be—then will the Erie railroad become like another Hudson river to this city; and then, also, will the *doubters*, and *croakers*, and *selfish*—who have refused to give a helping hand in its construction—begin to see and feel its influences; and then—as with the Erie canal—will those people claim to have been its best friends, and probably claim credit for its construction; while those who actually bore the burthen of the work, in its dark days, will be thrust aside and be forgotten.—Such is mankind, and such will men be until some time after the completion of the New-York and Erie railroad.

But that we may do our part in causing to be remembered those who have been immediately instrumental in completing this last and longest section of the work, we give annexed a list of the officers, directors, engineers, and principal contractors, that we may be able, on our return from California,—a few years hence,—to ascertain who were, in truth, the men who aided in so noble a work. This is the only way in which the history of the work can be written ten years hence—as a people benefited by their fellow-men are sure to forget, and never to forgive, those who labor most devotedly for the public good, unless in so doing they become wealthy—and we are sure that no man will get very wealthy who has recently been, or is now, engaged on the New-York and Erie railroad.

We are not disposed to be partial in recording the names of those only who have been connected with the last section completed; as we would, if we could get a list of them, with great pleasure give a list of all those who, in by-gone days, were prominent in aiding the work, but as it would be difficult to get a correct list of them; and, rather than to seemingly do injustice to any one, by omission, we omit all for the present, except those who have been so recently engaged that they are not yet forgotten.

First in order we give the directors, then the officers, engineers, and principal contractors, as follows:—

DIRECTORS—Benjamin Loder, Silas Browne, H. Sheldon, Daniel S. Miller, Henry Suydam, Jr., Wm. E. Dodge, Shepherd Knapp, Samuel Marsh, John Wood, Cornelius Smith, Thomas J. Townsend, Homer Ramsdell, (of Newburgh), William B. Skidmore; Marshall O. Roberts, Thomas W. Gale, Charles M. Leupp, Theodore Dehon.

OFFICERS—Benjamin Loder, President; Samuel Marsh, Vice-President; Thomas J. Townsend, Treasurer; Nathaniel Marsh, Secretary; H. C. Seymour, Superintendent of the road in operation.

ENGINEERS—Major T. S. Brown, Chief Engineer; Horatio Allen, Consulting Engineer; Silas Seymour, W. H. Sidell, W. H. Morell, and J. W. Adams, Superintending Engineers; J. P. Kirkwood, Engineer in charge of Starucca Viaduct; W. W. Morris, Engineer and Agent for obtaining supplies of rails, castings, etc.; J. K. Ford, T. A. Emmet, Jr.,

E. F. Jones, W. R. Kingsley, F. Hubbard, and F. C. Cunningham, Resident Engineers; W. S. French, I. S. Beggs, D. Hardenburg, Irving Camp, John May, George Wolcott, H. J. Barker, H. Riddle, J. R. Knight, J. A. Case, F. W. Beebe, N. A. Gurney, R. N. Browne, W. L. Storke, G. H. Bellden, Philip Harry, J. H. Morley, Edwin McNeill, Peter A. Der, E. L. Wentz, Assistant Engineers.

WEST OF BINGHAMTON—L. D. Stancliffe, Superintending Engineer; P. P. Dickinson, W. P. Innis, A. C. Archibald, Assistant Engineers.

ON NEWBURGH BRANCH—McLee Swift, Superintending Engineer.

CONTRACTORS—Thomas King, — Malone, McEvoy & Co., Michael Barke, Martin & Freeland, Dougherty & Lauman, Story & King, Carmichael & Stranahan, Flannery & Healy; King, Folien & King; Becker, Gros & Co.; Becker & Dutcher, Wilkes & O'Garrah, Hegarty & Demon, Calvin, Carmichael, J. & C. Collins; Thomas, Edwall, & Storrs; David H. Lockart, J. D. Wheeler, George Rowley, Uriah Gregory, Timothy Ives; Richard McGrann & Co.; P. McMahan, Case; Baker & Co., Ewers & Co., Eldredge & Jones; Barker, Denton, & Co.; Brayton & Gouder; Dimmick, Cook, and Co.; John Fowler, (builder of Cascade and other structures); William J. Marlett, Dougherty & O'Rorke, Hubley & Hamersley, George M. Lauman, Philip Dougherty; McGrann, Reilly, & Co.; Ford & Crandall, Fowler & McCallum, (bridge builders), Hazard Lewis, M. M. White, (builder of iron bridge, and agent for Rider's plan); Store & King, Carmichael & Stranahan, and Boody & Thatcher, (track layers.)

Railroad to Albany—Oliver Evans—Col. J. Stevens—J. Fitch—The first Locomotive.

Few men, if any, in this country, are more familiar with the history of our internal improvements, and the *pioneers* in the cause, than the writer of the following communication. For many years he was actively engaged in the effort to convince the capitalists, and business men of this city, of the importance of a railroad from here to Albany, but with all the energy and effort brought to bear on the subject during a ten years' campaign, up to 1814, capital, sufficient to construct a good road, could not be relied on; whereas now, such has been the advance of the age, and the progress of intelligence on this subject, that we are to have two lines of railroad to Albany,—one of which, is to be the model road of the country.

There are few men in the country better able than J. E. B.—looking on as he does from his quiet retirement—to correct the errors into which we may fall in our sometimes hasty allusions to men, times, and things by gone, in connection with the origin, rise, and progress of the improvements of our country; and his communication ought therefore to have had an earlier insertion, as it is designed to give credit where it is justly due—without in the least detracting from the merits of others—and least of all from Col. Stevens—in vindication of whose claims to being the pioneer of Railroads, he has often welded his pen.

"Give honor to whom honor is due."—I am led to make this remark, as I perceive a correspondent 'B.,' in the Courier & Enquirer of the 18th Nov. introduces a letter of John C. Stevens, Esq., who gives credit to his father as the projector of a railway on "the margin of the Hudson" and "the astounding accuracy with which he describes the first locomotive." The latter is true, the former doubtful.

The late Col. John Stevens, of Hoboken, has

honor enough in being the first to propose to Governor Morris, and De Witt Clinton, as early as the 24th Feb. 1812, "to make a railway from Albany to Lake Erie, instead of a canal." His plans and calculations were admirable. On the 11th and 16th March, 1812, Col. Stevens answers all the objections of G. Morris and Robert R. Livingston—(and curious ones they are,)—to his "Memorial to the Commissioners for exploring the route of Internal Navigation, &c."

In this remarkable production, in the advance of his age, (it is only the projectors of the river road who have caught up with, and gone ahead of him.) Col. S. takes ground, page 15:

First—"What railway would be the cheapest?"

Second—"Those railways, which, from the nature of their construction, will be free from the numerous casualties to which canals are liable?"

Third—(Mark, ye canal advocates!)—"The expense of transportation would be much less than on a canal of the best construction,"—and, he adds: "To prove this a summary calculation of cost of road—expense of transportation, and the plan of a small engine, of ten inches diameter, worked with steam, the elastic power of which, was 50 pounds to the circular inch,—[See A. R. Lawrence's printed Report and Estimates, 1838,] would possess a power, equal to 5000 pounds on the whole area of the piston, moving at the velocity of three feet in a second." How true to the description of the present locomotive engine.

This rare and remarkable pamphlet, which I have in my possession, was "printed by T. & I. Swords, No. 160 Pearl street, (N. Y.) 1812, and is entitled,

DOCUMENTS:

TENDING TO PROVE THE SUPERIOR ADVANTAGES OF RAILWAYS OVER CANAL NAVIGATION.

This work, I suspect, is the one referred to by John C. Stevens, Esq., as among his father's papers, in which he expected to find "the project of a railroad between New York and Albany, by the River route." Col. S. does not touch on this subject,—he was content to contend with the Erie canal. It is true, some time after—to wit 1834—he may have given the idea to D. K. Minor, although I doubt it. He was the first, to the writer's knowledge, in his railroad map, of 1834 (engraved by Wm. Norris,) who located the line of the New York and Albany Railroad on the River. This was done, no doubt first done, by Mr. Minor, under the charter granted in 1832, to Nicholas Fish—[father of the present Governor,] Elisha Tibbits, Benjamin Wright, William C. Redfield, James B. Murray, D. D. Field, Charles H. Hall, and others—whose labors appear to be forgotten, and at a period too, when these gentlemen could not wake up one of the Van Winkle capitalists, to make a railroad any where, but to Yorkville,—and then, to speculate in the rise of stock, by the sight of a Tunnel!!!

As respects the first steam carriage, or locomotive, Oliver Evans, as early as 1788, constructed one, and proceeded with it, from Broad street, Philadelphia, to Schuylkill. At that early period he predicted its use and improvement with the speed we are now making on our railways. Col. Stevens improved on those suggestions. No doubt his plan of a "small engine," as described and published in 1812, to Congress,—(see pamphlet,) prompted the construction (1828) of the Rocket, and Novelty, by

R. Stephenson, and Braithwait, and Ericsson, under the stimulus of £500 stg, offered by the Directors of the Liverpool and Manchester Railway, with the stipulation, "that the engine should be capable of drawing, day by day, on a well constructed level railway, a train of carriages of 20 tons, including the tender and tank, at the rate of ten miles per hour"!!—Our 18 ton engines, now draw, over the Philadelphia and Reading R. R., with grades of 15 feet, and curves, trains of 1197 tons gross, at the average rate of ten miles per hour.

It is about seventy years ago, that Darwin wrote with more truth than poetry, when he prophesied:

"Soon shall thy power, unconquor'd steam! afar
Drag the swift Barge, and speed the ponderous Car."

John Fitch, who died in poverty, as early as 1787 propelled a steamboat, with sculls, on the Delaware, at the rate of eight miles an hour; and subsequently, on the old Collect Pond, in New York, used the side paddle wheel, for the application of which, aided by the long purse of Livingston, Fulton got the credit from Fitch. If my memory serves me, Mr. Fulton failed to establish his originality, in a suit that was tried in Trenton, N. J., on an injunction brought against the owners of Steamboat Pennsylvania, on the Delaware. Fitch's papers, with the account of this trial, may be found at Hoboken, with the son of Col. Aaron Ogden. He was the assignee of Fitch. These papers, in old barrels, should see the light, to give honor to the first man in this country who propelled a boat with steam.

Too much honor, I repeat, cannot be awarded to Col. John Stevens, for being the first to project a railway from Albany to Buffalo, instead of a canal. This is a work, which, (if we are to believe the experienced E. Haskett Derby, of Boston, and I agree with him cordially, as well as in the three positions quoted from Stevens,) that a railway from Buffalo to Albany, if properly constructed and judiciously located, with a level, or descending line, as it can be, is competent to transport persons, and all classes of freight, on such a thoroughfare, and in quantities, at much cheaper rates than the enlarged Erie canal, can do it. They are both to be on a par, free of tolls. I draw the conclusion, therefore, that the River railway—and even two railways to Albany—are, after all, not such "visionary undertakings."

They will both pay good dividends, and astonish those who have often contended with the writer—"that the North river—with the Housatonic railroad for winter travel (!)—was all the city of New York required." They called any railway to Albany, in 1838-9, "a visionary project," and seven years ago, stated that I was fit for a straight jacket, when I contended.—(See sketch of a railway, 1841, pages 81-2-3, and 100)—"of the ability of a railway to contend successfully with the steamboats on the Hudson river, so as at least to compel them into a rate, that would be mutually advantageous, and at the same time an accommodation to the public." The R. R. Journal, 1837-8, show that, with its Editor, I was the first to raise the flag—"Rail Roads versus Canals." The immense volume of passengers, and of freight, destined to pass over the River road, as well as the Harlem railroad on its connection with the valleys of the Housatonic and of the Connecticut, renders it difficult to form an estimate of their receipts and profits even by the most sanguine. It will greatly exceed all belief at present. As early as Feb. 7, 1839, in an estimate of the income of a railroad to Albany,

called for, and attached to the report of John B. Scoles—Assem. Doc. No. 171—page 5 to 27,—I then placed it at \$900,000 gross, and on the 15th March, 1842, at \$1,130,000,—and, the passengers, then floating daily, on the Hudson, at 5188 persons. This number, I perceive Wm. C. Redfield, in a late excursion along the Hudson railway, with his usual accuracy and prudence, states to be "8000 persons, who pass and re-pass daily, in the active business season of the year." I have no doubt of this important fact. It settles the question of the profit of even two railroads to Albany. Allowing them but a moiety of the business.

On another occasion, I may go into details of income; also, of those, to whom some credit is due, for long and continued efforts in your press, and others, to enlighten capitalists, on the merits and the profits of one railroad to Albany: a class of men, who shut their eyes from 1836 to 1842, to the efforts and the enterprise of the capitalists of Boston, aided by their State, to construct their Great Western Railroad. It was this work, projected by manufacturers, to regulate the provision market of Coenties slip, after the close of the North river, that was the gad, to awake the Van Winkle capitalists of New York. This was long after the Messrs. C. H. Hall, J. B. Murray, Jacob Harvey, Aaron Clark, J. I. Codrington, I. Rich, J. E. Bloomfield, E. F. Johnson, D. K. Minor, and a host of others, with more brains than capital—after several trials—could not start even one railway, under a better charter than now exists. There will now be three railroads to Albany!!—all paying dividends, as I am prepared to demonstrate. Each will create a business of its own, profitable to the New York city and to the stockholders of these important works, sufficient to justify their construction.

I cannot close, without giving credit to one, in practically securing the construction of a railroad on the margin of the Hudson river. To the long purse, and Scotch persevering character of James Boorman, Esq., all honor is due, from facts within the knowledge of the writer. He was firm, while others faltered. This is due to him, although I differed with him in plans and routes for the road. This gentleman justly gives credit to Mr. Gouverneur Kemble, as among the first and fast friends of the Hudson river project. He was its soul before R. P. Morgan was thought of. Next, I would place A. G. Thompson,—perhaps he should precede both these gentlemen, as he got up a meeting of capitalists at the Mayor's rooms, 15th March, 1842, aided by Gen. C. W. Sandford—"to take into consideration, the subject of a rail road between N. York and Albany," over which Stephen Allen presided. Judge A. Vanderpool took part in the same, and is reported, truly,—"read an interesting paper relative to the Boston railroad," to wake up capitalists.

At this meeting, an address, prepared by the writer, of this, at the request of Messrs. Thomson & Sandford, was submitted, taking a general view of the subject, with calculations of profit for the investment. It was the condensed labor and reflection of six years in the cause. As a proof, the same views may be found in a Legislative report, 8th Feb. 1839—Assem. Doc. No. 171,—also, in the Evening Post, 1838,—Railroad Journal, and other N. York papers,—entitled, "Statistical Facts, in relation to the New York and Albany railroad—showing the importance of the work to the city of N. York and to the interior." Also, Doc. No. 10, of Isaac L. Varian—22d. June, 1840,—and a report of J. Rich and nine other aldermen. This address, and calculations of profits, was issued in a circular, dated the 24th March,

1812, over the signatures of thirteen of your leading capitalists. It was widely circulated by the parties, asking "the attention of the public to the facts, set forth in the address."

It is but just, that—with such names, as fathered this production for which no credit was given, and with six years previous labor in the Railroad cause, in collecting and publishing all railroad information derived from abroad, and from the experience in the United States, to prove that at least one railway was necessary to reach Albany, in 5 hours—"to head off" Boston.—Others, not named by "B," should not have been forgotten by him, in distributing his honors, have done "some service" towards getting a railroad to Albany, by showing it would be profitable.

J. E. B.

Mexico, Dec. 6, 1818.

Cheshire and Sullivan N. H. Railroads Opening.

The remaining part of the Cheshire, N. H., railroad, from Keene to Bellows Falls, was opened for regular travel on Monday, the 8th inst.; and the Sullivan road, from the termination of the Cheshire road, at B.F., to Charleston, 23 miles, on the 4th, by which the travel from Boston on this line is by railroad over 130 miles to Charleston,

Another year, or 18 months, at the most, will complete the connection with the central Vermont road and the Rutland road, both of which will reach Lake Champlain, and connect with the northern New-York road, and with the St. Lawrence, at Ogdensburg; and, also, a connection will be formed with the Connecticut and Passumpsic river road—reaching to Canada line—thus opening a region of country to the railroad interest which will yield rich rewards and ample returns to those who have deserved them.

The following remarks, by the editor of the Keene Sentinel, shows the interest taken by the masses in the progress of this noble work:—

"The Cheshire and Sullivan railroads were regularly opened for travel on Monday last. Two trains a day now pass between this town and Charlestown, connecting with the morning and afternoon trains to and from Boston.

The Sullivan railroad, from Bellows Falls, Vt., to Charlestown, N. H., was opened for travel on Thursday, the 4th instant. The occasion was celebrated in a proper style, by a large number of the stockholders and friends of the road. A train left the Fitchburg depot in this city at 20 minutes past seven, and arrived at Charlestown at a quarter past two—the distance travelled being about 122 miles.—On the arrival of the train, the bells of the meeting-houses rung a merry peal. A splendid collation was prepared by the people of the town, which was very acceptable after the long ride. Mr. Enos Stevenson was president of the day. He was assisted by ex-Governor Hubbard, both of whom reside in Charlestown, and both of whom have been competitors for the gubernatorial chair of New Hampshire.—After the wants of the body were supplied, Gov. Hubbard, president of the Sullivan road, T. M. Edwards, president of the Cheshire road, Hon. Stephen Salisbury, of Worcester, S. M. Felton, engineer of the Fitchburg road, Mr. Jarvis, of Ohio, and others, made speeches and gave sentiments. The time passed merrily until five o'clock, when the train returned to Keene, where the company stopped over night. Next morning those who went from Boston returned. The occasion was a very agreeable one, and will be remembered with pleasure by those who were present."

The following statement is a beautiful illustration of the sagacity and enterprise of our New England friends. The Boston Courier says that "the following railroads and sections of railroads, leading towards Boston, or connecting with Boston lines, will have been opened during the year ending Jan. 31, 1819: . . .

Cape Cod railroad, length about	27½ miles.
South Shore, " "	11½ "
Norfolk county railroad, length about	20 "
Milford branch, " "	12 "
Vermont and Miss. railroad, length about	35 "
Connecticut river, " "	11 "
Cheshire, " "	37 "
Sullivan, " "	28 "
Vermont central, " "	65 "
Bristol, " "	12 "
Northern, " "	4 "
Boston, Concord and Montreal, " "	36 "
Passumpsic, " "	40 "
Worcester and Nashua " "	45 "
Portland to Lewiston, " "	27 "
New York and New Haven railroad to Harlem railroad, length about	60 "
Section of Ogdensburg railroad, length about	12 "
Stony branch railroad, length about	14 "
Lowell and Lawrence, " "	12 "
Total miles,	513

"The cost of these lines may be safely estimated at fifteen millions of dollars, and their annual dividends promise to exceed one million dollars. The completion of this extent of railroads must greatly help the business of Boston, and relieve the money market."

Suspension Aquaduct on the Delaware and Hudson Canal.

The Delaware and Hudson Canal Company, have for the last two years, been actively engaged in the enlargement of their canal and locks for boats of 120 tons, those now in use measuring 50 tons. The enlarged canal, has a width of 30 feet in bottom, slopes two to one, and will have a depth of water of six feet six inches. The capacity of this improvement, which forms the only line of transportation between the Lackawanna coal fields and the Hudson river, will, when the enlargement is completed, be adequate to a business of two millions of tons. It cannot be expected that such vast results will grow out of the next few years, but the present enlargement has been undertaken with a view of eventually increasing the business of mining as well as transporting, to the extent above indicated.

A simplicity of operation is observed on the canal as well as on the railroad, from Carbondale to Honesdale, under charge of James Archbald, Esq. which attracts attention. Great work is done here by little means, comparatively speaking, and this applies to the railroad with peculiar force. When the expensive character of this line of navigation is considered, in connection with a railroad, crossing a mountain by means of twelve inclined-planes, so well arranged and worked, that the apparently formidable barrier ceases to be an obstruction, we may readily conclude, that the rich dividends of the company, are not the result of accident, but rather the legitimate consequence of a fortunate position, and of a wise and prudent management.

The Delaware river is now crowded in a pool at the mouth of the Lackawaxen. To avoid the frequent delays, caused by high water and rafting, a total change of location was concluded on by R. F. Lord, Esq., principal engineer in charge of the canal. This change rendered the construction of two aquaducts over the Lackawaxen and Delaware rivers necessary. After an examination of the Pittsburgh suspension aquaduct, Mr. Lord advised the company, to adopt the same plan, and to accept my proposal for the erection of the super structure, the masonry to be done by the company. The two works are now completed and ready for the opening of navigation next spring.

The following exhibits some of the dimensions of the Delaware aquaduct.

Number of spans, varying from 132 to 142 ft. 4	
Width of bottom of trunk, - - -	17 ft. 6 in.
" " trunk on top, - - -	20
Depth, - - - - -	9
Depth of water, . - - - -	6
Weight of water is 142 ft. span in tons of 2000 lbs.	481 tons.
Tension of cables resulting from this weight, 708 "	
Diameter of each of the two suspension cables, - - - - -	8¼ inch.
Number of strands composing a cable,	7
Number of wires in each strand, -	307
" " in one cable, - - -	2150
" " in both - - - -	4300
Number of feet of wire, weighing 1 lb.	175
Weight of one lineal foot of cable and wrapping, - - - - -	130 lbs.
Length of each cable and anchor chains,	664 ft.
Average strength of one wire, - - -	1800 lbs.
Ultimate strength of both cables, - - -	3870 tons.

The wire cables do not extend below ground, but connect with anchor chains, the cross sections of which exceeds that of the wire fifty per cent.; the strength of wire being 90,000 lbs, per superficial inch, while the chains will not bear over 60,000 lbs.

The trunk of this aquaduct is lined with a tow-path of 6 feet wide on each side.

The Lackawaxen aquaduct, forms two spans of 114 feet each, suspended to two cables of seven inches diameter, same size as those at the Pittsburgh aquaduct.

I have contracted with the company, for two more aquaducts, one over the Roundout river, the other over the Sink river, of 170 feet span, requiring cables of 9¼ inches diameter, large enough for the support of a suspension bridge over the Niagara river, at the site in contemplation below the falls, of 750 feet span.

Truly Yours,
JOHN A. ROEBLING.

A statement of facts, in relation to structures of this kind, must be interesting to those engaged in building railroads and bridges; and we therefore requested Mr. Roebling, to give us the details in relation to the works upon which he has been for some time engaged.

Mr. Roebling's work, both on a suspension aquaduct and a suspension bridge—has been thoroughly tested at Pittsburgh, for several years with heavy loads—and, as far as we have heard, with entire success; and, from what we hear in relation to those which he has just finished for the Delaware and Hudson canal company, of which we give above a partial description, he will lose none of his well earned reputation, as we are quite sure they will be found equal to the work required of them.

Some of the eminent English engineers opposed suspension bridges for railroads—and adopted wrought iron tubes, of enormous weight and cost.—Those on the Holyhead railroad, over the Dee, of four hundred feet span in the clear, weigh 1300 tons each; and at 10 cents a lb. will cost \$291,200 each, or \$582,400 for the two, without the mason work, and expense of putting them in place; and those over the Menai straits, being about thirteen hundred and fifty feet long—or two spans of 450 each, and two spans of half that length—must weigh at least, for a double track, three and a half times as much as those over the Dee—or 4550 tons, and cost at 10 cts. per lb., \$2,038,400, without the masonry—which, at that place will probably amount to near half a million of dollars, thus making the

bridge over the straits cost about \$2,500,000!! an amount which would make us, in this country, hesitate for a long time before we should undertake it. It is however, fortunate that we can span our rivers at much less cost—as we hope to show to the world by the construction of a railroad suspension bridge of eight hundred feet span, two hundred and forty feet above the torrent of the Niagara—every way suitable for a railroad bridge, and a common road bridge with foot paths for pedestrians, at a cost of less than one-tenth part of the cost of the bridge over the Menai straits—or not to exceed \$130,000; or we will engage that it shall be done for that amount—in the most safe and substantial manner.

THE LOCOMOTIVE ENGINE—ITS INVENTORS AND IMPROVERS.

We find the following account of the early history of the Locomotive Engine in the biographical sketch, of Mr. George Stephenson, deceased, recently published in the London Periodicals. We give it a place in the Journal as a matter of interest at the present day, and for future reference.

“Mr. Stephenson was now getting beyond his thirtieth year, his mind strengthened by knowledge, and by the trust that what he might do would reap its full reward. His child was growing up to boyhood, while his earnings were still so slender that he could do but little for his schooling. He had at this time felt bitterly his own want of learning, and he made up his mind that he would put his son to a good school, and give him good breeding. “I was, however,” said he afterwards, at a meeting at Newcastle (u,) “a poor man; and how do you think I did? I betook myself to mending neighbors' clocks and watches at night, after my day's work was done; and thus I got the means of bringing up my son.” This he might well say with boasting, for it is one of the bright lights in his life.

“The great draught of coal on the tram ways, and the heavy trains which went forth from the pits, had set the minds of many at work to use steam instead of horses to draw the loads. The stationary engine worked well on the incline, but the steam-horse was called for to run throughout from the pit's mouth to the ships' side. In 1758 or 1759, Dr. Robison, then a young man, had hinted to Watt to put steam to work wheel-carriages. (w) Watt, however, had other things on his mind; though he named it in his patents of 1769 and 1784; but as Watt had a dislike for high-pressure steam, that may be one cause why he never made a locomotive. (x)

“About 1763, John Theophilus Cugnot, a Lorrainer, showed a model of a steam-carriage to the Count de Saxe. He afterwards went to Paris, and got the help of the Duke de Chiseul. In 1769, he built an engine at the cost of the king, and it was tried in 1770. It moved with such strength, that it knocked down part of a wall which stood in its way; therefore some thought that the power was

too strong to be kept within bounds, and not fit for common use. (y) It is said the engine was given up, and put in the Arsenal Museum, and is now kept in the Conservatoire des Arts et Metiers. It would be worth while for an engineer who may be in Paris to look after it.

In 1782 or 1792, Murdock made a model of a steam-carriage at Redruth. This was perhaps the beginning of Trevithick's; who is said to have been brought up under Murdock, and who knew him well.

“In 1786, Oliver Evans laid a plan for steamwagons before the commonwealths of Pennsylvania and Maryland, and the latter gave him a privilege for fourteen years, yet he was never able to get money enough to build a wagon. All that he did was, in 1804, to put wheels on a steam-dredging machine he had made for cleansing docks, and which he made to move slowly, though in a cumbersome way. (z)

“On March 24, 1802, Trevithick and Andrew Vivian took out a patent, (a) which, among other things, was for the use of high-pressure steam for carriages, and by which the weight of the engine was brought very low. A carriage was made and run in Cornwall, and afterwards in London. Another was made in 1804, in South Wales, which was worked on the Merthyr Tydvil railway, and “drew after it as many carriages as carried ten tons of bar iron, from a distance of nine miles, which it performed without any supply of water to that contained in the boiler at the time of setting out, travelling at the rate of five miles an hour. (b) The engine had an eight-inch cylinder, and the piston a four-feet six inches stroke. (c)

“These engines fell into dislike, from the one on the Merthyr Tydvil railway blowing up, (d) having been made (against Trevithick's orders,) without a safety-valve, and likewise from the wrong belief which got about that the wheels had no bite on the rails, and could not work up a slope. (e)

One of Trevithick's engine was sent, singularly enough, to George Stephenson's birth-place, to Mr. Blckett, of Wylam; and thus it came within his sight. This happened most strangely, and most luckily, for the mind of Stephenson was now brought to bear on the great work of his life. The finding of Trevithick's model by Uville was strange, and most fruitful in the deeds it brought about; but perhaps we owe more to the Wylam engine. (f) On some ground or other, the engine does not seem to have been put to work on the trainway, but was used to blow a cupola in an iron foundry at Newcastle. (g)—This engine had one cylinder only, and a fly-wheel to secure a rotatory motion in the

crank at the end of each stroke. If Mr. Blckett did not, however, work this engine, he had another of the same kind made and set upon his trainway at Wylam; and in 1813, it worked by the adhesion of the wheels on the rails, thus upsetting the belief that the engine could not so work.

“On the 30th December, 1812, William and Edward Chapuan, took out a patent for an engine, with additional wheels to work upon a chain stretched along the middle of the railway the whole length. This engine was tried on the Heaton tramway, near Newcastle, but given up.

“On the 22nd May, 1812, William Brunton, of Butterley, took out a patent for a locomotive with legs. This was tried and worked. In 1811, Mr. Blenkinsop had hit upon the plan of having a cog-wheel and cog-rail to overcome the adhesion.

“At this time, Mr. Blckett was fully at work experimenting on the Wylam railway with an ill-made engine of Trevithick's which was found to be very troublesome, as the irregular action of the single cylinder made jerks in the machinery, so as to shake it in pieces. Still, the whole of the coals were taken down the tramway by this kind of engine. (h)

“By this time George Stephenson was likewise at work; and Lord Ravensworth and the Killingworth, owners had such trust in him, that they gave him the money to make an engine in the opening of 1814, and on the 25th or 27th July, 1814, (i) it was tried on the tramway. As Stephenson said Lord Ravensworth and his partners were the first to entrust him with money to make a locomotive engine, “We called it ‘My Lord.’ I said to my friends, there is no bound to the speed of such an engine, if the works can be made to stand it.” (k)

“The engine had two cylinders, each eight inches diameter, and two feet stroke; the boiler was cylindrical, eight feet long, and thirty four inches diameter; the tube twenty inches diameter, passing through the boiler. The cylinders worked two pairs of wheels by cranks placed at right angles, so that when the one was in full operation, the other was at its dead points, by which means the propelling power was always in action. The cranks were held in this position by an endless chain, which passed round two cogged wheels placed under the engine, and which were fixed on the same axles on which the wheels were placed. The wheels in this case were fixed on the axles, and turned with them. (l)

“The trial was made on a piece of road laid with the edge-rail, rising about one in 440, and was found to drag after it, besides its own weight, eight laden wagons, weighing altogether about 30 tons, at the rate of

(y) Stuart's “Steam Engine.”

(z) Mechanics' Magazine, No. 372.

(a) Repertory of Arts, 2d ser., p. 241.

(b) Wood on Railroads, 1st edition, p. 127.

(c) Stuart's “Steam Engine,” p. 460.

(d) Railway Register, vol. v.

(e) Lardner on the Steam Engine, 1840, p. 336.

(f) Stuart's Anecdotes of the Steam Engine. Civil Engineers' Journal, “Life of Trevithick.”—Railway Register, vol. v.

(g) Wood on Railroads, 1st, 2d, and 3rd edition. 2d edition, p. 126.

(h) Wood on Railroads, 2d edition, p. 134.

(i) Wood on Railroads, 2d edition, pages 134 and 136, where different dates are given. In the report of Stephenson's speech at Newcastle, in 1834, he is made to say that the date was 33 years before, which would be in 1812. This is a mistake.

(k) Speech at the Newcastle and Darlington opening.

(l) Lardner on the Steam Engine, p. 340.

(u) Newcastle and Darlington opening.

(w) Robison's Mechanical Philosophy.

(x) Penny Cyclopaedia. Art. “Steam Carriage.”

four miles; and after that time, it kept steadily at work. The application of the cylinders made the working of the engine regular and secured the steady progressive motion which was wanted in the Wylam engine, there being only the single cylinder and fly-wheel. (m)

"It was not till the next year, that Stephenson took out a patent for his locomotive; and here we find the bad working of the patent laws as bearing upon our poor workmen. Had it not been that his first engine was not perfect, he could have had no patent, and would have reaped no fruit from his days and nights of toil, as he could not raise the money to pay the heavy fees which are drawn from the patentee. Even for his first trial he wanted money, and for which he was beholden to the kindly feeling of Lord Ravensworth. Much happier than Oliver Evans, who fruitlessly sought in America and England, for the means wherewith to start his steam-wagon.

AGRICULTURE AND RAILWAYS.

The Scottish Railway Gazette holds the following language in relation to the advantages of Railways, upon the agricultural community of Scotland. We hold the same views in relation to a large portion of this country; and we desire to place the subject fairly before the American people. Therefore we give it a place in the Journal.

The Railway System and Agriculture—The Caledonian Railway.—We have, ere now, had occasion to urge that no class in the State has its interests more closely connected with the railway system than our home agriculturists. A system of good roads is to the landowner and farmer what an extensive sea board and first-rate harbors are to the commerce of a nation. But even when the modern highway plan had been extended over a wide surface, and made to intersect districts not accommodated in such a way before, the change, though beneficial, was still partial. Carriage by draught is a tedious and most expensive process, as everyday's experience shows. Hence lime and other manures were often carted to farms at an enormous cost—at a cost, indeed, operating almost as an interdict on the article. Large tracts of land were left uncultivated or but partially put under tillage, and an enormous deficit was left in the native supplies of corn and other crops. Nor was this all. It was often a matter of expense, difficulty, and time, to convey farm produce to market; and nothing could be more tortuous and thiftless than the mode of driving stock to the sale pens at a distance. The sight of a drove on a hot day—the animals jaded, thirsty, and tortured by all manner of insects—was pitiful in the extreme; while the fatigue, and other incidents of the march, depreciated the value of the beasts in the carcass market. No improvement in the turnpike system could obviate such inconveniences, or materially diminish their number. The railway system, however, was interposed at the pe-

riod when it became most necessary that our agricultural resources should be fully developed, and when, with foreign rivals to contend with, it is, perhaps, more necessary than the means of the landed interest should keep progressing rather than take a retrograde movement. And here this grand expedient has achieved as great wonders as it has done in the case of passenger locomotion. What do we find? A perfect maze of wonders—bestial by tens of thousands hurled along without putting hoof to ground, by a power which never wearies; wheat, corn, potatoes, legions of fowls, and masses of "yellow butter," with vegetables to an extent enough to supply the commissariat of Xerxes—all conveyed for miles, with lightening speed, day by day; and even the fluid produce of the dairy, brought recking from the cow, is sold at a high profit at a distance of many miles from the farm, and as sweet as if it was carried by the milkmaid to customers in the adjacent village. On the facility which the railway has supplied for the transit of the substances necessary to renovate the soil and supply its nutritious and vitalising properties, we need not expatiate.

These remarks have been partly called forth by a consideration of the circumstances connected with the Caledonian Railway. This great undertaking—great even amidst the huge measures of enterprise with which we are familiar—it is calculated will, in all its ramifications, absorb five millions of money. This is a high figure truly; but, regarded in even its agricultural bearings, we should not wonder if, in the experience of people now alive, it enhanced the value of the mere soil through which it passes to an extent equal to its own cost. The rise in the value of land near the iron road is in some cases all but incredible, though explained by the facts already set down. Nor does the superinduced advantage terminate at the landlord and farmer, but adds also to the profits of the work which was the agent in its production. The Caledonian Railway passes through much barren and sterile land; and in some cases the climate locally, is ungenial. But one grand object the line is destined to fulfil, and that at no distant day, is to convert such useless soil into the field of an extensive and profitable tillage. The grand means of effecting the change must be capital; but the facility furnished by the railway for bringing to the spot the substances necessary for fertilising the land, and again for conveying its produce to market, will assuredly justify and encourage the outlay of money; while, as regards climate, its amelioration stands towards cultivation in the way of the effect to the cause. We have just before us a little book (which we advise our readers to procure), entitled, "Moffat, its Spas and Neighborhood," by Mr. Fyfe, which has several references to the bearings of the Caledonia Railway on the agriculture of the Moffat district. Our author says—"Already the fields adjoining the line that are improvable are beginning to wear the marks of drainage; the pastures at this season are uniformly receiving their top-dressing of

lime; and, when their beautiful green salutes my eye, I say I don't care for their known elevation above the sea level, and their want of shelter. They will be planted—they will be sheltered—some of them will ultimately be subsoiled. The railway will do all this, so you will see trees and human habitations where now there is nothing but an open moorland dotted with sheep." Even as regards pasturage, apart from husbandry, the railway has done a deal, and promises to effect a great and advantageous change. Referring to this important point in rural economics, Mr. F. has the following statements as to the Moffat district:—"The attention paid to the pastures is admirable.

At present the braes and a considerable belt of the activities of the mountains may be seen dotted over with the lime heaps about to be applied for the topdressing the grass. Formerly the lime was chiefly drawn to this distance from Douglas, a distance of 23 miles; and one agriculturist has informed us that the carriage stood him 8s. 6d. per cart load, his own horses being inadequate, with other work, to undertake the drawing of 800 cart loads—the quantity he required—and the time occupied, even with night travelling, being a day and a half. The pastoral farmers of Moffatdale can now, however, command the mountain limestone of Westmoreland and Cumberland, at an easier rate per railway than they once could the nearest Scotch shells. The consequences will be the extension and enrichment of the pasture, &c. Such results will, we trust, be largely extended in this case, and an improvement not merely valuable, but lasting, be effected over miles of land now comparatively useless. To the railway system so great a benefit will be owing. (Of its realisation we cannot entertain a doubt; and what has been done already is a pleasing example, and, we believe, certain omen of wide-spread agricultural and pastoral improvement in the districts traversed by the Caledonian Railway and other Scotch lines."

DEPRECIATION OF RAILWAY STOCK,

Or Mode of Presenting Railway Accounts.

The following report, made by Captain Huish, of the London and North-Western Railway, will be found of interest, and utility, we are sure, to many of our readers, and we therefore give it a place in our Journal. The experience of the author enables him to speak understandingly on the subject, and we hope the length of the article will not prevent its being generally and carefully read:—

To the Chairman and Directors of the London and North-Western Railway—Euston Station, June 1848.

Gentlemen,—It will be in the recollection of those directors who compose the general board, that, on making up the accounts for the half-year, ending 31st December, 1847, a discussion arose in regard to the necessity, or at least the propriety, of sitting aside a con-

(m) Wood on Railroads, 2d edition, p. 136.

siderable sum, over and above the cost of repairs and renewals during the six months, to meet the "depreciation" which it was contended had been insensibly going on, and which no renovation could fully provide for. The result of the deliberations on this point was the transference of 30,462*l.* from the surplus revenue of the half year to the credit of "the working stock," or, in other words, the extinction of so much of the moving capital of the concern, with the view of maintaining a due relation of first cost to present value.

In adopting this course, the board proceeded on a practice which had for many years been followed by the London and Birmingham, and to some extent by the Grand Junction company, and, admittedly, without being in possession of certain data on which to ground the application of that or any particular amount. The appropriation proceeded, in fact, from that anxious desire which the directors of this company have always evinced, to make ample provision for all possible demands, and not to swell the dividend by the division of anything which might be due to the permanent maintenance of the large and varied stock of perishable machines, by whose instrumentality the earnings of a railway are produced.

That such a feeling is laudable, no one can for an instant doubt: and the error, should it prove to be one, is only an excess of prudence which must eventually react in favor of the company.

The peculiar position, however, of a railway proprietor must not be overlooked. It is a fluctuating body; incessantly parting with its constituent members, and receiving new partners. But the duration of the corporation is perpetual, and the object which the managing body must, consequently, keep prominently in view is, so to apportion the burthens of each half year as to do full justice to existing holders of the stock, without regard to the prospective proprietors; and, at the same time, to guard against any attempt to produce a temporary advantage at the expense of the future interests of the concern.

But while this principle, as such, is so admitted by all parties conversant with the subject, that it is unnecessary to do more than allude to it in passing, the means of arriving at it, and of working it out, involve a question, perhaps the most unsettled in the whole range of railway management. We are without any admitted formula; scarcely two companies act alike; and even the same company, at different periods of their history, have adopted conflicting systems.

The question of "depreciation" has long formed a fruitful source of argument, and, with all the experience of 20 years, seems to be still undisposed of.

That it is one of paramount importance, cannot be denied; because, in fact, the whole structure of the half-year's working cost, in three of the principal departments of expense, and, consequently of the surplus profit applicable to the dividend, must hinge upon it. If it is allowed too prominent a claim, there is risk of the fair earnings on the present

proprietor's capital being swallowed up, and his property proportionally depreciated; and, on the other hand, if altogether discarded, there is danger of paying dividends out of capital, and producing an illusive prosperity, which must, at no distant day, lead to serious results. The facility also which this large and doubtful item affords for producing a "satisfactory report," and the temptation which it holds out to a railway executive, is an additional reason for regarding it with extreme jealousy. Other expenses are fixed and defined—this is an indefinite incubus which it is difficult to avoid, but very unpalatable to meet.

The facts upon which calculations of "depreciation"—that is, the amount of "wear and tear" beyond the cost of the perpetual reparation and renovation, which is charged under the general term of "repairs," and which attracts, as an element, to the working of traffic—have been too carelessly noted. That such an item exists, and should be added in making up the cost of conveying every passenger and ton of goods, may be admitted; but it is extremely difficult to arrive at any safe rule which shall be applicable in all cases.

The question would, indeed, be comparatively simple, if the elements for solving the problem were to remain constant. If, for instance, a line of say 20 or 500 miles could remain isolated, if it never constructed branches, and closed its capital account, and we could conceive an unvarying traffic for a long series of years. It would not be difficult to maintain an equal ratio of working stock for an indefinite time without improvement or retrogression; but such a case cannot exist. We are doomed to be in what is termed a "transition" state; disturbing causes are always at work; improvements in machinery, new lines, increased traffic and demands for better accommodation, are for ever interfering with comparative calculations, and the experience of the past cannot be brought to bear with exactitude on the proceedings of the present.

Still something may be done, and sufficient, I think, to enable us to avoid any very serious mistakes. We have the materials of our own past experience; we have had valuations, and we possess the practical results of other companies, large and small, to guide us. In troubling you, therefore, with this report, I am desirous of investigating the subject, of elucidating it by its effects on the London and North-Western, as well as other lines, and of placing upon record a correct inventory and estimate of the entire moving stock of the company.

I am not sanguine enough to suppose that I can throw much new light on the question, considered in the abstract; but the inquiry will be useful if it collects scattered facts and leads to further scrutiny, and if, as I believe, it proves that the directors have erred (on the safe side, it is true) in regard to their "depreciation" of the working plant.

Now, it being sufficient for the object admittedly in view permanently to maintain out of revenue a working stock in the most effi-

cient state, repairing it as required, and replacing it when worn out, but neither improving its condition nor suffering it to deteriorate, it is evident that three leading points will embrace the whole question at issue.—These are, the "original cost or value," the "present market value," and the "effective value" to the concern.

The first, and to a considerable extent, the last, are definite. The second is continually fluctuating with the demand and supply of the day. Still, taken over a series of years, it may be assumed that "market value" will remain pretty nearly equal, allowing for a continued gradual reduction consequent on that improvement and economy of construction which is the result of skill and experience.

But the "effective value" of a plant, properly attended to, will more than keep pace with the "market value," and both will differ from the "original value or cost," without leading to any suspicion that the account is wrong. The necessary result of continually reproducing similar articles, is to cheapen their cost and to improve their character; and this produces a constant divergence of market value, and effective value from original cost, but in opposite directions; the market value becoming less, and the effective value greater; so that if in ordinary times, and uninfluenced by any unusual demand, the present "market value" of a stock equals the "original cost," it may fairly be assumed that its "effective value" is greatly enhanced. Let it be remembered also, that as the railway is a permanency, the "effective value" to use is of more consequence to us than the "market value" to sell, and that the real advantage of possessing the latter is to act as a contingent check on the accounts.*

A due attention to these three propositions and their relation to each other, will enable us to test, pretty accurately, the effect of wear and tear, or what is called "depreciation."

Keeping a stock maintained out of revenue in a perfect effective state, and at a value

* The following report from Mr. Wright, who has had a very large experience, illustrates my meaning:—

June 10, 1848.

Statement, showing actual cost, and comparative value (as regards accommodation and quality), of 1st and 2nd class carriages in the years 1837 and 1847.

Date	Class	Cost	Comparative value (size accommodation, etc.)	Difference in favor of 1847	Remarks
1837	1st	£ 420	£	£	per carriage.
1847	1s.	380	475	95	
1837	2nd	300			" "
1847	2nd	260	338	78	

This difference is allowed for in my valuation, which is the present market value of the carriages, independent of their first cost and effective value.

J. WRIGHT.

Thus showing that while the market price is now 11 per cent. less, the real value is 12½ per cent. more; thereby proving, that where the aggregate market value equals the original cost, the effective value is 23½ per cent. more.

equal to the original cost, and at the same time charging depreciation, are clearly incompatible. But a second-hand article, be it an engine, carriage or wagon, cannot be made equal to new, unless in process of time it may be so thoroughly changed in all parts as no longer in fact to retain anything but the name of its former self. And as this entire renovation, though effected in some departments, was supposed not to run through the whole range of the stock, the system, or rather I should say, the expediency of meeting by a depreciation allowance, the inability to overtake the decaying process, forced itself on the attention of railway officials.

The means, however, exists of still keeping up the same aggregate value of a stock, when deteriorated by age, without any "depreciation," by adding out of revenue so much new stock as shall represent the difference of value in any given time; and this is the practice (supposing justice to be done to the stock) where no "depreciation" is allowed for.— Upon this principle the board acted on the occasion of the last valuation of stock, in 1846. The subject was then discussed at some length, and the following were the instructions issued to the valuers on the occasion. They were drawn up by Mr. Booth, who had conducted the Liverpool and Manchester line from its opening, without any allowance for "depreciation."

"The locomotive committee think it right to state to the parties about to undertake a detailed valuation of the moving stock of the company, the principle on which they think it expedient they should proceed, in ascertaining and agreeing upon such valuation.

"The committee wish to know the present value of the company's stock of engines, carriages, and wagons, &c., estimated with proper allowances, according to the present average price of new engines, carriages, etc.; supposing it were practicable to purchase a large stock on the same terms as new engines, and carriages are now supplied in limited numbers by various builders.

"The committee request that the valuers will consider themselves for the moment contractors for providing and upholding the moving stock of the company, and then endeavor to ascertain what such stock is now worth, for the efficient working of the line for a long term of years; the estimate being formed by a comparison with the present market price of engines, carriages, and wagons. For example, if in regard to any particular eight or ten of the company's engines or carriages (having carefully examined the state of repair and general condition, age, etc.), the valuer shall be of opinion that such eight or ten old engines or carriages would be as efficient, and as valuable to a contractor, as any five or six or any other number of new engines or carriages of a particular description and ascertained certain price, then the ascertained present fair market price of the five or six new engines or carriages will be the estimated value of the said eight or ten new engines or carriages of the old stock; it being indifferent to the contractor,

at such estimated value of the old engines, etc., and at such ascertained price of the new, whether for his purpose he take the one or the other."

As the results of this valuation are noted below, I pass on without remark, further than to say that the effect was an estimate which subsequent events have demonstrated to be too low.

Now, without adverting at present to the question of "market value," it will not be denied by any one who has watched the progress of the various companies consolidated under the title of the London and North-Western—since their formation—that the character of their moving plant has greatly improved. The plain, confined, and somewhat rude passenger carriages have become capacious, elegant, and easy. The wagons, originally adapted for 3½ tons each, have given way before a gradual infusion of stock equal to 6 tons load, with corresponding strength of build; and the small 12 inch cylinder engines, which with difficulty drew a light mail train at 22½ miles an hour (the London and Birmingham contract in 1840), have been superseded by powerful locomotives maintaining an average speed of more than 40 miles an hour, with heavy trains.— But not only is the state of the railway plant more efficient for the duty it has to perform than it was some years ago, but another most important feature as regards economy has shown itself, viz, increased durability. The superior construction of the carriages, the greater care in the selection of seasoned timber, (a neglect of which was the cause of much deterioration in the early stage of railways), the additional strength of the framing, the nicer adjustment of the working parts of the engines, and the more elaborate finish of every portion of the machinery, not only leads to economy in the daily use, but to a prolonged existence of the machine, without any large amount of renovation.

It is usual to talk of the "life" of a carriage or an engine as so many years, and, having assumed a certain term, to consider that it disappeared from the scene altogether. The original value of the article is then spread over this period, and this is taken as the measure of the annual depreciation. On this reasoning, therefore, the "life" of a locomotive engine or carriage is lengthened as its construction is improved, and hence arises another disturbing element in comparing original cost with "market value" and "effective value." But the term to which I have alluded is calculated to mislead; and it is from what I believe to be misapprehension on this point, that much of the difficulty surrounding this question has arisen. A due proportion must always exist between the age of an engine or carriage, and the amount of repair to be expended on it. A new under-framing one year; a new body the next, besides casual repairs; fresh wheels and axles the third, etc., etc, leaves, in process of time, nothing but the number-plate of the original vehicle. It is true that cases arise when it is cheaper to throw aside a carriage or engine altogether, than to repair it; but

even then some of its component parts are worked up, and the carriage never wholly disappears. Thus the northern division of the line was opened with what was deemed an efficient stock of carriage stock eleven years ago. It now possesses a stock admittedly superior as to character, and, during the whole time, not a carriage has been parted with, and the entire number of all classes "broken up" amounts to 13, or less than 1½ per annum. If, therefore, this reasoning, corroborated by such facts is correct, the "life" of a machine is an expression which, if not accurate, should be used in a much wider sense than has generally been applied to it.*

Again, it must be remembered that depreciation as regulated by "market value," takes place rapidly in the earlier stages of working. The difference between a new and second-stock is always very great, if it has been used even a few weeks. We know that a private carriage, when run a month, loses perhaps 25 per cent. of its "market value" (its "effective value" remaining the same), and that the ratio of "depreciation" then proceeds more slowly; it follows, therefore, that whatever the allowance for "depreciation" is in the first year, it must every subsequent year become less, as it acts on a second-hand stock, and this, of course, without any reference to its effective value.

It will be gathered from the above remarks that I do not attach so much importance to "depreciation" as others have done. I consider it easy to maintain a working plant at its full "market value;" and that, if so maintained, there is every probability of its being actually a better and more efficient stock than it was originally. All that is necessary to repair and replace out of the current half year, and the efficiency, or otherwise, with which the service of the line is carried on will be the true test (always bearing in mind the requirements of the traffic), whether depreciation is allowed to creep in or no. It is surely better to prevent than to remedy it.

* The following return of the London and Birmingham stock broken up, seems, at first sight, large; but it will be seen that the bulk consists of second and third class carriages, which were so originally faulty in construction, from bad materials, as to form an exceptional case; and even, including this the annual loss has been under £4,000. June 10, 1848.

"Statement showing the number and cost of carriages of all classes, and trucks and horse-boxes broken up upon the southern division, and value of materials remaining, from the opening of the line, until 31st December, 1847—

CLASS.	No.	Cost per Carriage	Total.	Value of old Materials.	Actual loss.
1st class ..	2	£ 420	£ 840	£ 140	£ 700
Ditto mails	3	500	1,500	200	1,300
2nd and 3d	142	100	14,200	3,550	10,650
Ditto	36	300	10,800	1,800	9,000
Trucks....	70	100	7,000	1,250	5,750
horse boxes	70	150	10,500	1,500	9,000
	322	—	44,840	8,440	36,400

J. WRIGHT."

(To be continued.)

HUDSON RIVER RAILROAD.
NOTICE.—PROPOSALS FOR SPIKES.—Proposals will be received at the office of the Company, No. 54 Wall street, until the 15th day of February next, for a quantity of Wrought Iron Railroad Spikes, from fifty to two hundred tons, (of 2000 lbs.) to be delivered at such wharf or wharves on the line of said Railroad as may be designated by the Chief Engineer in the employment of said Company. The Spikes to be nine-sixteenths of an inch square, headed and sharpened, suitable for the purpose, and to be of such lengths, not less than six, nor more than seven inches, as may be required by said Engineer. The Spikes to be made of the best quality of iron, and put into suitable kegs, with weight and size of Spike marked on the head.

The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the Company to require.

JOHN B. JERVIS, Chief Engineer.
 Office Hudson River Railroad Co.,
 New York, 10th Jan., 1849. } 312

FULLER'S PATENT INDIA RUBBER SPRINGS.—The Commissioner of Patents has dissolved the interference which had been declared against this Patent. The Patentee is ready to supply the springs upon the shortest notice, in any quantity, and at a moderate cost. They have now been in use for nearly 4 years, with complete success. They are made of the best materials, are economical, both as to cost and wear; are light and very easy in their motion.

The patent was granted to W. C. Fuller, in October 1845. G. M. KNEVITT, Agent.

Office, 78 Broad street New York, and at Messrs. James Lee & Co., 18 India Wharf, Boston. Jan. 13, 1849.

NICOLL'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee
 G. A. NICOLLS,
 Reading, Pa. ja15

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	} Canal Commissioners of the State of New York.
Nelson J. Beach,	
Jacob Hinds,	
Willard Smith Esq.,	} Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris	
Mr. Wm. Howe,	} Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,	
	} Engineer & Bridge Builder, Utica, N. Y.

January 1, 1849.

1y*

MATTEWAN MACHINE WORKS.
THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also, *Tenders, Wheels, Axles,* and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woolen,* or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING, Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting, and *Drilling* Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at
 39 Pine Street, New York.
 WM. B. LEONARD, Agent.

FAIRBANKS' RAILROAD SCALES.

THE Subscribers are prepared to construct at short notice, *Railroad and Depot Scales,* of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and despatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon Railroads, either in the United States or Great Britain; and the manufacturers refer with confidence to the following in the United States.

Eastern Railroad,	Boston and Maine R. R.,
Providence Railroad,	Providence & Wor. R.R.,
Western Railroad,	Concord R. R.,
Old Colony Railroad,	Fitchburg R. R.,
Schenectady Railroad,	Syracuse and Utica R. R.,
Baltimore & Ohio Road,	Baltimore & Susq. R. R.,
Phila. & Reading Road,	Schuylkill Valley R. R.,
Central (Ga.) Railroad,	Macon and Western R.R.,
	New York and Erie Railroad;

and other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.
 St. Johnsbury, Vt.

Agents { FAIRBANKS & Co., 81 Water st. N. York.
 A. B. NORRIS, 196 Market st., Philad.
 April 22, 1848. 1y*17

PATENT HAMMERED RAILROAD, SHIP and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.
 The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Eiting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

RAILROAD IRON.

THE NEW JERSEY IRON CO.'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to DUDLEY B. FULLER, Agt
 139 Greenwich Street.
 New York, October 25, 1848. if

DIRECT ACTION ENGINES
FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS,
 AND ALSO
THE ANNULAR RING PISTON ENGINES,
 of Messrs. Mauldsley, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.,
 28 Platt street, New York.
 May 6, 1848.

WILLIAM JESSOP & SONS,
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufactory,

PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—Square, flat & octagon.
 Best warranted Cast Steel—Square, flat & octagon.
 Best Double and Single Shear Steel—Warranted.
 Machinery Steel—Round.
 Best and 2d gy. Sheet Steel—for Saws and other purposes.

German Steel—flat and sqr., "W. I. & S." "Eagle" and "Goat" Stamps.

Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms, by WM. JESSOP & SONS,
 91 John Street, New York;

Also by their Agents—
 Curtus & Hand, 47 Commerce St., Philadelphia.
 Alex'r Fullerton, & Co., 119 Milk St., Boston.
 Stickney & Beatty, South Charles St., Baltimore.
 May 6, 1848.

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has incited the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington.

SIZER & CO.
 January 29, 1848. if Springfield, Mass.

RAILROAD IRON AND LOCOMOTIVE Tyres imported to order and constantly on hand by
 A. & G. RALSTON
 Mar. 20th 4 South Front St., Philadelphia.

TO MACHINISTS & MANUFACTURERS.
 The Subscribers have taken the **READING CAR AXLE MANUFACTORY**—and are prepared to execute orders for *Axles of every description,* and Wrought Iron Shafts for Steamboats, Mills, etc., made from superior material, at short notice. Address Reading, Pa.

ANDREW TAYLOR & CO.
 August 5, 1848—3m*

RAILROAD IRON—SHEET IRON—BRASIER'S RODS—HOOPS—SCROLL—BANK'S BEST—& OTHER GOOD MAKES OF ENGLISH IRON.

100 Tons Railroad Iron—Staffordshire make—56 pounds per yard—shipped from Liverpool 20th July, expected to land on wharf from 10th to 20th September.

Also have Invoices of Sheet Iron, Brasier's Rods, Hoops, Scroll, and Band Iron, Banks best, and other good makes of English Rolled Iron, to arrive, suitable for Railroad Axles, etc., etc., equal in quality to American Rolled Iron. I have agency of several best makers in England and Wales, and can import for Railroad Companies, and others, on best terms, and at much less prices than they can be supplied from American Mills.

DAVID W. WETMORE,
 218 Water street.
 New York, Sept. 9, 1848. 3w*

JAMES LAURIE, Civil Engineer.

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
 Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
 October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person to
JAMES HERRON,
 Civil Engineer, Navy Yard.

Jan. 1.

10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Audover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents,
 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition
 92v11y

NORWICH CAR FACTORY,
 NORWICH, CONNECTICUT.

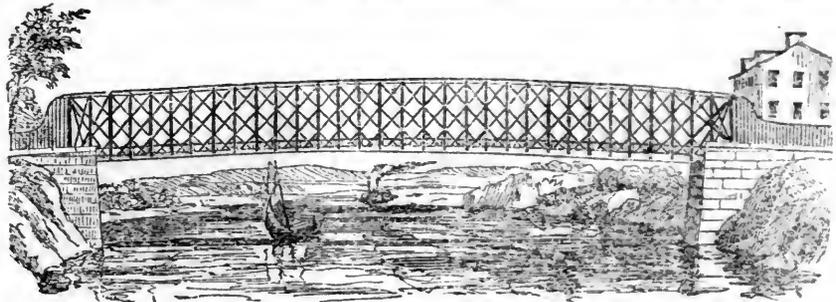
AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of

RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
 PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
 ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
 Orders executed with promptness and despatch.
 Any communication addressed to
JAMES D. MOWRY,
 General Agent,
 Norwich, Conn.,

Will meet with immediate attention.

1y8



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on *certain conditions*, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the **RIDER BRIDGE**, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74 BROADWAY, up stairs,** or of **W. RIDER & BROTHERS, 58 Liberty Street**, where terms of contract will be made known, and where orders are solicited.
M. M. WHITE,
 Agent for the Company.

November 25, 1848.

**LAP—WELDED
 WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,
 FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

**ENGINEERS' AND SURVEYERS'
 INSTRUMENTS MADE BY
 EDMUND DRAPER,**

Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut,
 1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTEN-
TION of Railroad Companies is particularly requested of Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

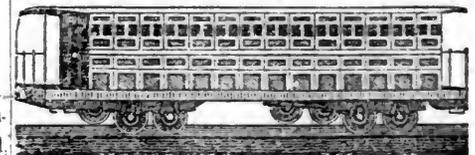
We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.
 Office, No. 3 North 5th street,
 Philadelphia, Pa.

1y25

CAR MANUFACTORY,
 CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
 Cincinnati, Ohio, October 2, 1848. 411

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
 Mount Savage Iron Co., Troy, N. Y.
ERASTUS CORNELL, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md

November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
 245 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. **THOMAS & EDMUND GEORGE,** 245 N. E. cor. 12th and Market sts., Philad. Pa.

JAMES HERRON, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE

HERRON RAILWAY TRACK.
MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.
The above may be had at order at our Car Factory,
Reuel Dean,
Elijah Packard,
Isaac Mills, } SPRINGFIELD, MASS. 1y48

TO CONTRACTORS.

OFFICE NASHVILLE & CHATTANOOGA R.R. Co.
Nashville, 9th November, 1848.

PROPOSALS WILL BE RECEIVED AT this office on 20th December next, for the Graduation and Masonry of forty miles of road, viz: twenty miles next to Nashville, ten miles crossing the Barran fork of Duck river in Bedford county, Tennessee, and ten miles on the northwest side of Tennessee river, in Jackson county, Alabama.

Profiles and plans may be seen at this office after 12th December. By order of the board.
C. F. M. GARNETT,
Chief Engineer.

N. B. Twenty-five miles of road (including the Tunnel), and six miles heavy mountain work are under contract. Seven Hundred Laborers are wanted by the Contractors. t48

NOTICE.

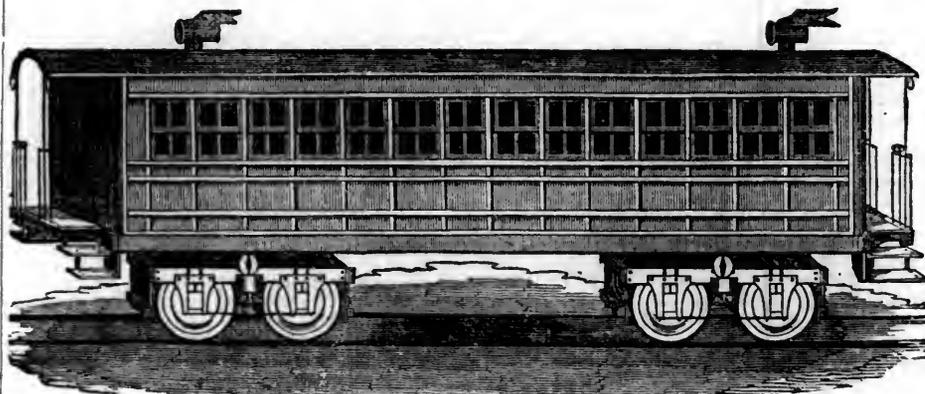
RAILROAD LINE BETWEEN ALBANY AND BUFFALO, N. Y.

1848.—SCHEDULE FOR RUNNING.—1848.

Going west.	1st train.	2d train.	3d train.
Leaves.... Albany	7½ A.M.	2 P.M.	7 P.M.
Pass..... Utica	11 P.M.	7 P.M.	1¼ A.M.
Pass..... Syracuse	1 P.M.	11 P.M.	5 A.M.
Pass..... Auburn	6½ P.M.	1 A.M.	7 A.M.
Pass..... Rochester	12½ M.N.	7 A.M.	1 P.M.
Arrives at Buffalo	5¼ A.M.	12 M.	6 P.M.
Going east.	1st train.	2d train.	3d train.
Leaves.... Buffalo	7½ A.M.	2 P.M.	7 P.M.
Pass..... Rochester	12½ M.	7 P.M.	12 M.N.
Pass..... Auburn	6½ P.M.	1 A.M.	6 A.M.
Pass..... Syracuse	8½ P.M.	3½ A.M.	8 A.M.
Pass..... Utica	12 M.N.	7 A.M.	11¼ A.M.
Arrives at Albany	5 A.M.	12 M.	4½ P.M.

Adopted February 18, 1848, in convention at Albany. (Copy.) T. Y. Howe, Jr., Secretary of the Convention.

DAVENPORT & BRIDGES' CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes. 10f

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO., Philadelphia.
ROBERT NICHOLS, Agent,
No 79 Water St., New York.

26f

RAILROAD IRON, PIG IRON, ETC.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ¾ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Cast-iron.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO. No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark-Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year, on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

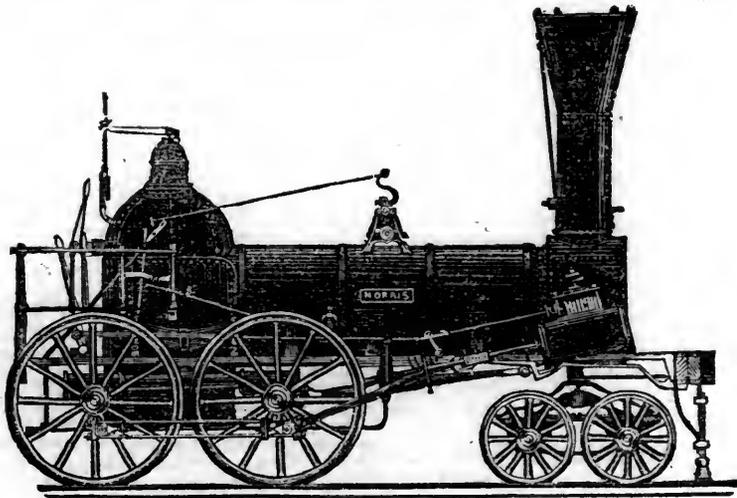
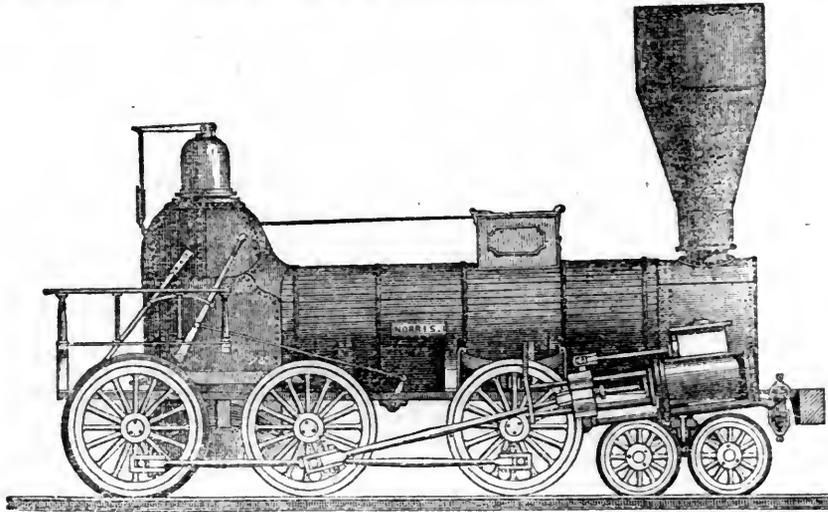
Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

•• The letters in the figures refer to the article given in the Journal of June, 1844. ja 15



NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St. below 13th,
 Philadelphia, Penna.
 Nov. 10, 1847. [il.]



THE SUBSCRIBER has on hand a good assortment of his best Leveling and Surveying Instruments, among them his improved Compass for taking angles without the needle—also Bells, suitable for Churches, Railroad Depots, etc.

ANDREW MENEELY,
 West Troy, May 12, 1847. 1y*21

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

** Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.

ja45

TWO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,
 Warehouse S. E. corner 3d and Walnut Sts., Philadelphia. 11

CHILLED RAILROAD WHEELS.—THE undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
 Point Pleasant Foundry,
 He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.
 A. T
 Kensington, Philadelphia Co., }
 March 12, 1848. } 1111

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
 Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO.,
 68 Broad street.

New York, Sept. 16. 1848,

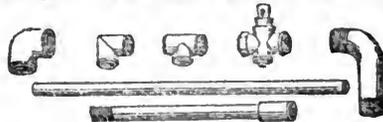
Also on hand—1000 Tons best quality Rails. 39tf

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1/2 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

LAURENCE'S ROSENDALE HYDRAULIC Cement. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
112 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1/2

LOCOMOTIVES FOR SALE.

FOR SALE—Three Locomotive Engines and Tenders, in good running order. Apply to **JOHN WILKINSON,**
President of the Syracuse & Utica R. R.
Syracuse, New York.

December 16, 1848.

4150

BOSTON AND PROVIDENCE RAILROAD. On and after Monday, October 21, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m. and 3 1/2 p.m. Leave Providence at 8 1/2 a.m. and 3 1/2 p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10 1/2 p.m. Leave Dedham at 7 1/2, 10 1/2 a.m., 1 1/2, 4 1/2, and 9 p.m.

Stoughton Trains—Leave Boston at 11 1/2 a.m. and 4 1/2 p.m. Leave Stoughton at 8 1/2 a.m. and 2 1/2 p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2 and 10 1/2 p.m. Leave Dedham at 8 10 1/2, a.m., 1 1/2, 4 1/2 and 9 p.m.

WM. RAYMOND LEE, Sup't.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848.
WINTER ARRANGEMENT.

December 4th.—Fare \$1.

Leave Philadelphia 8 a.m. and 4 p.m.

Leave Baltimore 9 a.m. and 8 p.m.

Sunday—Philadelphia only at 4 p.m.

" Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C.

Through tickets Philadelphia to Charleston, \$20.

Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 11 1/2 p.m. daily

PITTSBURG AND WHEELING.

Through ticket, Philadelphia to Pittsburg, \$12.

" " Wheeling, 13.

All through tickets only sold at office, Philad.

WILMINGTON ACCOMMODATION.

Leaves Philadelphia at 1 1/2 and 4 p.m.

Leaves Wilmington at 8 a.m. and 4 p.m.

N.B.—Extra baggage charged for.

J. R. TRIMBLE, Gen. Supt.

GEORGIA RAILROAD. FROM AUGUSTA to ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class.	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 86
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 70
	Molasses, per hogshead.	8 50	13 55
	" " barrel....	2 50	4 2
	Salt per bushel.....	0 18	
	Salt per Liverpool sack.	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows... 0 75	1 50	

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS,
Sup't. of Transportation.
Augusta, Ga., July 15, 1847. 44*1v

THE WESTERN AND ATLANTIC Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculmbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer.

Atlanta, Georgia, April 16th, 1846 1v1

CENTRAL RAILROAD-FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight.

Rates of Passage, \$8 00. Freight—

On weight goods generally... 50 cts. per hundred.

On measurement goods..... 13 cts. per cubic ft.

On brls. wet (except molasses and oil).....\$1 50 per barrel.

On brls. dry (except lime).... 80 cts. per barrel.

On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred

On hhd. and pipes of liquor, not over 120 gallons.....\$5 00 per hhd.

On molasses and oil.....\$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
Gen'l. Sup't. Transportation

y40

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after

Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m. Freight train at 1 p.m.

Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6-28 and 8 p.m.

Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m.

Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.

Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m.

White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.

Pleasantville, 8 15 a.m. and 5 15 p.m.

Newcastle, 8 a.m. and 5 p.m.

Mechanicsville, 7 48 a.m. and 4. 48 p.m.

Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m.

Returning, leave Croton Falls 10 a.m. and 9 1/2 p.m.

ON SUNDAYS, the trains will run as follows:

Leave City Hall for Croton Falls, 7 a.m., 4 p.m.

Croton Falls for City Hall, 7 30 a.m., 4 30 p.m.

Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m.

White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st.

A car will precede each train 10 minutes to take up passengers in the city.

Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87 1/2c., to Newcastle 75c., to Pleasantville 62 1/2c. to White Plains 50c. 25tf

S. H. P. LEE, JR., Sup't.

32 1/2

44*1v

BALTIMORE AND OHIO RAILROAD.

MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburg and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13yl

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and

Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:
Leaves Baltimore at.....9 a.m. and 3½ p.m.
Arrives at.....9 a.m. and 6½ p.m.
Leaves York at.....5 a.m. and 3 p.m.
Arrives at.....12½ p.m. and 8 p.m.
Leaves York for Columbia at..1¼ p.m. and 8 a.m.
Leaves Columbia for York at..8 a.m. and 2 p.m.

FARE.

Fare to York.....\$1 50
" Wrightsville..... 2 00
" Columbia..... 2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....\$9
Or via Lancaster by railroad..... 10
Through tickets to Harrisburg or Gettysburg.. 3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at.....5¼ p.m.
Returning, leaves Owing's Mills at.....7 a.m.
D. C. H. BORDLEY, Sup't.
Ticket Office, 63 North st.

NEW YORK & PHILADELPHIA.

NEW JERSEY RAILROAD & TRANSPORTATION CO.

6 o'clock, A. M.

Accommodation Line from New York to Philadelphia, via Jersey City, New Brunswick, and Camden.

Fare for 1st class cars, \$3; for 2d class, \$2 50; children under 12 years, half price.

Leaving every morning, (Sundays excepted) at 6 o'clock, from foot of Courtlandt street, and passing through Newark, Elizabethtown, Rahway, New Brunswick, Kingston, Princeton, Trenton, Bordentown, Burlington and Camden, and arriving at Philadelphia at 11¼ A. M.
Leave New York 6 o'clock A. M.; Newark, 6h. 30m.; Elizabethtown 6h. 40m.; Rahway, 7 A. M.

DAILY EXCURSION TO PHILADELPHIA.

Excursion Tickets will be furnished, entitling the passengers to return by the 4½ o'clock P. M. Mail Line the same day, or next morning by the 6 o'clock A. M. Mail Line, for FIVE DOLLARS.

RAILROAD IRON—2500 TONS HEAVY

ii Rail, now landing, and expected shortly to arrive, for sale on most favorable terms by
DAVIS BROOKS & CO.
63 Broad street, New York.

July 19th, 18

SOUTH CAROLINA RAILROAD.—A

Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscombia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily.....\$26 50
Fare through from Charleston to Huntsville, Decatur and Tuscombia..... 22 00
The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr, Agent.

CENTRAL AND MACON AND WESTERN

Railroads, Ga.—These Roads with the Western and Atlantic Railroad of the State of Georgia, form a continuous line from Savannah to Oothcaloga, Ga., of 371 miles, viz:

Savannah to Macon—Central Railroad.....	Miles. 190
Macon to Atlanta—Macon and Western.....	101
Atlanta to Oothcaloga—Western and Atlantic..	80

Goods will be carried from Savannah to Atlanta and Oothcaloga, at the following rates, viz:

On Weight Goods—Sugar, Coffee, Liquor, Bagging, Rope, Butter, Cheese, Tobacco, Leather, Hides, Cotton Yarns, Copper, Tin, Bar & Sheet Iron, Hollow Ware & Castings.....	To Atlanta. \$0 50	To Oothcaloga. \$0 75
Flour, Rice, Bacon in Casks or boxes, Pork, Beef, Fish, Lard, Tallow, Beeswax, Mill Gearing, Pig Iron and Grind Stones.....	0 50	0 62½
On Measurement Goods—Boxes of Hats, Bonnets and Furniture, per cubic foot.....	0 20	0 26
Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs and Confectionary, per cubic foot.....	0 20 pr. 160lbs. 35	
Crockery, per cubic foot.....	0 15 "	" 35
Molasses and Oil, per hhd., (smaller casks in proportion).	9 00	12 50
Ploughs, (large,) Cultivators, Corn Shellers, and Straw Cutters, each.....	1 25	1 50
Ploughs, (small,) and Wheelbarrows.....	0 80	1 05
Salt, per Liverpool Sack.....	0 70	0 95
Passage—Savannah to Atlanta, \$10; Children, under 12 years of age, half price, Savannah to Macon, \$7.		
Goods consigned to the subscriber will be forwarded free of Commissions.		
Freight may be paid at Savannah, Atlanta or Oothcaloga.		
F. WINTER, Forwarding Agent, C. R. R.		
Savannah, Aug. 15th, 1846.		1v34

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.
The Train from Philadelphia arrives at Reading at 12 18 M.
The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville, 92		\$3 50 and	\$3 00
" " Reading, 58		2 25 and	1 90
" " Pottsville, 34		1 40 and	1 20

Five minutes allowed at Reading; and three at other way stations.
Passenger Depot in Philadelphia corner of Broad and Vine streets.

NEW YORK ANDERIE RAILROAD LINE.

SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M.
Fare between New York and Otisville, \$1 50; way-fare in proportion.

For Milk—Leave Otisville at 5½ o'clock, morning and evening.

For Freight—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)

No freight will be received in New York after 5 o'clock, P. M.

Freight for New York will be taken by the trains leaving Otisville at 10½ o'clock, A. M.; Middletown at 11, A. M.; Goshen at 12½, P. M.; Chester at 1 o'clock, P. M., etc., etc.

For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.

H. C. SEYMOUR, Sup't.

LITTLE MIAMI RAILROAD COMPANY.

Fall and Winter Arrangement, 1847. On and after Monday, September 20th, until further notice, a Passenger train will run as follows:

Leave Cincinnati daily at 9 A. M., for Millford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4½ a.m. Upward train arrives at Springfield at 2½ p.m. Downward train arrives at Cincinnati at 10½ a.m.

Freight trains will run each way daily.

Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:

A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.

Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.

A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.

Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.

From Springfield to Bellefontaine by stage, over a good Summer road.....32 "

From Bellefontaine to Sandusky city by railroad.....102 "

FARE—From Cincinnati to Lebanon....\$1 00
" " " Xenia..... 1 50
" " " Springfield.. 2 00
" " " Columbus... 4 00
" " " Sandusky city 7 00

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.

Tickets can be procured at the Broadway Hotel, Dennison House, or at the Depot of the Company on East Front street.

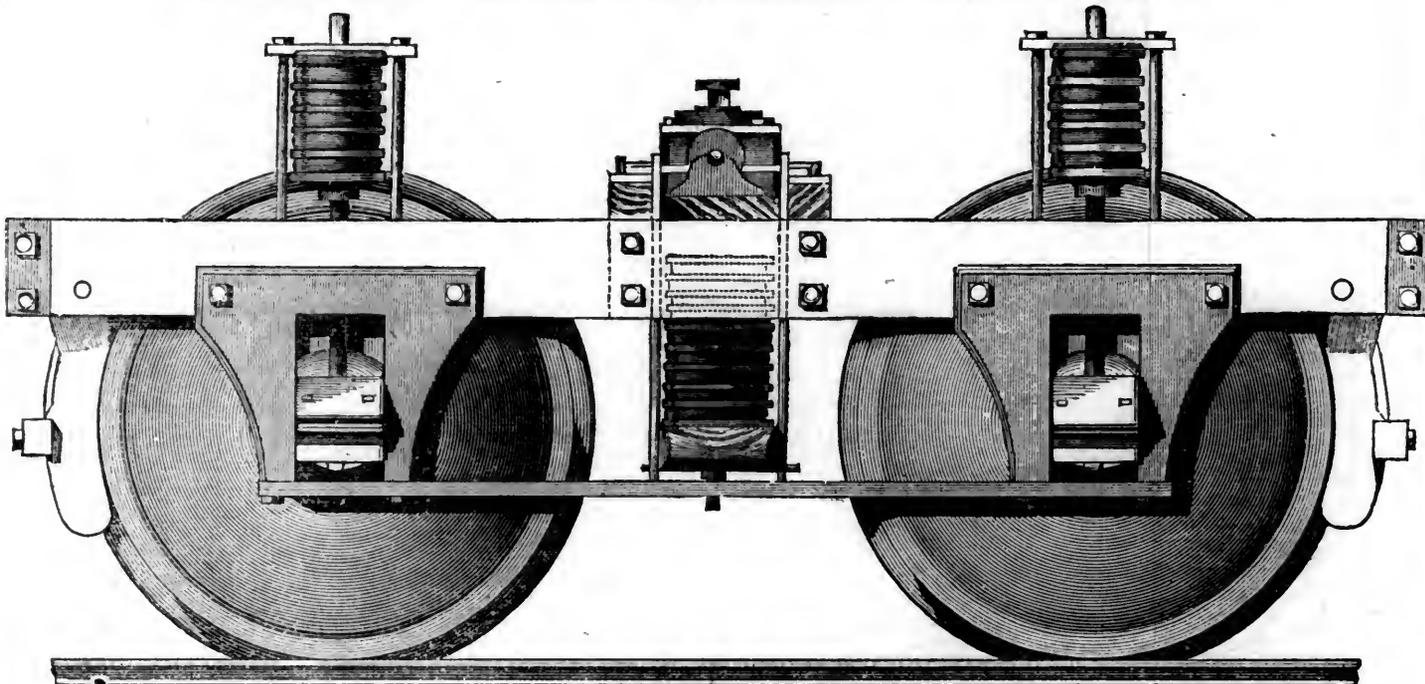
Further information and through tickets for the Stage lines, may be procured at P. Campbell, Agent on Front street, near Broadway.

The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount.

W. H. CLEMENT, Sup't.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street.
BROTHERS may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article, from the pen of Mr. Hale, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are gradually aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New special train of the Boston and Worcester Railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester Railroad Corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the road, with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniatta Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
124½
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office, No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1½ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patenteer.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 2811

AMERICAN RAILROAD JOURNAL.

OFFICE AT No. 98 NASSAU STREET,
(Opposite the Herald Buildings.)
NEW YORK.

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

TERMS.—Five Dollars a year, *in advance.*

RATES OF ADVERTISING:

One page per annum.....	\$125 00
One column "	50 00
One square "	15 00
One page per month.....	20 00
One column "	8 00
One square "	2 50
One page, single insertion.....	8 00
One column "	3 00
One square " "	1 00
Professional notices per annum.	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
D. K. MINOR.

AMERICAN RAILROAD JOURNAL,

AND

IRON MANUFACTURER'S AND MINING GAZETTE.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 98 NASSAU STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 3]

SATURDAY, JANUARY 20, 1849.

[WHOLE No 666 VOL. XXII

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 98 NASSAU STREET, NEW YORK.

Saturday, January 20, 1849.

RAILROAD IRON.

1000 tons T Rails, weighing about 60lbs. to the yard, of the latest and most approved pattern, for sale by BOORMAN, JOHNSTON, & CO., 119 Greenwich st., New York.

Jan. 20, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

Index for 1848.

We send with this number, the TITLEPAGE AND INDEX for Vol. 21—or 1848.

Contrary to our expectations, the Journal is still behind its regular time, but we hope to be up to time in another week.

Errata.

In the article, on the comparative "receipts of the South Carolina railroad," published in our last number, on 2d page, 2d column, below the figures, the following sentence will be found, viz:—

"This is encouraging, and the prospect ahead, on the completion of the Western and Atlantic lake, to Chattanooga, and from thence up the Nashville and Chattanooga lakes to Nashville, is bright indeed."

It is not easy to imagine how a passage, so much at variance with the copy, could have got in type. It should have read as follows:—

"This is encouraging, and the prospect ahead, on

the completion of the Western and Atlantic railroad to Chattanooga, and thence by the Nashville and Chattanooga railroad to Nashville, is bright indeed."

It may also be worth while to add one word to the first line of the 2d paragraph of the 3d column on same page—and then the line will read thus:

"It is well known, however, to those" &c., instead of "It is well, however to those" as it now reads.

Panama Railroad.

A work well begun, we have often heard it said, is half done, we may therefore conclude that the Panama railroad is about half done, as an efficient corps of engineers has left this city, for Chagres for the purpose of making the necessary surveys for locating the road.

COL. G. W. HUGHES, of the United States Topographical Engineers, has charge of the work, and is to be assisted by Wm. Norris, Esq., of Philadelphia, Wm. H. Sidell, Esq., late of the New York and Erie railroad, together with

Capt. Lloyd Tilghman, Edward W. Serrell, J. L. Baldwin, John May, J. J. Williams, A. H. Mandeville, George Stoddard, George Wolcott, and H. T. Stow.

The following gentlemen, are also attached to the party viz:—Geo. W. Brown, W. Geo. Norris, W. J. Gaul, Henry M. Minlor, Clarkson P. Hale, Benjamin Burns, Jas. O'Brien, Geo. E. Burr, John Wright, Wm. S. Ogden, Charles H. Ehrman, John H. Ballman, Robt. B. Jarvis, Wm. J. Corcoran, H. H. O'Callaghan, K. Duglison, Washington Hopper, and several others.

Most of the party left on the 22d inst., in the schooner Templeton, for Chagres, and others are to leave on the 1st and 5th of February.

The examinations are, we understand, to be commenced at the same time, both on the Gulf and on the Pacific side. Mr. Sidell to have charge of the parties on the Pacific, and Mr. Norris of those on the Atlantic side; and there can be little doubt but that the entire line will be thoroughly examined, and mainly located, by the end of May next, when the work will, we understand, be put under contract,

and, as a matter of course, completed at the earliest possible period.

We shall give in our next, a map of the Isthmus between Chagres and Panama, with the proposed and probable route of the road.

Deterioration of Permanent Way.

The Civil Engineer and Architect's Journal, says that "it is stated a committee has been appointed by the directors of the London and Northwestern railway company, consisting of Mr. Dockray, the resident engineer, Mr. M'Connell, the locomotive superintendent, Mr. Madigan, the ballast carrying contractor for the southern division of the line, and Mr. Crampton, C. E., for the purpose of discussing by what means the comparative deterioration of the permanent way, caused by heavy engines of different classes, may be ascertained."

The Balt. American said, some time since, that "On Wednesday an excursion to various points on the line of the Hudson River railroad was made by the Directors and a number of stockholders. The route of the road is along and near the east bank of the Hudson, and the party went up in a steambot, landing at various points in their course. Between New York and Poughkeepsie there are now five thousand men at work. The road is, we believe, the broadest in the country. A single track only will be laid at the commencement. The cost, of the road to Poughkeepsie, graded for double, but laid with a single track, and all necessary turnouts or switches, the erection of depots and the supply of the necessary carriages and locomotives, will be four millions of dollars. The loss of distance by this road upon a direct line is only six and three-quarters per cent.—less than upon any railroad in the country."

We republish this paragraph mainly to correct an error of the writer in relation to the width. He says "the road is we believe the broadest in the country;" not so, the N. Y. and Erie is the widest, being six feet—while this is of the ordinary width, or 4 feet 8 1/2 inches; and the Portland and Montreal is the next widest, being 5 feet 6 inches.

Philanthropic Society's Farm School for Vagrant Boys.—The selected design for the farm school for vagrant boys, at Potter's-bar, near Barret, to be founded by H. R. H. Prince Albert, consists of eight houses, each for about sixty boys, arranged on the sides of a chapel, as at the schools of reformatory discipline at Metray, Hamburg, and elsewhere on the Continent. Each building is to be adapted to the instruction of a separate family of the boys, in domestic occupations and mechanical arts, as well as husbandry and gardening.—*Artisan.*

A new Method of Extracting Pure Gold from Alloys and from Ores.—Mr. C. T. Jackson communicates the following process to *Silliman's Journal*:—
 'A method of obtaining pure metallic gold in the form of a spongy mass, has been practised by me for several years, and no account of the process has, to my knowledge, been published. It is very useful to the chemist and to the manufacturer, and is more economical than any other method that I am acquainted with.

After separating the gold from silver, by means of a mixture of nitric and hydrochloric acids, as is usually done, the solution containing gold and copper is to be evaporated to small bulk, and the excess of nitric acid is thus driven off. A little oxalic acid is added, and then a solution of carbonate of potash sufficient to take up nearly all the gold in the state of aurate of potash is gradually added. A large quantity of crystallised oxalic acid is now added, so as to be in great excess, and the whole is to be quickly boiled. All the gold is immediately precipitated in the form of a beautiful yellow sponge, which is absolutely pure metallic gold. All the copper is taken up by the excess of oxalic acid, and may be washed out. Boil the sponge in pure water so long as any trace of acidity remains, and the gold is then to be removed from the capsule, and dried on filtering paper. It may be formed into rolls, bars, or thin sheets, by pressing it moderately in paper. I have made several useful applications of the gold sponge thus prepared, and had a tooth plugged with it in October, 1846, to which purpose it is well adapted. By moderate pressure the spongy gold becomes a solid mass, and burnishes quite brilliantly.

The jeweller or goldsmith will find spongy gold to be quite convenient when he requires it for a solder, and it is a convenient form of the metal for making an amalgam for fine gilding. I have used it for some years in soldering platina, and prefer it to the filings or gold foil for that purpose. This method of separating fine gold from coarse is very simple, and cheaper than the usual processes. It is applicable in the separation of gold from ores that may be treated by acids, and is vastly preferable to the method commonly used by chemists and assayers. When making oxide of gold for dentists' use, the chemist will find that oxalic acid, added to this potassic solution, will at once recover all the gold that is dissolved in an excess of the alkaline solution, much gold being lost by the usual method of preparing the oxide. Many other applications of this very simple method will occur to chemists and artisans."—*Artizan*.

Electric Telegraph from Vienna to London.—In a lecture, delivered on Thursday evening, at the Western Literary and Scientific Institution, by Mr. Partington, he stated, as a fact, that it was the intention of the Emperor of Austria, before the late troubles broke out, to have established a telegraphic communication between Vienna and London, by means of a single wire.

The Rocket Locomotive.

We give place to the following paragraph, as it gives us the latest account of a machine which astonished the world when it was exhibited on the Liverpool and Manchester railroad, but not allowed to compete for the prize of 500*l*. in October 1829, because it weighed, with wood and water on board, over five tons! many changes have occurred since that date—especially in railroads and locomotive engines.

The *Carlisle Journal* gives the following particulars of Mr. Stephenson's first celebrated engine, the 'Rocket,' which was bought in the year 1837 from the Liverpool and Manchester, by Mr. J. Thompson, of Kirkhouse, the lessee of the Earl of Carlisle's coal and lime works. Here the engine was worked for five or six years on the Midgeholme line, a local line belonging to Mr. Thompson, for forwarding his coals from the pits towards Carlisle. Soon after the engine was placed on the line the great contest for East Cumberland took place, when Sir J. Graham was superseded by Major Aglionby; and it was used for conveying the Alston express with the state of the poll from Midgeholme. Upon that occasion the 'Rocket' was driven by Mr. Mark Thompson, and accomplished its share of the work, a distance of upwards of 4 miles, in 4½ minutes;

thus reaching a speed nearly equal to 60 miles an hour. On the introduction of heavier and more powerful engines, the 'Rocket' was 'laid up in ordinary' in the yard at Kirkhouse, where it now stands, no less a monument of the genius of the inventor than as a mark of the esteem in which his memory is held by Mr. Thompson. Such an engine, says the same Journal the first constructed on the principle which has brought railways to such a height of perfection in this country and throughout the world—ought to have its abiding place in the British Museum."

Railway Signal.

The railway Chronicle, gives the following account of a new signal.

"The Southeastern have been experimenting a new signal, to effect an instantaneous communication between the guards and the engine drivers, or from any station or post of watch to a train. The machinery is said to be so simple that it is in the power of the slightest touch to render it effective. By the forcible expulsion of air striking upon the extreme edge of a bell-shaped contrivance, sound is conveyed four miles round. It has been found that in dense foggy weather its shrill cry penetrates the atmosphere with a facility unknown to the whistle raised by steam; and as it does depend upon the latter agency, its small and compact machinery may be fixed inside any one of the carriages far removed from the engine, and there worked by hand if desired, or acted upon by gear attached to the axle. The patentee is a Mr. Wells; and Mr. Farnough, the chief locomotive engineer, and the rest of the officers of the Southeastern line, have afforded facilities for its trial and adoption.

Messrs. Smith, of the Strand, have concluded a contract with the Midland and Chester and Holyhead, for the privilege of selling newspapers, books, &c., at the various stations. As we have previously announced they already hold a similar contract with the London and Northwestern, they have now secured the right to supply periodical literature to passengers over 1,000 miles of rail. In case of irregularities of any description, or of deficiencies in the present arrangements of this important service, the public will know to whom in future to apply for remedy.

"Mr. Hudson is reported to be ready to lease the Stockton and Darlington, which has always paid 40 per cent, since its opening in 1835, and is almost exclusively devoted to the conveyance of coals from the coal-fields of Durham and Stockton, at from 10 to 15 per cent."

TRAFFIC ON THE ENGLISH RAILWAYS.

The following extracts from the railway statistics of England, by Hyde Clarke, Esq., may be both useful and interesting to our readers, and therefore we give them from the Civil Engineer and Architect's Journal.

The total tonnage of goods in the years ending 30th June, 1844, 1845, 1846 and 1847, is as follows, including every description of traffic: was in

1844	9,823,533
1845	12,522,976
1846	15,871,179
1847	16,699,382

The following shows the distribution in traffic in 1847, in tons:

Coals and coke	8,900,000
Ironstone	600,000
Iron	300,000
Iron dross	110,000
Copper and tin	23,000
Limestone and lime	300,000
Building stones	600,000
Sand	37,000
Ballast	36,000
Bricks and tiles	5,000
Miscellaneous minerals	300,000
Fish	43,000
Grain	300,000
Provisions	400,000
Manure	40,000
Goods, timber and sundries	4,705,382

Total.....16,699,382

To show how small this traffic is relatively to the total carried, the following items in the consumption of the people of this island, in tons, may be noted:

Corn	3,000,000
Potatoes	3,000,000
Sugar	300,000
Tea, coffee and tobacco	50,000
Malt	400,000
Spirits	100,000
Paper	40,000
Soap	90,000
Candles	100,000
Cotton goods	250,000
Woollens	100,000
Linens	100,000
Iron	1,600,000
Glass	40,000
Coals	30,000,000
Salt	650,000
Timber	2,000,000

Total.....41,720,000

This enumeration of 41,720,000 tons is under the mark, and only gives the total consumption of this island, reckoning the articles as only carried one way, and not including many articles of agricultural produce—manures, leather, 60,000; fish, stone, lead, copper, earthenware, oil, 60,000, fruits, etc.;—bark, 50,000; dyestuffs, 70,000; hemp, 50,000; cabinet woods, 30,000; rice, 20,000; tar, 20,000; turpentine, 20,000, etc. The railways at present do not carry more than a fourth of the traffic of the country, if so much.

The largest tonnages in 1847, were the following

York and Newcastle	2,706,595
Ballochney	1,746,339
Midland	1,449,215
London and North Western	1,411,080
Stockton and Darlington	1,127,058
Wishaw and Coltness	924,424
Lancashire and Yorkshire	763,016
Leeds and Thirsk	619,235
North Union	548,813

The total receipts for minerals and goods in 1847 were £2,600,000, of which for minerals, 750,000.

AVERAGE RATE AND MILEAGE.

It is of importance for engineers to know the average distance that each class of produce is carried, and the average receipt, which are far below what is believed.

Passengers.—The average mileage of all the passengers in 1847, was 16, and the average receipts. The average receipt on the London and North-western is 4*s*; Great Western 4*s* 6*d*; Midland, 2*s* 7*d*; Southeastern, 1*s* 6*d*; Brighton, 2*s* 4*d*; eastern counties, 3*s*; Southwestern, 3*s*; and Lancashire and Yorkshire, 1*s* 4*d*.

Beasts.—The average receipt for beasts on the London and North-western is, 42*d*, miles 57; Eastern Counties, 68, miles 75; Great Western, 31*d*, miles 45.

Sheep.—London and North-western, 10*d*, 70 miles; Eastern Counties 9*d* 7*s* miles; Great Western, 10*s*, 66 miles.

Swine.—London and North-western, 18*d*, 120 miles; Eastern Counties 6*d*, 58 miles; Great Western 12*d*, 75 miles.

Coals.—York and Newcastle, 16*d*; Stockton & Darlington, 18*d*; Midland, 27*d*; London and North-western, 20*d*.

Ironstone.—Ballochney, 9*d*; Taff Vale, 2*s* 6*d*, 25 miles.

Limestone and Lime.—Midland, 22*d*; Newcastle and Carlisle, 20*d*, 16 miles; York and North Midland, 14*d*, 9 miles.

Building Stone.—York and North Midland, 24*d*, 21 miles; Midland, 20*d*; Newcastle and Carlisle, 22*d*.

Sand.—Bodmin and Wadebridge, 24*d*, 8 miles.

Fish.—York and Newcastle, 21*s*. 50 miles; Norfolk, 13*s*, 68 miles; Whitby & Pickering, 6*s*, 25 miles.

Parcels.—Average of enumerated lines, 3*s* 9*d*.

Horses.—Average of all lines, 16*s*. Carriages, ditto, 25*s*.

Horse Traffic.—The total number of horses carried in 1847, was 99,405, and the total receipts 80,216*l*.

The greatest horse traffics are the following:—

Horses.	£
London and Northwestern.....	27,715
Great Western.....	11,785
Midland.....	12,373
Eastern Counties.....	8,155
Brighton.....	6,558
York and North Midland.....	5,813
Southwestern.....	5,447
Southeastern.....	3,782
York and Newcastle.....	3,156
The charge for horses per mile is, London and Northwestern, 3d; Great Western, 5-4d; Midland, 4-25d; Eastern counties 3-6d.	

Railway Amalgamation on a large scale.

We have for some time past noticed in the English railway papers, indications of a movement among the powerful companies, between London, Winchester, Liverpool, Bristol, Exeter, and that portion of England northeasterly, or including easterly and southeasterly from London, tending towards an amalgamation—or a combination of interest and action.

We have always encouraged amalgamations when we thought the interest of the shareholders and the public would be promoted thereby—as for instance, from *Boston to Albany*—from the *Hudson river to lake Erie*, from Boston via Concord to Burlington, Vt. and also from Boston via Fitchburg and Rutland to Burlington—and in most other similar lines, including branches dependent mainly on such lines; but we much doubt the policy of uniting three, or even two, such powerful companies as those named and described in the following article, which we take from the supplement to the London "circular to bankers" of Nov. 10th—for which we are indebted to a kind friend resident in London.

The aggregate amount of capital of the three companies will be over *forty-two millions* sterling, or more than \$200,000,000!! and those who may be entrusted with its management *may possibly*, in the consciousness of their own power, forget the rights of others, and become too strong for the government itself; therefore for these and other good reasons, we should oppose such an amalgamation in this country.

"The Amalgamations.—The official announcement promulgated yesterday, of an intention on the part of the London and Northwestern, Great Western, and Southwestern railways, to apply to Parliament in the ensuing session for powers to amalgamate, has been the subject of more than ordinary conversation and comment. Divested of its various technicalities, the notice is a comprehensive proposal for consolidating the three railways, hitherto in a state of perpetual hostility, into one great working corporation, under some name yet to be decided on, provided that all these are to become one; but in the event of any one being dissentient, the other two may coalesce, it being agreed that the third, which shall not have so amalgamated, "subsequently" may come in. The bill proposed to be applied for also contemplates an alteration in the tolls and fares. Both the London and Northwestern and Great Western have issued notices convening special meetings of their respective proprietors for the 13th of December, to consider and decide upon the subject.

"The Great Railway Companies.—The proposed amalgamation of the London and Northwestern, Great Western, and Southwestern railways, will, if effected, create the most powerful combination ever known in this country, and bring to one undertaking an amount of capital larger than any of our great national undertakings. The total amount of the capital of the amalgamated company will be £42,371,239, divided as under:—London and Northwestern capital, raised by shares £14,044,573; by loans, £9,186,672; total, £23,231,245. The shares in this company are 10,181 original shares of £100 each, which are paid up, 55,000 London and Birmingham £25 shares, upon which £22 have been paid, 163,380 new quarter (£25) shares, upon which £7 only have been paid, 65,879 fifths or £20 shares, on which £18 have still to be paid, 12,090 London

and Manchester £40 shares, £25 paid, and £15 due; 30,000 Manchester and Birmingham £10 shares, marked A, upon which £9 are paid; 60,000 ditto, marked B, £9 paid; 70,000 marked C, £1 paid; consequently the company have power to call upon—

55,000 Quarter shares, at £4 each.....	£ 165,000
168,380 New ditto, at £18 each.....	3,408,840
66,879 £20 shares, at £18 each.....	1,203,822
120,090 £40 shares, at £15 each.....	181,350
30,000 £10 shares, at £1 each.....	30,000
60,000 £10 shares, at £9 each.....	630,000
	£5,251,012

The capital of the Great Western is £11,457,277; £6,478,221 being raised by shares, and £4,979,056 by loan. The share capital is divided as under: 25,000 shares of £100 each, £90 paid up; 28,000 £50 shares, all paid; 93,000 £25 shares, upon which £4 are still due; 37,500 £20 shares, paid up; and 69,700 new £17 shares, on which £13 have been paid. This company has still power to call upon—

35,000 original shares, at £10 each.....	£250,000
93,000 £25 shares at £4 each.....	372,000
69,700 £17 shares, at 2 each.....	139,400
	761,400

The Southwestern company has raised from shares 6,075,387, and by loans 1,609,350, or a total of 7,684,737. The Southwestern shares may be classed as under:—25,840 50l paid up shares; 60,000 new 50l shares, upon which 42; 10 have been paid; 46,500 40l shares, upon which 34 have been paid; 9,266 50l consolidated tenths, paid up; 12,000 40l consolidated tenths paid up; 020,560 16l-13-4 thirds, upon which 13-6-8 have been paid; 147,760 new 7 per cent scrip upon which 12 13 4 only have been called up. This company has therefore, power to call upon—

6,000 50l shares, at 7 10 each..	45,000l	0	0
46,000 40l shares, at 9l each...	279,000	0	0
120,560 16l 13 4 shares,			
3 6 8 each.....	281,306	13	4
147,766 16l 12 6 sbares, at			
14l 19 10 each.....	2,210,482	13	4
	2,815,789	6	4

The amalgamated companies will, by their present powers, be entitled to call up, within the time allowed by the act for doing so, the sum of 8,819 201 6 8. The entire weekly receipt of the three companies, should they not exceed their present average, will be 70,000l per week, or 3,640,000 per annum. The number of miles of railway over which the companies will have control will be nearly 2,000, upwards 1,900 of which they will have in their absolute possession. The Northwestern consists of London and Birmingham, 112½ miles, Birmingham to Newton 83 miles, Macclesfield branch 10 miles, Northampton and Peterborough 47½ miles, Bedford and Bletchely 16½ miles, Leamington and Coventry 9 miles, Aylesbury seven miles, Bolton and Leigh ten miles, Chester and Crewe 21 miles, Trent Valley 49½ miles, Dunstable seven miles, a portion of the North Union and Preston 16 miles. The Great Western from Paddington to Bristol 118½ miles, Diocott to Oxford ten miles, Swindon to Gloucester 37 miles, Kemble to Cirencester four miles, Bristol to Exeter 75½ miles, Gloucester to Cheltenham 71 miles, Reading to Hungerford 25½ miles, Wilts, Somerset, and Weymouth 13 miles opened, Reading and Basingsstoke 20 miles. The Southwestern main line is 106 miles; Bishopstoke to Salisbury 22 miles, Southampton to Dorchester 61 miles, Weybridge to Chersey three miles, Poole branch two miles, Windsor and Datchet 14 miles, Waterloo extension two miles. The great companies will thus by means of their own and other lines, in which they are beneficially interested, have the entire traffic from Plymouth to Perth.

The proposed amalgamation of the London and Northwestern, the Great Western, and the Southwestern railway companies has since its public announcement engaged the attention of several shareholders in those companies, and has given rise to much conversation on the subject. A great practical difficulty presents itself to them respecting terms upon which it is proposed to amalgamate. Shareholders of the London and Northwestern contend that it would be exceedingly unjust to them to unite at par with either the Great Western or the Southwestern, the stock of the former being considered more valuable in every respect than that of either

of the latter. The Great Western shareholders, on the other hand, believe it would be advantageous to them to amalgamate, and, as a proof, the prices of their shares have risen considerably since the announcement. Some of the Liverpool shareholders of the London and Northwestern look with considerable dismay upon the scheme; they say the object for which it is proposed to amalgamate—namely, to avoid expensive Parliamentary contests—would be much better effected by a committee composed of equal numbers of directors or shareholders in the three companies, with power to decide any question or dispute which may arise between the respective boards as to branches or extensions.—They are alarmed at the probable consequences of further amalgamation, which they say can only have the effect of permanently reducing the dividend, stating as a case in point that the Liverpool and Manchester from its opening in the year 1830 to the amalgamation with the Grand Junction and the Birmingham in 1846, paid a dividend of 10 per cent, per annum, that the Grand Junction paid at one period 13 per cent, and never less than 9½ per cent, per annum, until after the amalgamation in 1846 with the London and Birmingham company. The last dividend of the amalgamating or London and Northwestern company was at the rate of 7 per cent per annum. Those who were in the habit of receiving 10 per cent dividend for the past 16 years, feel the reduction, as well as those who purchased the shares in the London and Northwestern at a high premium, expecting that it would continue to pay a 10 per cent dividend, and of course anxious to avoid further reduction. The amalgamation scheme is looked upon with much distrust, its magnitude being likely to create public jealousy, and thereby render it liable to restrictions which might tend to still further injure the property and reduce its value. The general opinion is, that the scheme will result in no good to the shareholders generally, and that it has been concocted more with a view to promote the great ambition of a few individuals, than to effect any substantial benefit to the shareholders or advantage to the public.

Dublin and Kingstown Railway.

We have published many of the reports of this company, and often quoted its management for the benefit of others; therefore we give its last report, especially as the last half year's dividend was only 4 per cent. It has usually, for several years, been 5 per cent., or 10 per cent., per annum. We give the report entire, with the remarks of some of the managers. It shows well—

Dublin and Kingstown Railway Company. General Meeting.

The half-yearly meeting of the shareholders in this company was held at the Offices, Dublin; George Roe, Esq., in the chair.

Mr James Pim (the treasurer of the company) read the following abstract of receipts and expenditure for the six months ended 31st August, 1848, together with the subjoined half-yearly report:—

"Gentlemen,—We now submit a short abstract of receipts and expenditure for the six months ended 31st of August last, and although it shows a trifling decrease of income, yet it may be considered rather as a cause of congratulation that there is not a much greater falling off, when you recollect the extremely unfavourable weather which prevailed during the summer months.

"During the half-year we have made a considerable reduction in the fares on the Dalkey line. We have also tried the experiment of occasionally reducing all the fares one half, and we have revised and remodelled the fares between the intermediate stations; and so far as we can judge, we have reason to be satisfied with the result.

"We have the satisfaction to state that the

line of railway and the working stock is in excellent order.

"The rates and taxes on the line have been still further increased, and are now quadruple what they were two years since. The important subject continues to occupy the anxious attention of the Board, and we are now seeking to obtain a more equitable valuation.

"In our report of October, 1817, we apprised you of a new and amicable arrangement into which we had entered with the Waterford, Wexford, Wicklow, and Dublin railway company, modifying in some important respects the original agreement; and in last April you were informed that the company had brought a bill into parliament to legalize this arrangement. We have now to announce that this act has been obtained, and that it authorises the South Wales railway company to subscribe 250,000*l.* to that undertaking.

"The abstract of accounts shows a profit from the six months of 11,156*l.* 7*s.*; from which, in pursuance of the 9th section of the Extension Act, the board have apportioned the sum of 9,800*l.* for dividend for the past half-year, being at the rate of 4*l.* per cent. on your paid-up capital of 245,000*l.* This will leave a balance of 1,656*l.* 7*s.* to the credit of the next half-year, when the detailed and comparative statement for the whole year will be laid before you.

"George Roe, Chairman."

Abstract of Receipts and Expenditure for the Six Months ended August 31.

DEBIT.			
Expenditure on management, maintenance, and working of the Dublin and Kingstown and Kingstown and Dalkey railways, in the six months ended 31st of August, 1818.....	£14,764	9	4
Taxes and rates.....	2,199	4	3
Interest on debenture loan.....	1,190	0	0
Net balance.....	11,365	7	0
	£29,820	1	4
CREDIT.			
Income of the Dublin and Kingstown and Kingstown and Dalkey railways, for six months ended 31st of August, 1818.....	£24,507	19	4
Balance to credit of interest account.....	173	16	5
Balance from last half-year's accounts.....	135	5	7
	£29,820	1	4

The chairman then briefly addressed the meeting. He said—Gentlemen, I have scarcely a word to add to the report which you have just heard read. We have endeavored to make it as short and as clear as possible; and I have only to congratulate you upon the result of the last half-year's operations. (Hear, hear.) We have laid the accounts before you in the most simple and intelligent shape, and have endeavored to remove all complication from them, so that any person can understand them without the slightest difficulty. (Hear, hear.) It is now my duty to move that the report and abstract of accounts which have just been read be received, adopted, inserted on the minutes, printed, and circulated among the proprietors. (Hear, hear.) The dividend which we have announced will be payable on and after Monday, the 23d inst., at this office.

Mr James Perry—I have great pleasure in rising to second the motion. There is one trifling question, upon which, perhaps, it would be satisfactory to the meeting and the public that some explanation should be given. We are all aware that there has been a reduction of one-half in the fares on the Dalkey line, in addition to further reduction on particular days. Now, it would be gratifying to know how the concern has worked since the reduction was made. (Hear, hear.) That there has been some falling off, I anticipate; but it would be an interesting fact to know what is the exact result. (Hear, hear.)

The Chairman—We have stated generally that the result of our experiments has been satisfactory; but it has been particularly so with regard to the Dalkey line. (Hear, hear.) There has been no falling off whatever in the receipts; on the contrary, there has been an increase. (Hear, hear.)

Mr. J. Pin—Yes; although there has been a trifling reduction of about 250*l.* in the receipts of the company for the half-year, there has been an increase of 30*l.* in the Dalkey line, for the same period, at reduced fares. (Hear, hear.)

The report and statement of accounts were then received and adopted.

Alderman Boyce said, it was very complimentary to the directors of that company to be enabled, in the present depressed state of affairs, to declare so good a dividend as 4 per cent. for the half-year; if the same care which was paid to that company were observed with regard to others, he had no hesitation in saying that different results would be the consequence. (Hear, hear.)

Mr. Pin observed that the circumstances under which they met on the present occasion were very gratifying; but particularly so when they recollected that that company had no engagement for guarantees of any kind whatever, nor did they hold any shares in the stock of other companies. Their loan from the board of works was being gradually liquidated; and, so long as they paid 4 per cent. interest on their debenture loan of 70,000*l.*, the principal could not be demanded; and they had no other pecuniary engagement of any kind. On the whole, he considered the concern to be in as sound and healthy a state as possible. (Hear, hear.)

Mr. Gresham said, that in the course of his life he had never seen a railway so well and efficiently conducted as the Dublin and Kingstown. (Hear, hear.)

The meeting then separated.

Railway Accounts by Captain Hulsh.

We continue this valuable document. The captain says—

But it may be urged, if an allowance for "depreciation" is not absolutely necessary for the due maintenance of the working stock, why adopt it for the rails? There cannot be a stronger illustration of the correctness of the above remarks than is thus afforded. The wear and tear of the rails was long considered so very slight, that the question of renewing was altogether overlooked. Experience has proved, that with the speeds and the weights

now employed, the "life" of a rail is not above twenty; or at the most thirty, years.—The difference then is this—rails cannot be repaired; they are all used together and equally; the decay of each is therefore proceeding in the same ratio, making a trifling allowance for the different texture of the bars; and they, consequently, will all wear out about the same time. To prevent, therefore, the whole *renewed* falling in one year, the annual *estimate* of "depreciation" (a term very properly applied in this case) is put aside till a fund has accumulated, which shall do at once that which, with the plan, has been daily and hourly going on for years.

There can be no doubt that the system of writing off a certain amount periodically from the working capital has found favor with many who regarded the continual outlay on new and additional engines, carriages, and waggons, as an indication that the repairs were not keeping pace with the wear and tear. In this I think they were mistaken, and that so far from the new stock being required to fill up deficiencies arising from work, it has (at least, in our case) not proceeded in the ratio of additional mileage and increased receipts. It will at once be admitted that, for both these, capital should, in the first instance, be debited. Some light will be thrown upon the point in a subsequent part of the report.

Again, apprehension was caused in consequence of observing a deterioration in the performance of the public service. There was, doubtless, some time ago, a falling off in this respect; but this proceeded from no depreciation of the stock—it arose from the altered circumstances and demand of the times, from a large increase in business suddenly produced by a reduction of fares, and from applying that stock to duties for which it had never been originally calculated and provided. The market value remained unchanged, but the effective value, though improved, was unequal to the additional and unexpected duty imposed on it.

But the ability of a company to maintain, at its full "market," and therefore above its first "effective," value, the whole of its plant, must, of course, depend on the means at its command for repairing and renewing it; and in this respect the London and North-Western company stands very favorably.—The establishments at Crewe, Wolverton, Longsight, Liverpool, and London, are amply sufficient to overtake the repairs and renewals of a stock of engines which has only cost 700,000*l.*; and the capacity and accommodation afforded are much larger, in proportion to the stock to be kept in order, than is possessed by any other company in the kingdom. It is from no lack of means, therefore, to prevent it, if depreciation is permitted to arise.

The outlay of the three principal factories belonging to the company, together with the cottages, I find to be as follows:—

Crewe,	£242,759
Wolverton,	170,988
Longsight,	35,281

The rental from cottages is 6,605*l.* per annum, representing, at 4 per cent., the sum of 165,125*l.*, and leaving 283,963*l.* as the cost of the buildings, and fixed machinery employed in the repairs and renewal of stock. The interest on this, at the current rate of the day, is an item fairly chargeable to the stock. It has, however, always been debited to construction; and its transference to its proper account would only prove how much more has, in reality, been done for the maintenance in full efficiency of the working plant, than has generally been imagined.

Again, the possessions of the extensive factory of Crève (where, in addition to the daily repairs of extensive stock, there is the capacity of turning out a new engine every week) has enabled the company to supply itself with all the engines, carriages, and wagons required for the northern division, including the working of 59 miles of the Trent Valley, 90 miles Preston to Carlisle, and 60 miles Chester to Bangor (in all 200 additional miles), at *cost price*; and the manufacturer's interest on his capital, and profit on the large increase of stock of every description (of which, excepting a small order of wagons, none has been purchased), has been saved to the company; it will be found that this amount, taking at 20 per cent. (the manufacturer's usual calculation), amounts to a very large sum, which should, in fairness, be charged to the stock, and credited to the factory. I mention it now, because, in any "market" valuation, it tends greatly to enhance the present relative condition of the plant.

I have alluded to the diversity of practice adopted by railway companies in regard to "depreciation." The great majority have never recognised the necessity of any specific provision for this purpose, and among these the South-Western company, through its chairman, have strenuously denied the propriety of any allowance. Mr. Chaplin, acting on analogy drawn from the old coaching system, contended that to repair an engine when damaged, and replace it when worn out, constituted all the claims which the stock had upon the company. The present state of the South-Western stock, it is believed, is evidence of the practicability of carrying out this theory. Again, the Liverpool and Manchester never established a depreciation fund, nor deducted any amount from the capital account to represent an assumed "wear and tear." The London and Birmingham company, at a very early stage of its career, commenced the practice of writing off 10 per cent. from the cost of its stock annually, and continued it systematically for a long period. A few other companies timidly and partially followed the practice; but the Great Western and the Manchester and Leeds alone continued it for any time, and they, at length, abandoned it. The Grand Junction adopted a mixed plan (based on an annual valuation of its stock) of continually infusing a certain portion of new and additional plant, and making up any deficiency by a "depreciation fund."

It requires no argument to show that,

supposing no new branches or increased traffic to have demanded additional stock, the system of writing off *ten per cent.* annually, over and above the expense of repairs, must, in time, have reduced the cost of the stock in the books to a very small figure indeed.—Such a process argues nearly an annihilation of the whole plant in ten years; instead of which we see everywhere an improved stock with increased durability. Unless the preceding arguments and the subsequent calculations and estimates are fallacious, this has led to a positive extinction of capital for the benefit of futurity. If it is answered that each year would place the concern so regulated on a safer basis, I reply, that this argument, if sound, may be pushed to any extent, but at the expense of the dividends; and that not, as with a reserved fund, where every proprietor can judge for himself of the security which it presents for the maintenance of his interest, but silently and unknown to all, except to those who may narrowly investigate the subject. If proprietors would consent to waive their dividends altogether, not only the working stock but the entire capital of the railway might, on an 8 per cent. return, be redeemed in 12½ years, and a private partnership might possibly choose so to pay off its first outlay; but this is contrary to the whole theory on which a corporate body is managed, and the extinction of capital representing working stock, forms no exception to the rule. I now proceed to apply this reasoning to the facts as they present themselves:—

First, comparing our past and present condition; and, secondly, considering our relative position with other companies.

The last valuation was made in 1846, in accordance with the instructions already quoted. At that time, the total cost of the moving capital, reduced as it had been by the depreciation theory, stood at 1,130,899*l.*; and the result of the valuations gave a return of 1,117,272*l.*, or an apparent falling off of 13,627*l.*

It appears, however, that a very large amount of stores, material, and stock (already paid for and charged), was altogether omitted in the valuation, which, if inserted, as it is now, in the following inventory, would have greatly increased the market value beyond the original cost. Again, the estimate was in many respects manifestly too low; for instance, 22 engines taken indiscriminately, which were of too small a class for our use, and the aggregate valuation of which was 12,711*l.*, have since been sold in worse times, and have realised 16,220*l.*, or nearly 25 per cent. above the valuation. Other market discrepancies might be quoted. There is every reason, therefore, for being satisfied that we were at that time considerably in advance of the original cost.

Having ventured at the time to express the very strong doubts of the propriety of deducting anything for depreciation last half year, more especially in the absence of any data for our guidance, I turned my attention again to the subject, and attempted to obtain a more complete list of our existing stock, and a valuation of every engine, carriage,

and wagon, and all materials, and machinery which had been charged against this account, or paid for out of revenue. This work has been accomplished with the valuable assistance of Mr. Watkin, and the estimate of the company's officers, who valued on the previous occasion, is attached to every item.

Railroad from Pittsburg to the Mississippi.

We published, in a previous number, a synopsis of the report of the *Pennsylvania railroad company*—and we now publish an extract from an article from the Louisville Journal, with comments upon it by the Pittsburg Gazette, showing the deep interest taken by the several cities on the Ohio in its early construction. It is only by watching the increasing movements of the people in all the different sections of the country, that we can estimate the future growth of the railway interest in this country. And there is one peculiar feature, connected with the subject, which insures their rapid and continued extension; and that is, the people, in the large cities, and in the small cities, and in the towns and villages, and in the agricultural regions, cannot afford to do without them. Every part of the country must and will have their railroad facilities.

A GREAT CENTRAL RAILROAD.

We referred, on Wednesday, to the anxiety with which Cincinnati viewed the railroad movements of Pittsburgh, and to the important idea, that the Pennsylvania and Ohio railroad about to be built, would form the main trunk of a great central railway, between the Lakes and the river, from Pittsburgh to St. Louis. Since then we received the Louisville Journal, of Nov. 25th, which contains the following article, which is worthy of the attention of our readers as showing how strong a competition exists for the trade of the great West, and that longer delays would be highly detrimental to the interests of this city and of the state:

"*Railroad to Connect Louisville, and St. Louis*—Ten or twelve years ago a charter was granted in Illinois to construct a railway from Alton to Mt. Carmel, on the Wabash, and one in Indiana for a railroad from Mt. Carmel to New Albany, Indiana, two miles below Louisville. These charters have recently been renewed, and the directors of the two roads are now making vigorous efforts to procure means for their construction, and with the best prospects of success. General Pickering, the president of the first named road, has recently passed along the line, and procured from his subscribers from some of the corporations, and he is now applying for aid to New Albany and Louisville. He is on his way to the east to lay his schemes before the capitalists of that region, and will early in the session apply to Congress for a grant of alternate sections, six miles on each side of the road, from New Albany to Alton, with the right to locate other sections in lieu of such as are taken up by individuals. A bill making this grant, and the Senate at

the last session, and was defeated in the House by four votes in consequence of some misunderstanding between the friends of a similar grant asked for in the south and the delegation from Illinois. There is little or no doubt that the application will be successful at the present session. It is so obviously to the advantage of the government to make this disposition of its lands on all important routes, and the policy is sustained by such distinguished names among the opponents of internal improvement by the General Government, that we look to this appropriation with great confidence. If it be made, there will be no difficulty in completing the road.

We look upon this road as one of the most important ones in the Union. If made, it will be a part of the main trunk of railroad communication between the east and the west. This trunk will pass through Lexington to the mouth of Big Sandy, thence to connect with the Baltimore road or the Richmond road. A glance at the map will show that it is much the shortest route from St. Louis to Baltimore, while it runs in a latitude in which the snows are not troublesome nor the winters long. And the route possesses the advantage of being nearly level the whole way from St. Louis to the mouth of Big Sandy. From Alton to Mt. Carmel, it is estimated that a road with a large T rail, and fully furnished, will not cost over \$9,000 a mile. From Mt. Carmel to Louisville it is stated on good authority that an excellent route can be obtained. From this city to Frankfort the cost will but little exceed \$10,000 a mile. From Lexington to the mouth of Big Sandy, a route nearly level along a ridge can be obtained for the whole distance. The whole route from St. Louis to the mouth of Big Sandy would probably not average over 12,000 a mile completely furnished with locomotives, cars, depots, &c.

The route spoken of through Indianapolis and middle Ohio to Pittsburg would be a longer and much more expensive route, and would lie in a higher latitude. It would not touch the Ohio, nor any important railroad trunk. The St. Louis and Louisville road, on the other hand, would intersect the Ohio at the Falls, affording the railroad passengers an opportunity of taking the river, and river passengers the opportunity of taking the road; and it would also connect with the great southern trunk of railroads destined to pass from Louisville, and branching in North Alabama, to Georgia and South Carolina, Mobile, and New Orleans. There is no earthly comparison between the proposed route from St. Louis to Pittsburg and the route via Louisville.

The Mt. Carmel road terminates at Alton, where there is high land, instead of passing eight miles over the American bottom to a point opposite St. Louis. Illinois is not disposed to contribute to the building up of a city in another state without a chance of contributing to the growth of one on her own shores; and, as the shore opposite St. Louis is too low and unhealthy for a city, she has chartered the road to terminate at the first

high land above St. Louis, which happens to be Alton. This is but twenty-four miles above St. Louis, and at Alton ferry boats will connect with the railroad to convey freight and passengers to St. Louis. If the road terminated opposite St. Louis, ferry boats would be equally necessary. The cost of the road to Alton will be much less than to a point opposite St. Louis. The eight miles of the American bottom are subject to overflow, and would cost a large sum originally and require heavy outlays for repairs.

At the last session of the Illinois legislature, a most powerful and ferocious effort was made to obtain a charter for a road to terminate opposite St. Louis, and connect with roads through Indiana and Ohio, but the effort failed. It will probably be again renewed this winter, but we have good reason for believing that it will not meet with as much favor as before. If so, the project will probably be altogether abandoned.

It is estimated that the entire cost of the railroad from Louisville to Alton will be but \$2,750,000 and that a profit can be realized of 20 per cent, as soon as the road is completed. It will intersect the eastern edge of the coal field sixty miles from Louisville. This edge abounds in iron ore. There will be a wonderful tide of travel between the two extremities, besides an unusual quantity of way-business along the whole line. The city of Louisville should do everything in its power to promote the success of this enterprise.

On the above interesting article, we have space for comments but on two points.

First. The assertion that the route "through Indianapolis and middle Ohio to Pittsburg, would be longer and more expensive" than the Louisville route, is not founded on any correct data. The length of the route, from Alton to Baltimore, by way of Louisville, considering the character of the country through which it would have to pass, which would cause great variations from a direct line, would be much greater than a middle route from St. Louis to Pittsburg, and the central road to Philadelphia. As to expense, the comparison is greatly in favor of the Pittsburg route. By the Louisville route, all the large streams flowing into the Ohio, below that city, have to be crossed by expensive bridges, and it is well known that the nearer you approach the Ohio river, the more difficult and broken does the country become. On the Pittsburg route, the level table lands are followed for the whole distance, until near the Mississippi; crossing no large streams, and incurring little expense for bridging. This is a most remarkable topographical feature. The "high latitude" would be a low one compared with the most successful railroads in the country, and will secure to it an immense trade in wheat, not equalled by any route in the world. Its "not touching the Ohio," is greatly in its favor, as it will not then come into direct competition with steamboat trade. As to its not touching "any important railroad trunk," nothing could be farther from the facts in the case. It will intersect and

cross more important artificial means of inter communication, than probably any other railroad in the country. To name a few, all in the state of Ohio. It would cross the Wellsville and Cleveland, railroad—the Ohio canal—the Cleveland, Columbus and Cincinnati railroad, and the Cincinnati and Sandusky railroad, all connecting the lakes with the Ohio river, and all acting as so many artificial channels to convey passengers and produce to the main great trunk.— Then it will intersect the most important public works in Indiana, and by means of lateral branches, the railroad of Michigan and northern Illinois. No railroad could be projected on the whole continent, possessing so many and so important advantages of connection as this. In comparison with them, those of the Louisville route, sink into insignificance. And what has the Louisville route to offer, in reference to connections? "It would intersect the Ohio at the Falls!" What a vast advantage for travellers, and freight, going west, to find that when all the difficulties of navigation had been overcome, a railroad awaiting them. So of travellers and freight, coming east, the railroad would leave them at the most important point; for the idea of a railroad running through the hills of Kentucky, parallel with the Ohio river for three or four hundred miles, and then overcoming the rugged mountains of Virginia, passing for a great part of the way through a sparsely populated country, is too preposterous for consideration. But would not the Pittsburg route intersect the Ohio river, by means of the various roads it would cross, some of which are now in operation? Surely. All the advantages such intersection could give to the Louisville project would be possessed by our central road.

But then there are two other very important advantages possessed by the Pittsburg route, over the Louisville or Cincinnati.— The first is, it commands the trade of the vast Lake country, not second to any other in the Union. The other is, its connection east from Pittsburg, is sure, and in rapid process of completion. The construction of a road from Louisville east, is perfectly hopeless, at least for a generation or two to come; and that from Cincinnati to Baltimore is far from being in a flattering condition. On the Pittsburg route, all the arrangements are made for the states of Pennsylvania and Ohio, and the road passing through a highly cultivated country, will pay a good dividend from its local trade alone, and will consequently be rapidly pushed on the Mississippi.

Second. The second point for comment, is the fact stated by the Louisville paper, that a bill to grant alternate sections of land, six miles on each side of the Louisville and Alton route, passed the Senate of the United States, at the last session of Congress, and was defeated in the house by only four votes, and that the application is to be again made at the approaching session. Now, what we wish to call attention to is, that the friends of the Pittsburg route ought to endeavor to incorporate in the bill, a similar grant to their

contemplated middle route. It will pass through a country containing, in Indiana and Illinois, as much government land, and more, than the Louisville route; and is just as important in a national point of view. Let the members of Congress whose constituents are interested, remember this.

"To the citizens of the central parts of Ohio, Indiana, and Illinois, and St. Louis, this great central road is of the last importance, and we call their especial attention to it. The road is now surveyed from Philadelphia to Mansfield, in Ohio. It is finished to Harrisburgh, from Harrisburgh to Lewis-town, it will be finished by May next; in December, 1849, it will be finished to Hut-tington; in May following, it will be finished, in connection with the Portage railroad to Johnstown; from Johnstown to Piusburg, the route is surveyed, and will be put under contract in two or three months. From Pius-burg to Beaver, we have steamboat naviga-tion, but the route is surveyed, and will be put under contract as soon as the western sections are fairly started; from Beaver west to Salem, forty miles will be put under contract as soon as the necessary preparations can be made; from Salem west to Mansfield, the route will be prepared as speedily as the nature of the case will admit; and from that west to the Ohio state line, correspondence for its location is now in progress.

"From this statement, the people of Indiana and Illinois will see, that all they have to do, to secure the benefits of this great artificial thoroughfare, will be to procure from their several legislatures liberal charters, authorizing them to connect with the Pennsylvania and Ohio road, without specifying any particular points. Having secured this, and an appropriation of land from Congress, with a commendable public spirit on the route, the whole road can be put under contract within two years. Is this an unreasonable supposition? Greater things have been done by the energy of man.

"St. Louis is deeply interested in this enterprize, and we expect she will render all the aid which can be given by her enterprizing population.

Closing of Capital Accounts of Completed Railways—How is it to be Done?

As this is a matter in which the shareholders in railroads in this country are deeply interested as well as in Europe, we give the views of an English writer in the R. W. Chronicle, of October 21st, on the subject.—It is an important question, and should be maturely considered:—

"A principal reason of the distrust which prevails as to the accounts of railway companies, lies in the fact that the capital expenditure debited to the old trunk lines and their first branches, long ago opened for traffic, does not cease, but is continually creeping on. This is the gravamen of Mr Arthur Smith's charge, mixed up with much trade, and put forward with much ignorance. For instance, the Great Western Company's capital account, excluding altogether the recently finished or non-completed lines, stands thus:

	Opened through-out.	Expenditure at the half yearly balance next after opening.	Expendi-ture, Dec 31, 1847.
London to Bristol	June '41	£ 5,877,000	£ 7,489,000
Oxford Branch	June '41	68,000	175,000
		5,945,000	7,655,000

These lines when opened were 128 miles long, and were on the 31st of December 1847 still only 128 miles long, as before, and yet the expenditure upon them had crept up by £1,710,000, or 29 per cent.

In the companies now amalgamated as the London and North-Western company, it will be found that the capital expenditure, has increased since the opening by about 4,000,000%, excluding altogether fictitious capital created on new lines undertaken, excluding even the tunnel to the docks at Liverpool. A similar increase, we believe, will be found on any of the old lines.

The London and South-Western company appears best in this view of the case; for their expenditure on the line to Southampton and Gosport has only increased £200,000 since the opening, or by about 8 per cent. of the expenditure.

Now, what is the meaning of this extraordinary swelling of the cost of a concern long after it is apparently completed? Why should the capital of a trunk railway, say 128 miles long, have increased by 30 or 40 per cent. at the end of six years after it was opened, although a separate account has been opened for every additional mile of railway subsequently constructed, and the trunk line is now only 128 miles long, as it was before? Why was it not paid for, once for ever, within the first year after its opening? and if so, how is it possible that its cost should have gone on increasing at this pace? These are the questions continually occurring to shareholders, and which lie at the root of much of the present doubt as to railway property.

What, then, is the explanation of this expenditure? The enemies of railways, Arthur Smith, and others, will say, these items are old debts, which were improperly kept back to save appearance, but which, like murders, are out at last. The item of "locomotive stock," one large item of increase, is really the replacement of old stock, which should have been paid out of current revenue. The "stations" are the whole cost of the new and magnificent stations lately built, "capital" having already paid for the old ones, pulled down, and therefore having been charged improperly with two sets of stations, when there is only one to show for the money.—These and similar charges will be the mode of explanation which the enemies of boards will adduce. The directors and their friends will, on the other hand say, look at the arbitrary reduction of fares forced upon us, and the enormously increased quantity of business we have now to do to earn the same money. This has involved the necessity of a far greater quantity of locomotive stock, and of more extensive accommodation at stations and elsewhere. Look again at the

increased mileage of the railways we are working in connection with the trunk line. To do this we have necessarily increased the accommodation of the trunk line; and this accounts for the swelling of the expenditure on the trunk line. It is an expenditure really chargeable on the new branches, forced upon us by the public.

The latter view is no doubt in the main the true one: still there is probably some truth in the charges of the grumblers; and it appears to us that there never can be any end to the doubts on these points. Until stock is periodically taken on every completed railway, on the principle we explained as to depreciation of engines (see p 749)—that is to say, until the locomotive stock, the rails and sleepers, and the stations or other works which are about to be altered or enlarged, are periodically valued—any addition to the value, under any of these heads of expenditure, being charged to capital, and any deficiency in the value debited against revenue,—we shall then, and only then, be sure that for every addition to capital expenditure additional value can be shown.

We have so fully explained our meaning as to engines, that it is scarcely necessary to repeat the application of our rule as to permanent way, materials and stations. Permanent way, indeed, speaks for itself; but, to avoid misapprehension as to stations and works, let us take a case:—Say the stations have cost £20,000 at the time of our periodical valuation in January 1848, and are about to be enlarged and improved. In January 1849, when the periodical valuation recurs, we find £50,000 has been spent on the station during the year, and the old station has disappeared—the materials having been sold for £5,000. In this case, the station at D, being in January 1849 worth to value only £50,000, should only stand at so much in the capital account; and the difference between £20,000 and £5,000, the cost of the old station which has been pulled down, and the price at which the old material sold, should be charged upon revenue—such old station having been expended or used up since the line opened. In the ordinary way of keeping the capital account, probably this £50,000, the cost of the new station, less £5,000 for the old material, would be simply added to the £20,000 before spent, and the station at D would then stand in capital expenditure at £65,000, while there would only be a station worth £50,000 to show for the money.

The principle for which we contend is, in short, the common mercantile principle of taking stock periodically, adopted in every private business; and until this is done on railways, we can have no security that the capitals in revenue accounts are respectively debited with their due burdens; and that we are not either on the one hand, as Mr Smith says we are doing, paying dividends out of capital by subtracting unduly yearly profits, as Capt. Huish says the London and North-Western railway company were on the eve of doing.

This is the only way to close the capital accounts; the mere prohibition to charge any

more to the capital of the old lines would be absurd and impracticable, if their receipts and business increased and are to increase, as it should be their constant effort to make them: and as in the nature of things they must, their capital expenditure must also increase—and this increase will be an honest increase or not, as they are able to show increased value of stock in trade or not.

Chloroform as a Motive Power.

The following account gives us a new idea. We find the article in the London Mining Journal.

"M. Lafond, an officer in the French naval service, has taken out a patent for an engine, in which chloroform, in conjunction with steam, is the motive power. A trial was made recently at the manufactory of M. Charles Beslay, at Paris, in the presence of several engineers, manufactures, and deputies. The results obtained from this experiment were highly important, and indicative of considerable economy. The engine has two cylinders, one to be acted on by steam generated in the usual manner. The boiler is vertical, and contains several copper tubes, among which the flame passes into the chimney; and, from the amount of heated surface, the water is quickly raised to boiling temperature. To the other cylinder and piston is attached the chloroform apparatus, consisting of a cylinder of cast iron placed vertically, containing, like the boiler, a number of copper tubes, the lower ends of which are closed, and the others all terminate in a single pipe in communication with the second cylinder. In these tubes chloroform is placed, and the first cylinder which receives the steam is in direct communication with the chloroform apparatus; the steam having raised the piston in the steam cylinder, and at the same time opened the valve communication with the chloroform tubes passes into the cylinder around them, and having the property rapidly to absorb caloric from the steam, the latter is suddenly condensed, the chloroform transformed to vapor, which, expanding along the pipe to the second cylinder, raises its piston—the steam piston is depressed, and the operation goes on alternately.—This liquid thus performs the operations of a condensing agent, and a prime mover. The chloroform is, of course, again condensed for repeated use. It will thus be readily understood, that an expenditure of fuel is required only for one motion of the steam piston, the down stroke being performed by the caloric still contained in the steam, sufficient to vaporise the other agent. It is stated that by ether and chloroform a saving of 50 per cent, is secured in proportion to the cost of the common steam engine, and that "aldehyde" is still more economical.

James River and Kanawha Company.

On the 30th of November this company held their annual meeting at Richmond.

On the nomination of Wm. M. Peyton, Esq., the following gentlemen were unanimously elected president and directors of the company for the present year:

President—W. B. Chittenden.

Directors—Thomas M. Bondurant, Samuel McCorkle, Thomas H. Ellis, W. W. Boyd, and John S. Gallaher.

It is gratifying to us to see an early friend at the head of this important company. A gentleman of more sterling integrity, of more elevated moral character and views, or of more intense desire to carry through, to a successful termination, the great work with which he has been so long identified, cannot be found within the "old dominion." Long may he live, with health improved, and energies unimpaired, to be useful to the people of Virginia.

But with all our friendship for the man, and our desire to see him prosper with the noble work to which he has long been devoted, we cannot see as he sees, or feel as he feels, in relation to the results to follow the course now pursued by those having charge of the company. As we feel quite convinced

that as the canal will not be carried over the mountain, it will not be a judicious expenditure to lay out \$600,000 on the navigation of the Kanawha river—as it must and will be ultimately superseded by a railroad—just as the *Pennsylvania* canals are to be superseded by a continuous railroad.

It is of little moment what may be individual preferences, and opinions, and prejudices, so long as the spirit of the age, and the habits of the people are for accelerated speed. Revolutions seldom go backward, and more especially in the facilities for travel, and the transacting of business; and as well might we attempt to return to the old fashion mode of carding wool by the hand, and spinning and weaving it in our families, as was done forty years ago in New England, as to attempt to transact the business of the country on canals yet to be constructed. Those now in use, and nearly completed, will be used; but there is scarcely an instance of a canal in the country, now in use, which will not have a railroad in its vicinity, to compete for its business within ten years, and the James River and Kanawha company will not be an exception should it be completed.—Why, then, not build a railroad at once from the termination of the canal, on the east side of the mountain to the Ohio, and make it a feeder to the canal, and thus avoid making an investment so "permanent" as would be that made in the Kanawha River.

We trust we shall be excused for speaking freely on this subject, as one motive only prompts it, viz., a desire to see an easy and rapid communication from the Ohio to Tide Water in Virginia.

The following account of the proceedings at the meeting will show the desires and intentions of the managers:—

"November 30th, 1848.

On motion of Wm. H. Macfarland, Gen. John H. Cocke was appointed chairman; G. O. Gerberding, the secretary of the company, attending as clerk.

Thereupon, Wm. M. Peyton, chairman of the committee of thirteen, presented the following

REPORT.

The committee, to whom was referred the president's report with the accompanying documents, and to report such measures to the meeting of the stockholders as they may deem expedient, beg leave to report that they have had the same under consideration, and recommend the adoption of the following resolutions:

1. Resolved, That a memorial be presented to the legislature, asking that the State may guarantee the bonds of the company, or otherwise lend its aid or credit, to enable the company to complete the proposed improvement of the Dock; and to make the proposed connection between the Canal and tide-water; and that if such application be granted, the president and directors of the company are hereby authorized, for the purpose of securing the debt to be so incurred, to execute such mortgage or other lien upon the Dock, and other real estate of the company upon the line of the said connection, as may be necessary, or as the legislature may require.

2. Resolved, That an application be respectfully made to the next session of the legislature for aid to raise the sum of \$600,000, for the construction of a lock and dam navigation for steamboats from the mouth of the Great Kanawha to the Great Falls thereof.

3. Resolved, That the terms of the Act of Assembly, passed 10th February, 1818, providing for connections between the Canal and the south side of James River, appear to the stockholders to be inconsistent with the prior obligations of the company, inasmuch as they propose a mortgage of a portion of the company's revenue which is already under mortgage for other purposes; that the cost of the said connections would be greater than the sum of money provided by the said act; and that the company, therefore, respectfully decline to accept its terms.

4. Resolved, however, That the company deem proper connexions between the Canal and the south side of the James River, and also connexion with the Rivanna River, highly important to the interests of both the company and the State; and that the legislature be requested to grant the company such aid as will enable it to complete them.

5. Resolved, That the additional regulations for the Canal, Dock, and Western Improvements, adopted temporarily by the board of directors, and presented by the president along with his annual report, be and the same are hereby sanctioned and adopted, except the 1st and 3d, adopted on the 22nd November, 1847, and on the 2nd March, 1848.

The 1st Resolution was read and adopted.

The 2d Resolution was read. O. M. Crutenfield, Esq., proposed the following substitute:

Resolved, That application be made to the Legislature for a loan of \$600,000 for the erection of a lock and dam, at Tyler's shoal on the Kanawha River, as recommended by the president in his annual report in 1846.

Which substitute was rejected by the following vote, ayes 2811, noes 3030, and the resolution as reported by the committee was adopted.

3d and 4th resolutions read, and the following substitute offered by Thomas M. Bondurant, Esq.:

Resolved, That the Legislature be requested to amend the act of the 10th February, 1848, providing for sundry connexions between the Canal and the south side of James River, so as to provide an amount of funds sufficient to construct said connexions, without imposing on the company the duty to build the proposed bridge at Jefferson.

Which substitute was rejected—ayes 1670, noes 4021. Thomas M. Bondurant, Esq., moved to recommit the subject to the committee, to report tomorrow night.

Which motion was amended by Wm. Daniel, Jr. Esq., to submit the same to a committee of three, to report to-night, which was adopted.

The following substitute was reported by the committee, and adopted by the meeting:

Resolved, That an application be made to the Legislature to enable the company to make the long postponed connexions with the south side, and to construct the Rivanna connection.

Wm. H. Macfarland, Esq., offered the following resolution, which was adopted:

Resolved, That the application of Messrs. Duval, James & Co., for a reduction of tolls on nails and bar iron, manufactured at the Manakin works, on the line of the canal, and the application of Robert Carter Page, for a reduction of tolls on granite, be referred to the president and directors for their consideration and decision."

We find the following paragraph in the Richmond Republican, of 4th ult., in relation to

The Rappahannock Canal.

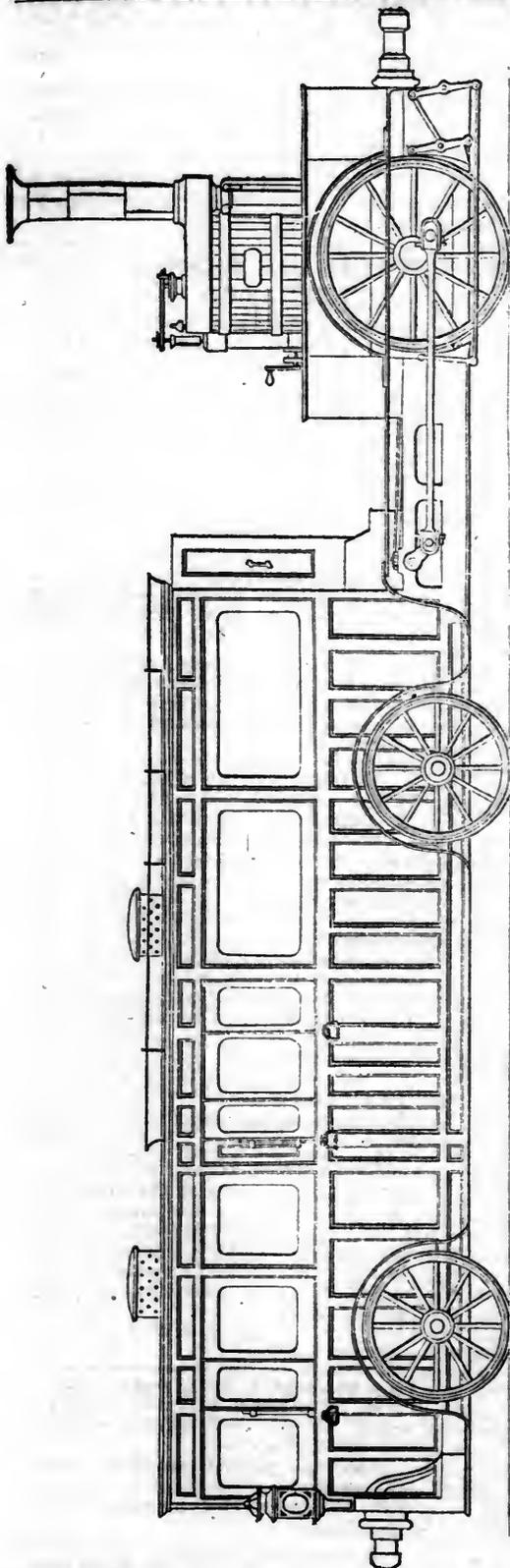
We are pleased to learn, from the Fredericksburg News, that this improvement has been opened for navigation, and that boats are already arriving with wood, lumber, flour, &c. Only 20 miles remain unfinished, to Carter's Run in Fauquier, and that portion will be completed by the 1st June next. This opens up trade with the upper part of Fauquier and Rappahannock, and portions of Page and Shenandoah.

The South Branch of the Rappahannock, winding through the counties of Green, Madison, Orange and Culpeper, it is expected, will be improved to Liberty Mills, within a few miles of the Ridge, which will secure trade from the counties above named, and some portions of Rockingham, Shenandoah and Page.

The News anticipates great results from this improvement, and gives the proper meed of gratitude to A. J. Marshall, Esq., of Fauquier, who revived the scheme after it had been torpid for many years, and who, with that energy and unflinching resolution for which he is distinguished, spent two years in giving it new vitality. We know something of Mr. Marshall's intense application to this object, and can heartily endorse the compliment due to him.

The work, however, eventually devolved upon the present company, the Messrs. Gordon & Co., enterprising capitalists, to whom the public are also indebted in an eminent degree.

The News thinks the old town of Fredericksburg is yet destined to rise in importance and wealth.



Light Locomotive Engines with Carriages Combined for Railway Traffic.

We have frequently alluded to Mr. Samuel's plan, of light engines and carriages combined, for short or branch railroads; and we now give a brief description, with an illustration, from the London Illustrated News. This represents the engine with two wheels, and the carriage with four—but we find in the Civil Engineer and Architects' Journal for December, an illustration of another engine, upon the same plan, only the locomotive part has four wheels—the additional wheels being much larger than the others, and the axle placed behind the boiler.

The opinion is becoming somewhat prevalent that there is generally too much gross weight in our passenger trains—and an effort will be made to devise some plan by which a light business may be done with less wear and tear, and we shall endeavor to keep our readers apprised of what is done, that they may, at all times, avail themselves of what is useful.

We are indebted to the EUREKA, a valuable periodical, conducted by Messrs. Kingsley & Pirsson, patent agents, of this city, for the engraving; and the following is the description.

THE "FAIRFIELD" RAILWAY STEAM CARRIAGE.

About a year since, (October 30th, 1847.) we gave in our columns an engraving of a Lilliputian locomotive, constructed by Messrs. Adams and Co., of Fairfield Works, for Mr. Samuel, the engineer of the Eastern Counties railway. This carriage engine was constructed for the supervision of the line to save the expense of the large machines. Another engine, intended to work branch lines of the Bristol and Exeter broad gauge, was last week making some experimental trips on the West London, which is laid for both gauges, or what is called the 'mixed' gauge—and the results were highly satisfactory; putting beyond all doubt the soundness of the principle.

The order for this steam carriage was given to Messrs. Adams and Co., by Mr. Charles Hutton Gregory, the engineer of the Bristol and Exeter line, under the sanction of his directors, after a single trial of the Lilliputian locomotive of Mr. Samuel, which is christened the "Express." The conviction was conclusive in the mind of Mr. Gregory, that light steam carriages were not only practical, but economical, and that by their agency profits might be made on branch lines which previously had yielded only losses.

Still, though the "Express" was a little "fact," the passenger carriage had yet to become a greater fact, and doubts in abundance were circulated.—But united purpose grew from the conviction of mechanical truth; for it was not regarded as a problematic scheme, but as a well ascertained plan.

The design and plan of the "Fairfield" is by the patentee. It was approved by Charles Hutton Gregory, who gave the carriage its name. The engine is peculiar, as will be seen by the view we have given. The frame is, for convenience, made to bolt to the carriage firmly, in a separate length, so as to remove with facility, in case of repairs. The boiler is tubular and vertical, 3 feet in diameter, and 6 feet high—150 tubes, 4 feet in length, 1 1/2 inches diameter. Fire box, 2 feet high, 2 feet 6 inches diameter. This will give 20 square feet of heating surface in the fire box, 150 feet tube surface in the water, and 50 feet in the steam, which has great effect in drying it before it leaves the boiler. The vertical tubes are found to generate steam very rapidly.

The cylinders are 8 inches in diameter, and of 12 inches stroke. The pistons communicate by their connecting rods with a separate crank shaft, on which are placed the eccentrics. The driving wheels, (4 feet 6 in. in diameter), the axle of which is in front of the boiler, are put in motion by side rods or crank pins. Thus when the side rods are removed, the whole becomes an ordinary wheel carriage. The tank is in front of the boiler, and will contain 230 gallons of water. The coke box is attached to the carriage end. The fuel and water would be sufficient for a journey of about forty miles. The first class compartment is fitted for 16 passengers, but 6 extras could find room. The second class will carry 32, but on occasions 48—total 60. The running wheels are 3 feet 6 inches in diameter, and run independently on their axles, as well as the usual movement of the axles in the journals. The frame is within nine inches of the rails, and no steps are required. The total weight is estimated at ten tons; and the consumption of coke will be under 10 pounds per mile.

The steam carriage was delivered on to the West London before she was in thorough working condition, in

order to test her powers. The result has been that she has exceeded a speed of 35 miles an hour up a three mile incline of 1 in 100; and 41 miles down the same incline, with the disadvantages of a very sharp curve and no run at starting, very loose rails, and one of them deeply rusted from disuse, and grinding in the flanges with great friction. There is little doubt that, when in order, she will make 60 miles per hour on good rails on a level. We understand that, when completed, it is the intention to run her for several days on the W. London, to give directors and engineers an opportunity of trying her.

We should mention, that in the trimmings of the carriages, is worked the monogram of the railway company—a tasteful novelty, introduced by Payne and Son, of Great Queen street, Lincoln's-inn-fields.

Improvement in the Steam Engine, Economy of Fuel.—We have just been shown a decided improvement in the practical working of the steam engine, which, as regards economy of fuel, and obtaining regularity of motion, we are satisfied must become an important acquisition in engineering. The discoverer of the improvement is Mr. W. Rowan, of the firm of John Rowan and Sons, of York st. foundry, in this town, who has taken out a registered patent for the invention, which is now at work on several steam engines in town, and on one lately erected by the above firm, of 41 horse power, for Messrs. Langtry & Co. Fortadown. The improvement is founded on a plait unerring principle in mechanical science, and is distinguished for the ease and facility by which it can be applied to steam power of every description. It simply consists of a slider, acting in immediate connection with the governor, on the expansion valve, in such a manner as to adapt the engine to the pressure, whatever that may be, by cutting off the steam at any given point of the stroke, while the engine is at work, and thereby securing at once regularity of motion, and an immense saving of fuel in proportion to the power employed. We are satisfied that the mercantile community, especially the extensive manufacturers of this town and neighborhood, will not be slow to take advantage of so valuable an acquisition in that all important agent in their affairs, the steam engine.—*Banner of Ulster.*

Ice.—The intrinsic value of ice, like that of metals, depends on the investigation of an assayer. That is to say a cubic foot of Lower Canada ice, is infinitely more cold than a cubic foot of Upper Canada ice, which contains more cold than a cubic foot of Wenham ice, which contains infinitely more cold than a cubic foot of English ice; and thus, although each of those four cubic feet of ice has precisely the same shape, they each, as summer approaches, diminish in value—that is to say, they each gradually lose a proportion of their cold, until long before the Lower Canada ice has melted, the English ice has been converted into lukewarm water.—*Chambers' Edenburg Journal.*

An Experimental Vessel.—There is now loading in the North Docks, Sumerland, an experimental vessel, named the *Mary Caroline*, built by Mr. Siddon, of Rochester, who is also the owner. She has no keel, but is flat bottomed, and built in the barge style. Neither is she caulked—the seams are lined with felt. She is 224 tons register, and carries 4000 yards canvass when in full sail; and when full laden with 20 keels of coals, she draws only 9 1/2 feet of water. She is intended for the French trade. On the run down, with a N. N. W., wind, she outstrips 40 colliers.—*Durham Advertiser.*

Scientific Discovery.—The Rev. Dr. Callan, professor of natural philosophy in Maynooth college, has made a very important discovery in galvanism; he has found that common cast iron is greatly superior as a negative pole even to platinum; that a battery of such material, with the usual positive poles, is much more powerful than Grove's or Woolaston's batteries.

HUDSON RIVER RAILROAD.
NOTICE.—PROPOSALS FOR SPIKES.
 Proposals will be received at the office of the Company, No. 54 Wall street, until the 15th day of February next, for a quantity of Wrought Iron Railroad Spikes, from fifty to two hundred tons, (of 2000 lbs.) to be delivered at such wharf or wharves on the line of said Railroad as may be designated by the Chief Engineer in the employment of said Company. The Spikes to be nine-sixteenths of an inch square, headed and sharpened, suitable for the purpose, and to be of such lengths, not less than six, nor more than seven inches, as may be required by said Engineer. The Spikes to be made of the best quality of iron, and put into suitable kegs, with weight and size of Spike marked on the head.

The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the Company to require.

JOHN B. JERVIS, Chief Engineer.
 Office Hudson River Railroad Co., }
 New York, 10th Jan., 1849. } 312

FULLER'S PATENT INDIA RUBBER SPRINGS.—The Commissioner of Patents has dissolved the interference which had been declared against this Patent. The Patentee is ready to supply the springs upon the shortest notice, in any quantity, and at a moderate cost. They have now been in use for nearly 4 years, with complete success. They are made of the best materials, are economical, both as to cost and wear; are light and very easy in their motion.

The patent was granted to W. C. Fuller, in October 1845.
 G. M. KNEVITT, Agent.
 Office, 78 Broad street New York, and at Messrs. James Lee & Co., 18 India Wharf, Boston.
 Jan. 13, 1849.

NICOLL'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee
 G. A. NICOLLS,
 ja45 Reading, Pa.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|------------------------|---|
| Charles Cook, | } Canal Commissioners of the State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | |
| Willard Smith Esq., | } Engineer of the Bridges for the Albany Basin. |
| Messrs. Stone & Harris | |
| Mr. Wm. Howe, | } Railroad Bridge Builders, Springfield, Mass. |
| Mr. S. Whipple, | |
| | } Engineer & Bridge Builder, Utica, N. Y. |
| | |
- January 1, 1849. 1y*

MATTEWAN MACHINE WORKS.
THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also, *Tenders, Wheels, Axles,* and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen,* or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING, Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Sabling, Planing, Cutting, and *Drilling* Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at
 39 Pine Street, New York.
 WM. B. LEONARD, Agent.

FAIRBANKS' RAILROAD SCALES.
THE Subscribers are prepared to construct at short notice, *Railroad and Depot Scales,* of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and despatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon Railroads, either in the United States or Great Britain; and the manufacturers refer with confidence to the following in the United States.

- | | |
|-------------------------|---|
| Eastern Railroad, | Boston and Maine R. R., |
| Providence Railroad, | Providence & Wor. R.R., |
| Western Railroad, | Concord R. R., |
| Old Colony Railroad, | Fitchburg R. R., |
| Schenectady Railroad, | Syracuse and Utica R.R., |
| Baltimore & Ohio Road, | Baltimore & Susq. R. R., |
| Phila. & Reading Road, | Schuylkill Valley R. R., |
| Central (Ga.) Railroad, | Macon and Western R.R., |
| | New York and Erie Railroad; |
| | and other principal Railroads in the Western, Middle and Southern States. |

E. & F. FAIRBANKS & CO.
 St. Johnsbury, Vt.
 Agents } FAIRBANKS & Co., 81 Water st. N. York.
 } A. B. NORRIS, 196 Market st., Philad.
 April 22, 1848. 1r*17

PATENT HAMMERED RAILROAD, SHIP and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed.
 JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.
 The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Etting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

RAILROAD IRON.
THE NEW JERSEY IRON CO'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
 DEWEY B. FULLER, Ag't
 139 Greenwich Street,
 New York, October 25, 1848. 1f

DIRECT ACTION ENGINES
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,
 AND ALSO
THE ANNULAR RING PISTON ENGINES, of Messrs. Mauldsley, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,
THOMAS PROSSER, C. E.,
 25 Platt street, New York.
 May 6, 1848.

WILLIAM JESSOP & SONS,
CELEBRATED CAST-STEEL.
 The subscribers have on hand, and are constantly receiving, from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—Square, flat & octagon. Best warranted Cast Steel—Square, flat & octagon. Best Double and Single Shear steel—Warranted. Machinery Steel—Round.
 Best and 2d gy. Sheet Steel—for Saws and other purposes.
 German Steel—flat and sqr., "W. I. & S." "Eagle" and "Goat" Stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favorable terms, by
WM. JESSOP & SONS,
 91 John Street, New York,
 Also by their Agents—
 Curtus & Hand, 47 Commerce St., Philadelphia.
 Alex'r Fullerton, & Co., 119 Milk St., Boston.
 Stickney & Beatty, South Charles St., Baltimore.
 May 6, 1848.

NEW PATENT CAR WHEELS.
THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.
 We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington.
SIZER & CO.
 January 29, 1848. 1f Springfield, Mass.

RAILROAD IRON AND LOCOMOTIVE Tyres imported to order and constantly on hand by
A. & G. RALSTON
 Mar. 20th 4 South Front St., Philadelphia, Pa.

TO MACHINISTS & MANUFACTURERS.
 The Subscribers have taken the **READING CAR AXLE MANUFACTORY**—and are prepared to execute orders for *Axles of every description,* and Wrought Iron Shafts for Steamboats, Mills, etc., made from superior material, at short notice. Address *Reading, Pa.*
ANDREW TAYLOR & CO.
 August 5, 1848—3m*

RAILROAD IRON—SHEET IRON—BRASIER'S RODS—HOOPS—SCROLL—BANK'S BEST—& OTHER GOOD MAKES OF ENGLISH IRON.
100 Tons Railroad Iron—Staffordshire make—56 pounds per yard—shipped from Liverpool 20th July, expected to land on wharf from 10th to 20th September.
 Also have Invoices of Sheet Iron, Brasier's Rods, Hoops, Scroll, and Band Iron, Banks best, and other good makes of English Rolled Iron, to arrive, suitable for Railroad Axles, etc., etc., equal in quality to American Rolled Iron. I have agency of several best makers in England and Wales, and can import for Railroad Companies, and others, on best terms, and at much less prices than they can be supplied from American Mills.
DAVID W. WETMORE,
 218 Water street.
 New York, Sept. 9, 1848. 1w*

JAMES LAURIE, Civil Engineer
 No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
 Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
 October 14, 1848. 6a1

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The *bells* and *builds* of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bell, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good Machinists can also find employment in the Navy Yard. Apply in person to
JAMES HERRON,
 Civil Engineer, Navy Yard.

Jan. 1.

10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

GOOPER & HEWITT, Agents,
 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE
 Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition
 92v11y

NORWICH CAR FACTORY, NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of

RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS,
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
 Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

General Agent,

Norwich, Conn.,

meet with immediate attention.

15b



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch*, *Suspension* and *Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74 BROADWAY, up stairs,** or of **W. RIDER & BROTHERS, 58 Liberty Street,** where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
 Agent for the Company.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT WOULD respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
 Cincinnati, Ohio, October 2, 1848. 41t

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WISLAW, President
 Mount Savage Iron Co., Troy, N. Y.
EMASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md

November 6, 1848.

THE NEWCASTLE MANUFACTURING

Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
 245 President of the Newcastle Manuf. Co.

RAILROAD SCALES.—THE ATTEN-

tion of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.

Office, No. 3 North 5th street,

Philadelphia, Pa.

1525

TO RAILROAD COMPANIES AND MANUFACTURERS of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. **THOMAS & EDMUND GEORGE,** 245 N. E. cor. 12th and Market sts., Philad., Pa.

JAMES HERRON, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE
HERRON RAILWAY TRACK.
MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.
The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

TO CONTRACTORS.

OFFICE NASHVILLE & CHATTANOOGA R.R. Co. }
Nashville, 9th November, 1848. }

PROPOSALS WILL BE RECEIVED AT this office on 20th December next, for the Graduation and Masonry of forty miles of road, viz: twenty miles next to Nashville, ten miles crossing the Barran fork of Duck river in Bedford county, Tennessee, and ten miles on the northwest side of Tennessee river, in Jackson county, Alabama.

Profiles and plans may be seen at this office after 12th December. By order of the board.

C. F. M. GARNETT,
Chief Engineer.

N. B. Twenty-five miles of road (including the Tunnel,) and six miles heavy mountain work are under contract. Seven Hundred Laborers are wanted by the Contractors. t*48

NOTICE.

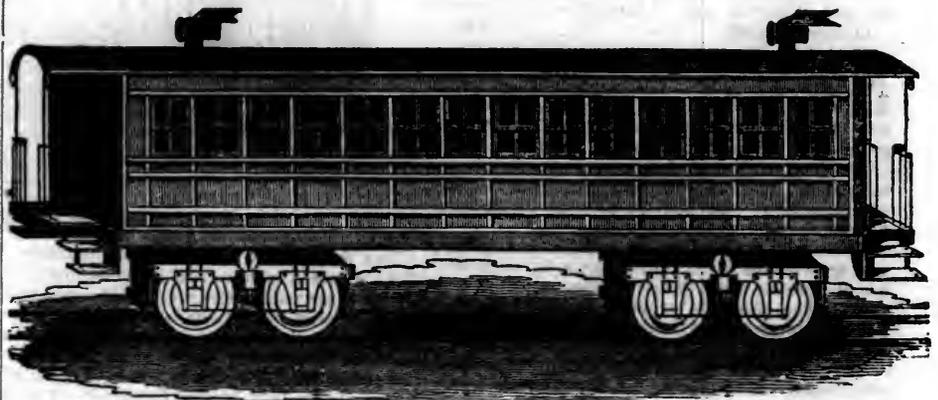
RAILROAD LINE BETWEEN ALBANY AND BUFFALO, N. Y.

1848.—SCHEDULE FOR RUNNING.—1848.

Going west.	1st train.	2d train.	3d train.
Leaves....Albany....	7½ A.M.	2 P.M.	7 P.M.
Pass.....Utica.....	1 P.M.	7½ P.M.	1¼ A.M.
Pass.....Syracuse....	4 P.M.	11 P.M.	5 A.M.
Pass.....Auburn.....	6 P.M.	1 A.M.	7 A.M.
Pass.....Rochester..	12 M.N.	7 A.M.	1 P.M.
Arrives at Buffalo..	5½ A.M.	12 M.	6 P.M.
Going east.	1st train.	2d train.	3d train.
Leaves....Buffalo....	7½ A.M.	2 P.M.	7 P.M.
Pass.....Rochester..	12 M.	7 P.M.	12 M.N.
Pass.....Auburn.....	6 P.M.	1 A.M.	6 A.M.
Pass.....Syracuse....	8 P.M.	3 A.M.	8 A.M.
Pass.....Utica.....	12 M.N.	7 A.M.	1¼ A.M.
Arrives at Albany....	5 A.M.	12 M.	4 P.M.

Adopted February 18, 1848, in convention at Albany.
(Copy.) T. Y. Howe, Jr.,
Secretary of the Convention.

DAVENPORT & BRIDGES'
CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes. 10f

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO.,
Philadelphia.

ROBERT NICHOLS, Agent,
No 79 Water St., New York.

RAILROAD IRON, PIG IRON, ETC.

- 600 Tons of T Rail 60 lbs. per yard.
 - 25 Tons of 2½ by ¼ Flat Bars.
 - 25 Tons of 2½ by 9-16 Flat Bars.
 - 100 Tons No. 1 Gartsbrorie.
 - 100 Tons Welsh Forge Pigs.
- For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark-Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

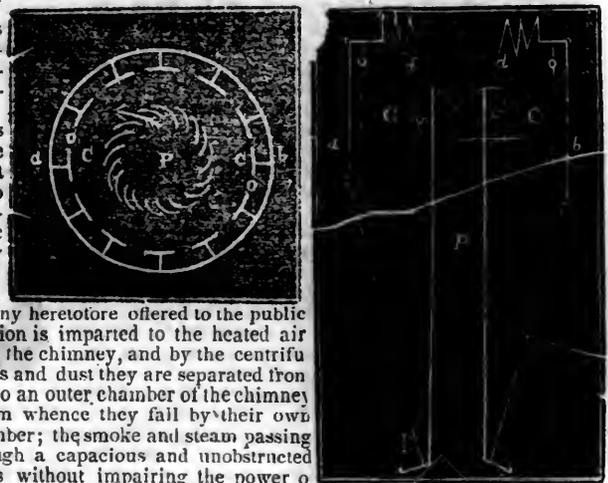
These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington, Va. and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

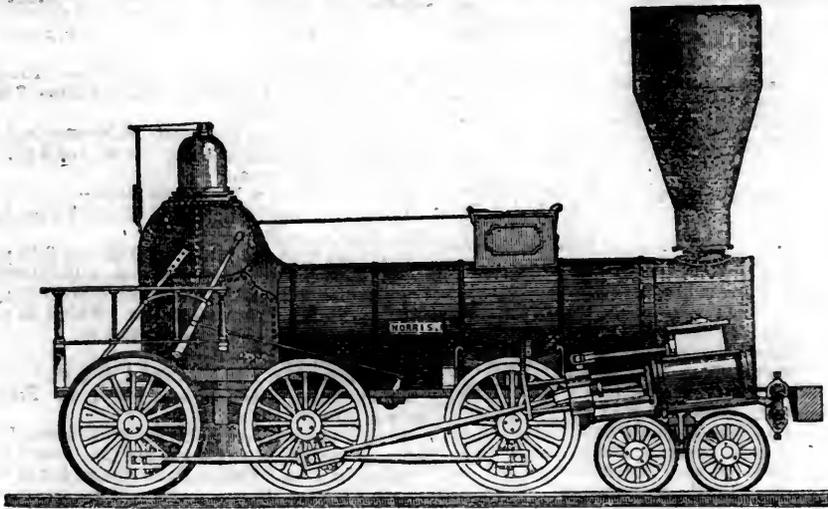
Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

••• The letters in the figures refer to the article given in the Journal of June, 1844. ja45



NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.
NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.
 Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
 Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO.,
 68 Broad street.

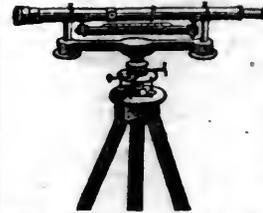
New York, Sept. 16, 1848, 39f
 Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,

Willow St. below 13th,

Nov. 10, 1847. [tf.] Philadelphia, Penna.



THE SUBSCRIBER has on hand a good assortment of his best Leveling and Surveying Instruments, among them his improved Compass for taking angles without the needle—also Bells, suitable for Churches, Railroad Depots, etc.

ANDREW MENEELY.

West Troy, May 12, 1847. 1y*21

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

* * * Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.
 ja45

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 1t

CHILLED RAILROAD WHEELS.—THE undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS.

Point Pleasant Foundry,

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T

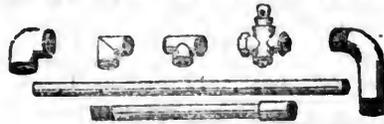
Kensington, Philadelphia Co., }
 March 12, 1848. }

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1/2 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER PLANS.



Manufactured and for sale by **MORRIS, TASKER & MORRIS.** Warehouse S. E. Corner of Third & Walnut Street, PHILADELPHIA.

LAWRENCE'S ROSENDALE HYDRAULIC CEMENT. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight paper-barrels, by **JOHN W. LAWRENCE,** 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office 321r

LOCOMOTIVES FOR SALE.

FOR SALE—Three Locomotive Engines and Tenders, in good running order. Apply to **JOHN WILKINSON,** President of the Syracuse & Utica R. R. Syracuse, New York.

December 16, 1818. 4153

BOSTON AND PROVIDENCE RAILROAD. On and after Monday, October 21, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m. and 3 1/2 p.m. Leave Providence at 8 1/2 a.m. and 3 1/2 p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10 1/2 p.m. Leave Dedham at 7 1/2, 10 1/2 a.m., 1 1/2, 4 1/2, and 9 p.m.

Stoughton Trains—Leave Boston at 11 1/2 a.m. and 4 1/2 p.m. Leave Stoughton at 8 1/2 a.m. and 2 1/2 p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the **DEDHAM TRAIN** will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2 and 10 1/2 p.m. Leave Dedham at 8 10 1/2, a.m., 1 1/2, 4 1/2 and 9 p.m.

WM. RAYMOND LEE, Sup't

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848. WINTER ARRANGEMENT.

December 4th.—Fare \$1. Leave Philadelphia 8 a.m. and 4 p.m. Leave Baltimore 9 a.m. and 8 p.m.

Sunday—Philadelphia only at 4 p.m. Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C. Through tickets Philadelphia to Charleston, \$20. Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 11 1/2 p.m. daily

PITTSBURG AND WHEELING. Through ticket, Philadelphia to Pittsburg, \$12. Wheeling, 13.

All through tickets only sold at office, Philad. **WILMINGTON ACCOMMODATION.** Leaves Philadelphia at 1 1/2 and 4 p.m. Leaves Wilmington at 8 a.m. and 4 p.m.

N.B.—Extra baggage charged for. **I. R. TRIMBLE, Gen. Supt.**

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES. AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28.
2d class.	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Warr, Castings, Crockery, etc.	0 60	0 86
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 70
	Molasses, per hogshead.	8 50	13 50
	" " barrel.....	2 50	4 2
	Salt per bushel.....	0 18	
	Salt per Liverpool sack.	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows....	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton. **F. C. ARMS, Supt. of Transportation.** Augusta, Ga., July 15, 1847. 4151

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer. Atlanta, Georgia, April 16th, 1846. 1v1

CENTRAL RAILROAD—FROM SAVANNAH TO MACON. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight.

Rates of Passage, \$9 00. Freight—On weight goods generally... 50 cts. per hundred. On measurement goods... 13 cts. per cubic ft. On brls. wet (except molasses and oil).....\$1 50 per barrel. On brls. dry (except lime)... 80 cts. per barrel. On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred. On hhds. and pipes of liquor, not over 120 gallons.....\$5 00 per hhd. On molasses and oil.....\$6 00 per hhd. Goods addressed to **F. WINTER, Agent,** forwarded free of commission. **THOMAS PURSE, Gen'l. Supt. Transportation** y10

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after

Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m. Freight train at 1 p.m.

Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 20 and 8 p.m.

Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m. Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m. Tuckahoe, 7 30 and 8 25 a.m., 12 55 and 5 52 p.m. White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m. Pleasantville, 8 15 a.m. and 5 15 p.m. Newcastle, 8 a.m. and 5 p.m. Mechanicsville, 7 48 a.m. and 4. 48 p.m. Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m. Returning, leave Croton Falls 10 a.m. and 9 1/2 p.m. **ON SUNDAYS,** the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m., 4 p.m. Croton Falls for City Hall, 7 30 a.m., 4 30 p.m. Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m. White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st. A car will precede each train 10 minutes to take up passengers in the city.

Fare from New York to Croton Falls and Somers \$1. to Mechanicsville 87c., to Newcastle 75c., to Pleasantville 62c. to White Plains 50c. 251f

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.

Accommodation Trains daily, (Sundays excepted.) Leave Norwich, at 6 a.m., 12 m. and 2 1/2 p.m. Leave Worcester, at 6 1/2 and 10 a.m., and 4 1/2 p.m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily; Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted—From Worcester at 6 1/2 a.m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars. 321y

S. H. P. LEE, JR., Supt.

BOSTON AND MAINE RAILROAD. Winter Arrangement.

Commencing Nov. 13, 1848. Trains leave Boston as follows, viz: For Portland at 7 A.M. and 2 1/2 P.M. Great Falls at 7 a.m., 2 1/2 and 3 1/2 p.m. Haverhill at 7 and 11 1/2 a.m., 2 1/2, 3 1/2 and 5 p.m. Lawrence, at 7, 9, 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6 p.m. Reading 7, 9 & 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6, 7 1/2 & 10 p.m. Trains leave for Boston as follows, viz: From Portland at 7 1/2 a.m. and 3 p.m. Great Falls at 6 1/2 and 9 1/2 a.m., and 4 1/2 p.m. Haverhill at 7, 8 1/2 and 11 a.m., 3 and 6 1/2 p.m. Lawrence at 6 1/2, 7 1/2, 8 1/2, 11 1/2 a.m., 12 1/2, 3 1/2, 6 1/2, p.m. Reading at 6 1/2, 7, 7 1/2, 9 1/2, 11 1/2 a.m., 1 1/2, 3 1/2, 7 1/2, 9 p.m.

MEDFORD BRANCH TRAINS. From Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 6, 9 p.m. From Boston at 7 1/2, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 10 p.m. The Depot in Boston is on Haymarket Square.

CHAS. MINOT, Super't. Boston, Nov. 7, 1848.

BALTIMORE AND OHIO RAILROAD.
MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7 and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1.60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13.1

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger

trains run daily, except Sunday, as follows:
 Leaves Baltimore at.....9 a.m. and 3 1/2 p.m.
 Arrives at.....9 a.m. and 6 1/2 p.m.
 Leaves York at.....5 a.m. and 3 p.m.
 Arrives at.....12 p.m. and 8 p.m.
 Leaves York for Columbia at.....1 1/2 p.m. and 8 a.m.
 Leaves Columbia for York at.....8 a.m. and 2 p.m.

FARE.

Fare to York.....\$1 50
 " " Wrightsville.....2 00
 " " Columbia.....2 12 1/2
 Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....\$9
 Or via Lancaster by railroad.....10
 Through tickets to Harrisburg or Gettysburg... 3
 In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at.....5 1/2 p.m.
 Returning, leaves Owning's Mills at.....7 a.m.
 D. C. H. BORDLEY, Supt.
 Ticket Office, 63 North st.

NEW YORK & PHILADELPHIA.

NEW JERSEY RAILROAD & TRANSPORTATION CO.—6 O'CLOCK, A. M.

Accommodation Line from New York to Philadelphia, via Jersey City, New Brunswick, and Camden.
 Fare for 1st class cars, \$3; for 2d class, \$2 50; children under 12 years, half price.

Leaving every morning, (Sundays excepted) at 6 o'clock, from foot of Cornlandt street, and passing through Newark, Elizabethtown, Rahway, New Brunswick, Kingston, Princeton, Trenton, Bordentown, Burlington and Camden, and arriving at Philadelphia at 11 1/2 A. M.
 Leave New York 6 o'clock A. M.; Newark, 6h. 30m.; Elizabethtown 6h. 40m.; Rahway, 7 A. M.

DAILY EXCURSION TO PHILADELPHIA.

Excursion Tickets will be furnished, entitling the passengers to return by the 4 1/2 o'clock P. M. Mail Line the same day, or next morning by the 6 o'clock A. M. Mail Line, for FIVE DOLLARS.

RAILROAD IRON—2500 TONS HEAVY
 H Rail, now landing, and expected shortly to arrive, for sale on most favorable terms by
 DAVIS BROOKS & CO.

July 19th, 1846
 63 Broad street, New York.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston on the arrival of the boats from

Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily.....\$26 50
 Fare through from Charleston to Huntsville, Decatur and Tusculum.....22 00
 The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
 125 JOHN KING, Jr, Agent.

CENTRAL AND MACON AND WESTERN RAILROADS, Ga.—These Roads with the Western and Atlantic Railroad of the State of Georgia, form a continuous line from Savannah to Oothcaloga, Ga., of 371 miles, viz:

Savannah to Macon—Central Railroad.....190 Miles.
 Macon to Atlanta—Macon and Western.....101
 Atlanta to Oothcaloga—Western and Atlantic... 80
 Goods will be carried from Savannah to Atlanta and Oothcaloga, at the following rates, viz:

	To Atlanta.	To Oothcaloga.
On Weight Goods—Sugar, Coffee, Liquor, Bagging, Rope, Butter, Cheese, Tobacco, Leather, Hides, Cotton Yarns, Copper, Tin, Bar & Sheet Iron, Hollow Ware & Castings.....	\$0 50	\$0 75
Flour, Rice, Bacon in Casks or boxes, Pork, Beef, Fish, Lard, Tallow, Beeswax, Mill Gearing, Pig Iron and Grind Stones.....	0 50	0 62 1/2
On Measurement Goods—Boxes of Hats, Bonnets and Furniture, per cubic foot.....	0 20	0 26
Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs and Confectionary, per cubic foot.....	0 20 pr. 100lbs.	35
Crockery, per cubic foot.....	0 15	" 35
Molasses and Oil, per hhd., (smallercasks in proportion). 9 00		12 50
Ploughs, (large,) Cultivators, Corn Shellers, and Straw Cutters, each.....	1 25	1 50
Ploughs, (small,) and Wheelbarrows.....	0 80	1 05
Salt, per Liverpool Sack.....	0 70	0 95

Passage—Savannah to Atlanta, \$10; Children, under 12 years of age, half price, Savannah to Macon, \$7.

Goods consigned to the subscriber will be forwarded free of Commissions.

Freight may be paid, at Savannah, Atlanta or Oothcaloga.

F. WINTER, Forwarding Agent, C. R. R. Savannah, Aug. 15th, 1846. 1v34

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.

The Train from Philadelphia arrives at Reading at 12 18 M.

The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville, 92		\$3.50 and	\$3.00
" " Reading, 58		2.25 and	1.90
" " Pottsville, 34		1.40 and	1.20

Five minutes allowed at Reading; and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 81 17f

NEW YORK ANDERIE RAILROAD LINE.
SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New

York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M. Fare between New York and Otisville, \$1 50; way-fare in proportion.

For Milk—Leave Otisville at 5 1/2 o'clock, morning and evening.

For Freight—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)

No freight will be received in New York after 5 o'clock, P. M.

Freight for New York will be taken by the trains leaving Otisville at 10 1/2 o'clock, A. M.; Middletown at 11 1/2, A. M.; Goshen at 12 1/2, P. M.; Chester at 1 o'clock, P. M., etc., etc.

For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.

H. C. SEYMOUR, Supt.

LITTLE MIAMI RAILROAD COMPANY

Fall and Winter Arrangement, 1847. On and after Monday, September 20th, until further notice, a Passenger train will run as follows:

Leave Cincinnati daily at 9 A. M., for Millford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Precept, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4 1/2 a.m. Upward train arrives at Cincinnati at 2 1/2 p.m. Downward train arrives at Cincinnati at 10 1/2 a.m.

Freight trains will run each way daily. Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:

A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.

Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.

A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.

Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.

From Springfield to Bellefontaine by stage, over a good Summer road.....32 "

From Bellefontaine to Sandusky city by railroad.....102 "

FARE—From Cincinnati to Lebanon.....	\$1 00
" " " Xenia.....	1 50
" " " Springfield..	2 00
" " " Columbus...	4 00
" " " Sandusky city	7 00

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.

Tickets can be procured at the Broadway Hotel, Dennison House, or at the Depot of the Company on East Front street.

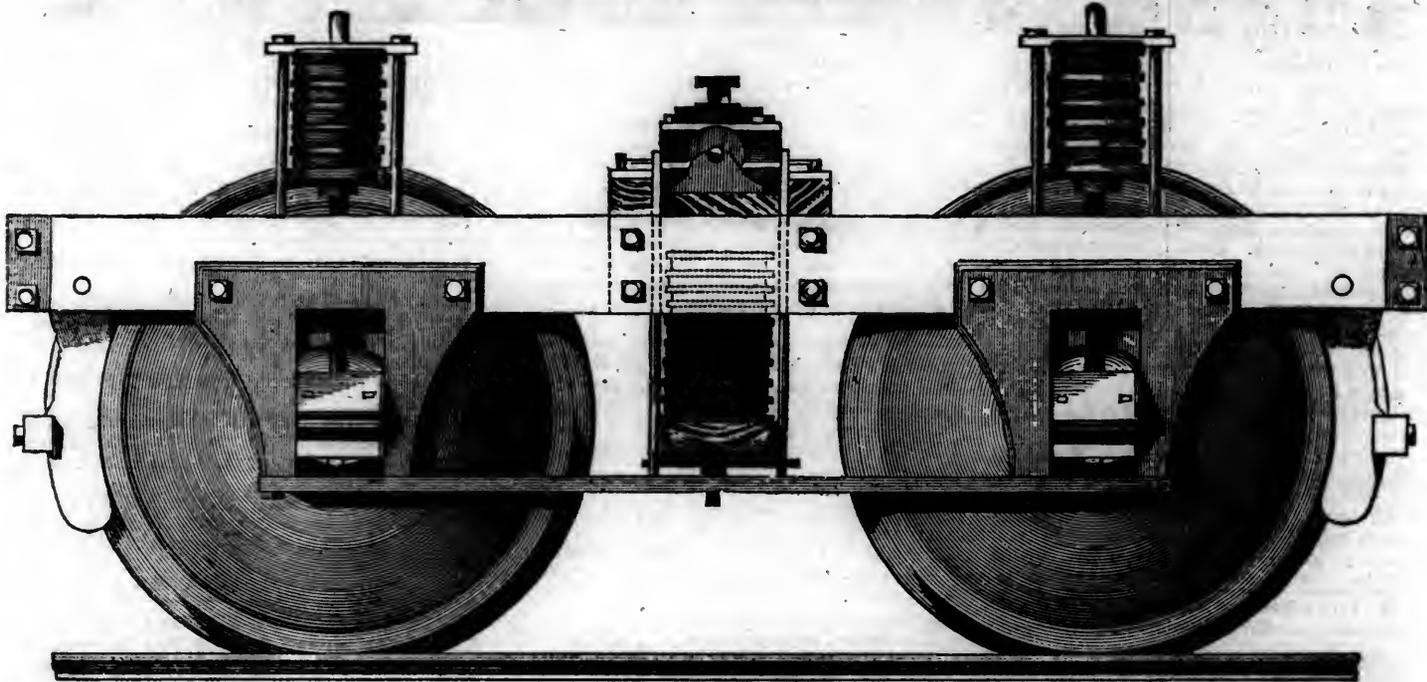
Further information and through tickets for the Stage lines, may be procured at P. Campbell, Agent on Front street, near Broadway.

The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount.

W. H. CLEMENT, Supt.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell this substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, without Goodyear's patents, and the rights of the New England Car Company under the same, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice and uniform and equitable terms. They invite the most careful examination and the severest scrutiny, into the merits of their Springs, whenever they have applied them. And if after such examination, your Company should judge it to their interest to do, then the New England Car Company would respectfully invite the patronage which they think they deserve, and are confident of giving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article, from the pen of Mr. Hale, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material,

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New England special train of the Boston and Worcester railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advance or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the road with which we are most closely connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.

121f
BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office, No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 281f

AMERICAN RAILROAD JOURNAL.
OFFICE AT NO. 98 NASSAU STREET,
(Opposite the Herald Buildings.)
NEW YORK.

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING:

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
D. K. MINOR.

AMERICAN RAILROAD JOURNAL.

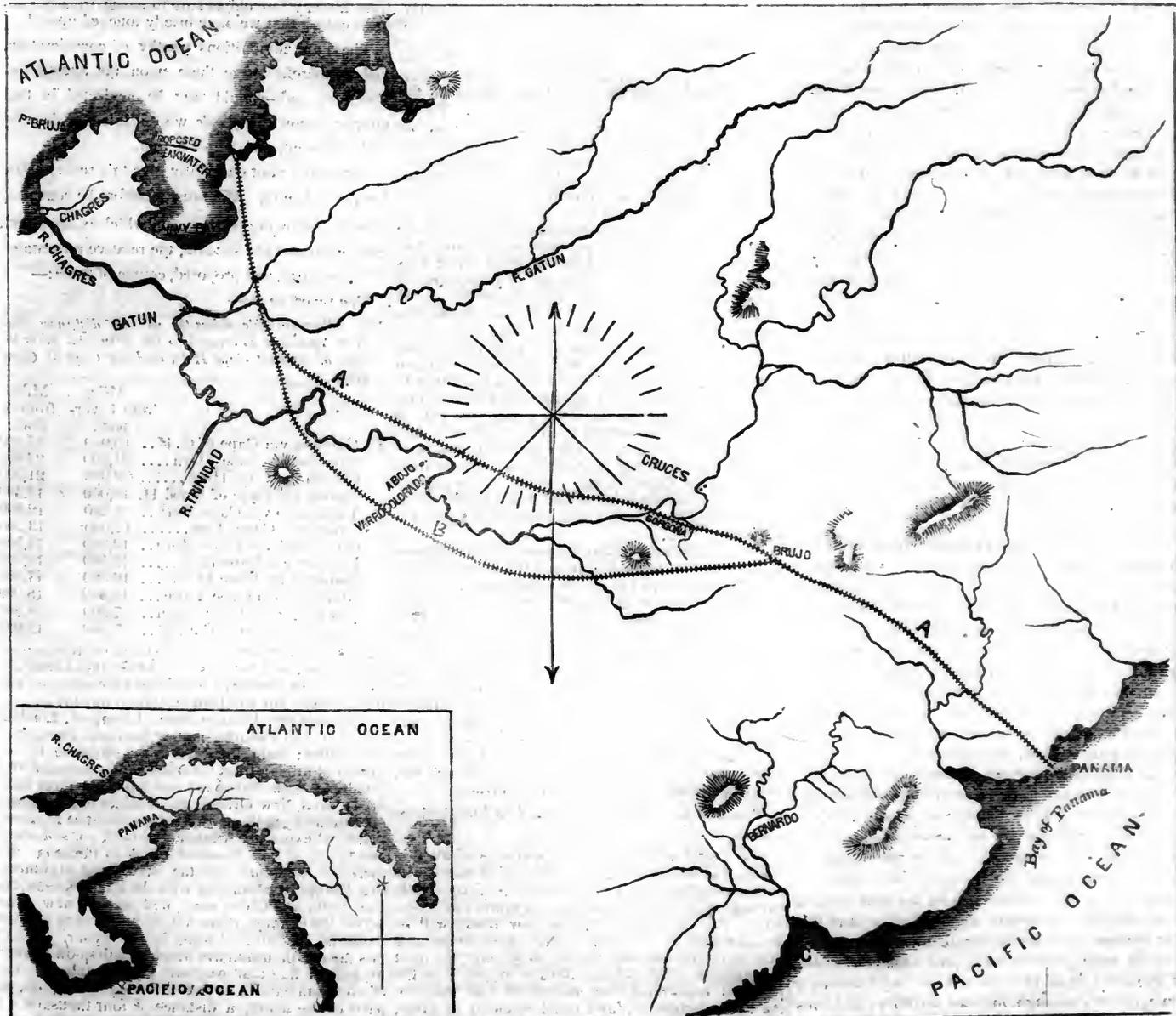
AND

IRON MANUFACTURER'S AND MINING GAZETTE.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 4] SATURDAY, JANUARY 27, 1849 [WHOLE No. 667, VOL. XXII.

PANAMA RAILROAD.—A A showing the probable, and B the possible route of the line. To those not familiar with the bearing of the coast of the Isthmus, the position of Chagres and Panama, will appear to be reversed, but by reference to the small sketch, in the lower left hand corner, it will appear correct. The distance by the proposed road is 51 miles, and the elevation to be overcome 337 feet.



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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 93 NASSAU STREET, NEW YORK.

Saturday, January 27, 1849.

Index for 1848.

We sent with the last number, the TITLEPAGE AND INDEX for Vol. 21—or 1848.

Panama Railroad,

Or the Proposed Connection Between the Atlantic and Pacific Oceans.

We alluded, in our last, to this important work, and promised to give in this number, a sketch of the proposed line, with further remarks in relation to it, which promise we now propose to redeem.

The question of a passage across the isthmus, from the Atlantic to the Pacific, at one point or another, has occupied the attention of able and sagacious men for a very long period; and several examinations have been made by the subjects of some of the European governments, with the view to determine its feasibility—all of which, we believe, have resulted in the opinion that it was entirely practicable; yet in no case has this opinion been acted upon by a commencement of the work; nor have we ever, until now, heard a satisfactory reason assigned for the omission to undertake a work which promised so much benefit to mankind. May we not believe, then, that the work has been reserved for us to perform, that it may thereby be most useful to man? That in our hands it may be made instrumental to the greatest good of all; and to the enlightening, and elevation, and advancement of the descendants of those who first from Europe possessed this continent? We are willing to believe so, and therefore, we would, if possible, be instrumental in promoting its immediate commencement, and early completion. With these views we have had the accompanying map of the isthmus engraved, and give the following extracts from the able report of the Hon. T. Butler King, chairman of the committee on naval affairs, to the House of Representatives at Washington.

From this exceedingly valuable production it will be seen that we now have great odds to contend against, when competing for the trade of the Pacific and Indian oceans—and also that the construction of this work will give us advantages over our rivals far greater than they now possess over us. The spirit of rivalry, however, is not one which actuates us on this subject, but a conviction that the work, when completed, will contribute to the advancement of the intelligence, the wealth, the comforts and the happiness of millions, and therefore it is that we would urge upon congress measures the most liberal, and prompt action in relation to it—not because it is asked for by a few individuals of this city, but because it is required by the interest, and convenience of the American people; and for the prompt action and economy of the American Government, in the protection of its citizens, who are now flocking to our distant possessions on the Pacific—and further because the construction of this work will ensure the early commencement, and rapid completion, of another line of railroad over a more northerly route, entirely through our own territory; and thus open a still more easy and cheap communication be-

tween the Atlantic and Pacific states, and secure the perpetuity of the Union.

By a careful perusal of the following extracts from the report above referred to, the importance of the Panama railroad will be seen, and appreciated, by every intelligent mind; and we trust that congress will grant such aid as will ensure immediate, energetic, and unflinching action, until the rapid car shall supersede the "Indian canoe," and the Spanish "pack mule," between the two oceans. This should be done without delay--of course under proper restrictions, and securing to the government and the people all proper protection in its use.

In referring to the relative advantages of European and American commerce, under the present and proposed circumstances, the National Intelligencer holds the following language, viz:

"For, except within the Atlantic, from positive physical causes, (heretofore scarcely remarked, unless by the private experience of our merchants and navigators) they who inhabit the European shores have a large maritime advantage over us; they lie, nautically, fifteen hundred miles nearer, in both time and sailing distance, to the passage around the two great capes of the world (Good Hope and Horn) than we do. From our coast, to avoid certain regular winds and meet certain others, it is necessary, on either great voyage, to run quite down to the Azores, before steering south. From Europe, on the other hand, they go directly down its coast and that of Africa. This is invariable, and creates a difference of such magnitude against us as not even the brisker genius of our trade can overcome. To explain this matter, the report exhibits tables of the comparative sailing distances from Europe and from our coast to places south of the line or beyond the two great capes. Thus all this part of the matter rests on a plain and downright hydrographical problem—measurements on an artificial globe.

"The same sort of demonstration has only to be applied to the proposed passage by Panama and thence west to India or China, by great circle sailing, in order to show that, while this route greatly shortens the sailing both for Europe and the United States, it flings a still larger odds in our favor than now exists against us; that is to say, the average distance of our great commercial ports from Panama is about 1600 miles; while that of the British and French ports from it is 4700—a difference in our favor of 3100 miles; adding to which our present disadvantages in the long voyage, we have a gain of 4600 miles—equal to 42 days sailing. And this must be doubled, for the voyage out and in.—We have only to add that while the voyage from Liverpool to Calcutta and Canton, by the cape of Good Hope, is 16,000 miles to that and 20,000 to this it is but 13,300 miles to Canton from Liverpool via Panama.

"The new route, then, throws large differences in our favor, as to the China and India trade, and a still greater odds, as to all the western coast of America, where we are now at disadvantage. But this is not all: the voyage to Eastern Asia, New Holland, and all that, can, from Panama, be made by steam, for which the Pacific is exceedingly favorable; and thus Canton can be brought within 36, and Calcutta within 47 days of New York, instead of as now 177 and 159 days. The odds look incredible—but the calculation is really only according to the rate of sailing which the Atlantic steam packets are now making; so that there can be no extravagance about the thing, upon the waters of that smooth sea, and from group to group of its flowery isles."

The able and sagacious editor of the Intelligencer also says—

"We need not enter into the statistics of all this trade, whether present or merely in prospect. Its actual condition and value, as well as the inevitable savings in it, to the extent of many annual millions, which will be effected by the new route, will be found stated in the report. Nor need we remark that, with our obvious destiny to become the most commercial people of the modern world, it is the peaceful achievement of enterprise like this, not the vain, dangerous, and cruel splendor of arms, that must erect for us greatness and glory. Let our

greatness and glory be humane, beneficent; or not be at all.

In addition, however, to this policy—we might better say this necessity—of trade, prescribed to us by the maritime causes which we have explained, and rendering it inevitable that we should counter-vail by an artificial access the natural advantage of our present rivals, we have of late, by reducing Oregon to possession and the acquisition of California, imposed on ourselves necessities of dominion. As only a most accelerated communication with our new and wide regions of the Pacific—that second and separate empire as great as our present one—can enable us to interchange with the population about to throw itself thither the relations and functions of a common government; so nothing but the speedy execution of some plan like this can render our acquisitions there anything but fatal preparations for the early severance of the very possessions which we shall have formed at such cost of treasure, of labor, of the transfer of our resources and population. It is now clear that the country in question is to spring up into rapid prosperity and strength, and therefore with little peopling of the huge wastes that intervene between them and our present utmost settlements of the basin of the Mississippi and Missouri; so that their very celerity of growth must, if unremedied by a readier intercourse in another direction, precipitate that separation from us which some of our able politicians have already foretold as sure to ensue from the natural causes that we have briefly touched upon."

These are admonitions worthy of consideration, and we therefore urge them upon the attention of Congress, and—should they be neglected in that quarter—upon the people whose interests demand early, efficient, and ample action.

We would most cheerfully give this report entire but for its length. We must therefore be content to give the following portion of it, which exhibits, with great clearness and method, the relative advantages of the natural, and proposed, course of trade:—

The report says:—

The following table shows the sailing distances from New York and Liverpool to the principal ports beyond or around Cape Horn and the Cape of Good Hope:—

	Miles from Liverpool	Miles from New York
To Calcutta via Cape of G. H..	16,000	17,500
Calcutta via Cape Horn....	21,500	23,000
Canton via Cape Horn.....	20,000	21,500
Canton via Cape of Good H.	18,000	19,500
Valparaiso via Cape Horn..	11,400	12,900
Callao via Cape Horn.....	12,000	13,500
Guayaquil via Cape Horn..	12,800	14,300
Panama via Cape Horn.....	14,500	16,000
San Blas via Cape Horn....	16,300	17,800
Mazatlan via Cape Horn... 16,500	18,000	
San Diego via Cape Horn..	17,000	18,500
San Francisco via Cape H..	17,500	19,000

The construction of the proposed railroad across the Isthmus will not only do away this advantage over us, now possessed by European commerce and navigations, but will turn the tide in our favor.

The average distance from Liverpool, London, and Havre to Panama is four thousand seven hundred miles; from New York the distance is two thousand miles; from Charleston one thousand four hundred; from Savannah one thousand three hundred; from New Orleans and Mobile one thousand six hundred—making an average distance from our principal exporting Atlantic and Gulf ports of about one thousand six hundred miles to Panama. If, therefore, we admit, for the sake of the argument, that European commerce with the Pacific Ocean, the East India and China seas, will take the new route across the isthmus, there will be a difference of three thousand one hundred miles in our favour. Add to this the one thousand five hundred miles now against us, and we find that we shall gain by this channel of communication, in our relative position to those parts of the world, a distance of four thousand six hundred miles, or of forty two days. In the voyage

out and home we shall have the advantage of our European competitors of nine thousand two hundred miles, and eighty-four days, as compared with the present route.

Table showing the average distances over the new route from Liverpool, London, and Havre, and from New York, Charleston, Savannah, Mobile and New Orleans, to the places named:—

Places.	Average distance from N. York and the other ports above named, via the Isthmus of Panama. Miles.	Average distance from Liverpool London, & Havre, via the isthmus of Panama. Miles.
To Panama.....	1,600	4,700
Guayaquil.....	2,400	5,500
Calao.....	3,100	6,200
Valparaiso....	4,400	7,500
San Blas.....	3,400	6,500
Mazatlan.....	3,600	6,700
San Diego.....	4,100	7,200
San Francisco..	4,600	7,700
Shanghai.....	10,000	13,100
Canton.....	10,200	13,300

This is admitting that European ships will come freighted to the terminus of the railroad on this side of the isthmus, with cargoes intended for the markets of the Pacific and China. That, however, will not be the case. The large number of vessels bound to the ports of the United States for cotton, rice, tobacco, lumber, flour, provisions, &c., will bring the freight for those markets as ballast or cargoes, whence they will be conveyed to the railroad in our fast sailing coasting vessels and steamers, which will also bring to us the commerce of the Pacific.— This is very obvious, because, if European ships were to sail with full cargoes direct to the railroad, they would run the risk of being compelled to return without freight, or come to the United States for it. We are not so much nearer to the isthmus than the ports of Europe, and our means of communication and information will be so frequent and certain, our lines of steamers and coasting vessels so constantly on the alert, and will move with such celerity that heavy European freighting ships will find it quite impossible to compete with them. If this view of the subject be correct, and we believe it is, the construction of this railroad will throw into our warehouses and shipping the entire commerce of the Pacific ocean. Our ports are on the very wayside from Europe to the Isthmus of Panama, and our lines of steamers and packet-ships across the Atlantic will come laden with the freights destined for that channel of trade. The commerce, therefore, from Europe to the East Indies, China, and the west coast of the continent, will be forced to pursue the old route or fall into our hands. The following table shows stronger than language could express it the saving in distance and time which will result to our commerce from the completion of this work, and the advantage it will give to us over our commercial rivals:—

Places.	New route from New York. Miles.	Old route from New York. Miles.	From Liverpool. Miles.
To Calcutta, via Cape of Good Hope....	17,500	16,000	16,000
" Cape Horn....	23,000	21,500	21,500
" Isth. of Panama	13,400	.....	.....
To Canton, via Cape of Good Hope....	19,500	18,000	18,000
" Cape Horn....	21,500	20,000	20,000
" Isth. of Panama	10,600	.....	.....
To Shanghai, via Cape of Good Hope....	20,000	18,500	18,500
" Cape Horn....	22,000	20,500	20,500
" Isth. of Panama	10,400	.....	.....
To Valparaiso, via Cape Horn.....	12,900	11,400	11,400
" Isth. of Panama	4,800	.....	.....
To Callao, via Cape Horn	13,500	12,000	12,000
" Isth. of Panama	3,500	.....	.....
To Guayaquil, via Cape Horn.....	14,800	12,000	12,000
" Isth. of Panama	2,800	.....	.....

To Panama, via Cape H.....	16,000	14,000
" Isth. of Panama.....	2,000	.....
To San Blas, via Cape Horn.....	17,800	16,300
" Isth. of Panama.....	3,600	.....
To Mazatlan, via Cape Horn.....	18,000	16,500
" Isth. of Panama.....	4,000	.....
To San Diego, via Cape Horn.....	18,500	17,000
" Isth. of Panama.....	4,500	.....
To San Francisco, via C. Horn.....	19,000	17,500
" Isth. of Panama.....	5,000	.....

These figures show that the new route across the isthmus will bring us more than an average of ten thousand miles nearer to the East Indies, China, and the ports of South America on the Pacific, and will actually, for all the purposes of navigation and commercial intercourse, bring the ports of the west coast of Mexico, California, and Oregon, fourteen thousand miles nearer to us than they now are!— With steamers on each side of the isthmus that will go fifteen miles an hour—a speed ascertained to be quite practicable—passengers, the mails, and small packages of light and valuable goods may be conveyed from New York to San Francisco in fourteen days, and from our southern ports in less time.— Thus bringing these remote points, for all practical purposes, nearer than New York and New Orleans were twenty years ago.

The average saving of time in our commercial intercourse with the west coast of America, China, and the East Indies, which will be effected by the construction of the proposed railroad, is exhibited in the following table:—

Table showing the saving of time from New York, by the new route, via the Isthmus of Panama, as compared with the old routes, via Cape Horn and the Cape of Good Hope, to the places therein named, estimating the distance which a common trading vessel will sail per day to be one hundred and ten miles, and calculating for the voyage out and home.

To	Miles.	Days.	Miles.	Days.	Miles.	Days.
To Calcutta.....	17,500	318	23,000	418	13,400	148
To Canton.....	19,500	354	21,500	400	10,600	109
To Shanghai.....	20,000	362	22,000	400	10,400	108
To Valparaiso.....	12,900	132	11,400	114	4,800	48
To Callao.....	13,500	134	12,000	120	3,500	35
To Guayaquil.....	14,800	148	12,000	120	2,800	28
To San Blas.....	16,000	160	11,400	114	2,000	20
To Mazatlan.....	18,000	180	16,300	163	3,600	36
To San Diego.....	18,500	185	17,000	170	4,500	45
To San Francisco.....	19,000	190	17,500	175	5,000	50

packets in the conveyance of the mails and passengers. Let this railroad be completed, however, and no part of the world will present as great advantages for the successful use of steam in ocean navigation as the Pacific. Coal is found on all its borders, both America and Asiatic, in the greatest quantity and perfection. Its quiet waters seem to indicate steam as the proper agent to be employed in their navigation. The spirit and genius of the American people, and the extent of our territory on the west side of the continent, proclaim clearly enough that we are to become the legitimate heirs of a vast commerce that shall spread fleets of steam-ships over the bosom of this peaceful ocean.

Steamers, with a speed of twelve miles an hour, would go from New York via the isthmus, (throwing out the fractions)—

To Calcutta in.....	47 days
To Canton in.....	36 "
To Shanghai in.....	35 "
To Valparaiso, in.....	17 "
To Callao in.....	12 "
To Guayaquil in.....	9 1/2 "
To Panama in.....	7 "
To San Blas in.....	12 "
To Mazatlan in.....	14 "
To San Diego in.....	16 "
To San Francisco in.....	18 "

When we consider the remarkable results presented in the foregoing tables, and compare our present condition with what it will be when the proposed railroad shall be completed, and the advantages we shall then possess over all competitors for the commerce of the Pacific and the East, we need not be surprised that European capitalists have refused to lend their aid to the accomplishment of an undertaking which will not only deprive them of the decided superiority which they now possess over us in their intercourse with nine-tenths of the world—exclusive of ourselves—but will place us so far ahead in the race for commercial supremacy that they can never overtake us."

May we not safely assume that the position here advanced, viz:—That European governments and capitalists have mainly refrained from engaging in the work from the apprehension that it would tend more to the advantage of their rival than themselves? If so, then ought we to allow it longer to be delayed? ought we not rather to commence it at once—and to relax not a nerve until it shall be completed? It seems so to us, and therefore we again urge it upon Congress to act promptly, and liberally.

The report adds, "whether any considerations of this nature have been the secret cause of the failure of all the efforts hitherto made in Europe to open a communication across the Isthmus of Panama, we pretend not to say, but we think it by no means improbable that men who now hold in their hands the pursestrings of the world would decline taking any steps which would so evidently deprive them of their commanding position, and transfer the seat of the money power to our shores.

"If a wise sagacity has deterred them from aiding to advance us at their expense, we may justly be regarded as blind to our true interest if we hesitate to adopt such measures as will secure the prize which is offered to us. In all great public movements it is as natural, as it is evidently proper, that every nation should consider well what course of policy will be best. With regard, therefore, to a channel of communication across the Isthmus of Panama, it was to be expected that, while European governments and capitalists would acknowledge its vast importance to the commerce of the world, they would not fail to perceive that its completion would transfer the seat of the commercial empire to the western hemisphere. Hence this scheme of a ship canal has found no favor with them except in empty words whilst a railroad is openly objected to as worse for them than no communication at all. Mr. Alexander Forbes, in his work on California, published in London, in 1839, page 319, says:—

"It has lately been much recommended to make a railroad from Porto Bello to Panama, or somewhere in that vicinity; but the foregoing objections

The employment of the steam vessels would render the contrast still more striking. But the difficulty and expense of transporting heavy merchandise across the isthmus in its present state, and the distance round the capes, render the employment of steam in the carrying trade to the East Indies, China, and the west coast of America quite impracticable. The most than can be done is to employ steam-

exist to this in all their force as to a canal for boats, and I should consider such an undertaking as utterly useless, in a commercial point of view. If, on the contrary, the canal was made capable of admitting vessels to pass through with their cargoes, the delay would be very small, and the expense trifling. Asia would be thereby brought by one half nearer to Europe, and the passage to all the west coast of America and the Pacific islands shortened in a still greater degree. This revolution in the commerce with Asia and the Pacific ocean, if it were to happen, would aggrandize the country of which we have been treating"—California—"in an extraordinary manner."

"Hence is the argument in favor of European commerce. The reader would not be led to suppose there was such a place on the face of the earth as the United States, yet it is precisely because there is such a country that the writer objects, in his heart, to a railroad. If any change is to be given to the course of European commerce with the west coast of America and the East Indies, by a communication across the Isthmus of Panama, it is quite clear that a ship canal would be the only channel that could save it from falling rapidly into our hands, while it is equally certain that our interests point to a railroad, as best suited in all respects to our position and progress."

Cleveland and Columbus, Ohio, Railroad

This road is, we understand, progressing energetically. The grading, bridging and laying the superstructure of the entire road is, we understand, contracted to be done by a highly responsible and energetic company—at the head of which is Mr. Witt, well known for many years past as the manager of the affairs of the Western railroad at its Albany terminus—and is to be completed by the first day of November, 1850. The engines and cars are also contracted for. A large and reliable subscription to the stock of the company has been made by the citizens of Ohio. The cost will be very small, compared with any other road of equal length. It is to have the heavy H rail. Alfred Kelly, Esq., formerly Ohio canal commissioner, and superintendent of construction of the canal extending from Lake Erie to the Ohio river, which cost less for its length and capacity, than any other work in the country, is president of the company. The Cleveland and Columbus road will complete another railroad connection between the Ohio river and the lake.

The Northern N. Y. R. Co., have renewed the application which was pending during the last session of the legislature, to amend their charter, giving them the power to erect a bridge across lake Champlain, and we can hardly imagine that the application will be denied by an enlightened and liberal legislature.

Long Island Railroad.

We understand that the present policy of the management of this road is to secure to it the confidence, and business, of the people of the Island.—There has never been a doubt, in our mind, of the propriety of making the business of the Island the first consideration, and the Boston travel secondary, nor have we hesitated so to speak at all proper times. If properly fostered, and developed by judicious rates and facilities, it will eventually ensure ample business, and liberal returns upon the investment.

The annexed statement exhibits the gross income of this company in each of the past three years:

Long Island Railroad—Gross Receipts.			
	1846.	1847.	1848;
Local Fares.....	\$89,721	106,136	108,955
Local Freights.....	24,932	37,170	43,317
Mails and Express...	3,986	5,286	5,818
Total.....	\$118,639	148,593	158,099

This shows a small annual increase in the gross income; while the expenditures have been largely reduced. The reduction of the debt has reduced the payments of interest, and the economy exercised in

the transportation department has given the company a larger net income from the same revenue. The rent of the Brooklyn and Jamaica road has been reduced from \$33,300 to \$21,000 per annum, payable monthly, and one seventh of the receipts, over and above \$150,000 per annum, until the gross amount of rent shall reach the original amount—33,300—reserved in the lease.

A great extent of land through which the road runs in the middle sections of the Island, to wit, from Farmingdale, in Queens, to Riverhead, in Suffolk county, a distance of forty miles, and covering an area of more than 150,000 acres, is now with but few exceptions, unoccupied and unimproved.—The greater portion of these lands possess all the requisites, under judicious management, aided by the great facilities now offered by the use of the road, for profitable cultivation; and extensive operations are in progress by enterprising individuals, for the immediate settlement of the same by an industrious and frugal class of emigrants, which, when effected, will give a business to the road which no competition can divert from it.

We are informed that there has been a large sale of these unimproved lands consummated within a few days past; that the purchasers are an able and enterprising body of citizens, and that their object is the immediate settlement upon them of German and other industrious emigrants, arrangements to which end are now in progress; it is expected that a large number of them will reach these lands during the present year.

The capital stock of the company outstanding is 43,270 shares, the par value of which is \$50, making an aggregate of \$2,163,4000. This, with the debt of \$446,803 87, making the total amount of liabilities \$2,610,303 98—to represent which the company have 96 miles of road, depots, and running property sufficient for any increase of business.

Let the company adhere to their present policy, of attending to the business of the Island first, and then to the through trade—if other parties will take it at Greenport—and they will make their road both useful and profitable.

Syracuse and Utica Railroad Annual Report.

We have received the first annual report of this company, made in accordance with the general railroad law of New York—which requires much more detail than the previous law requiring annual reports from each company—and we therefore give it entire, except that portion which gives the numerous items of freight, and the tabular statement of receipts and expenditures from the opening of the road, July 3d, 1839, to January 1, 1849—for which, to January 1, 1848, we refer the reader to page 660, or October 14, 1848.

This road occupies a very favorable position, and will prove an exceedingly good investment.

The rates of fare have been materially reduced on this road, and on the entire line from the Hudson to the lake, from which we anticipate favorable results, and, ultimately, a still further reduction.

The increase of business on this road will now be much greater than formerly, as it is prepared for carrying freight, and also as the Oswego railroad will give it a large amount, especially during winter.

Annual Report of the business of the Syracuse and Utica Railroad Company, for the year 1848.—Made in pursuance of a provision of its charter, and also of the Act, entitled "An Act to authorise the formation of Railroad corporations," Passed March 27, 1848.

The Syracuse and Utica railroad forms a part of the central line of railway between the Hudson river and Buffalo. It is 53 miles long, and is now laid with a single track of iron rail of the general average weight of 61 pounds to the yard.

This new track was commenced in 1846, and about two miles of it was laid that year. The grading for such track had been commenced and executed to some extent in the year 1845.

When this new track was commenced, it was determined to prosecute the work in reference to an entire double track of iron, to be laid down as soon as the demands of business should require it.

In the laying of the first track, therefore, a considerable amount has been expended, in the substitution of masonry for wood in the abutments, and piers of bridges; in culverts, in covered drains, and in grading and opening drains on both sides of the road.

The new track is laid mostly upon a gravel bed, on cross ties, or sleepers, without any other wood in the structure.

Several bridges have been rebuilt, with a double track over them. The Erie canal is crossed twice with bridges, both of which are new, one having been built in 1847 and the other the last year. They are each covered, of approved kind, and well built.

The Mohawk river is also twice crossed with bridges, both of which have been rebuilt within the last two years.

Considerable sums of money have been expended in rebuilding water stations permanently, and in obtaining supplies of good soft water. Originally the importance of this was not understood.

There will be required a large additional expenditure in like rebuilding of other stations, and in obtaining further supplies of water.

At several of the stations new freight houses will be required the next year.

When the reconstruction of the road was entered upon, the great importance of improving the grades was apparent, and it was resolved to improve them wherever it could be done within the reasonable means possessed by the company.

As this road was originally located upon a low tract of land, in order to obtain the most level and direct line, a considerable part of which is swampy, it will require a large annual outlay in gravelling across these low lands, in order to make a firm road bed.

Our experience has shown that the nearer it is possible to come to the level, in the grade line of the road, in that proportion is the business upon it carried on with economy and certainty. A large amount of money has therefore been expended to reduce the grades wherever it was practicable to do so.

About twenty-two miles of new track was laid before the year 1848. During that year about thirty-one miles of single track has been relaid, besides a considerable extent of branches and the commencement of the double track in three places. In all about four miles of the second or double track has been laid during the past season, so that there has been equal to 35 miles of single track laid exclusive of branches and turnouts, during the year.

The relaying of the track at the same time that the regular passenger business of the line was kept up, and which required six trains

daily over the road, has required the steady employment of five engines, with working trains, in the grading and graveling of the road and in the moving of materials.

The number of men employed daily upon this work during the season of laying the track, has generally not been less than 500, and a portion of the time much above that number.

The iron first laid upon this road was the flat bar of 2½ inches wide by ¾ of an inch thick. It has been used about nine years.—As fast as the new rail was brought into use, the flat bar was taken up and sold. It was found that the loss by wear upon this rail was about 300 tons out of 2000.

Double Track.—In order to carry out the intention of laying a double track, the directors resolved to increase the capital stock of the company by the addition of five hundred thousand dollars, thus making the capital two millions of dollars. The first call of 10 per cent. on this increase was payable on the first of December last. The opening of the railroad between Syracuse and Oswego it was supposed would afford a considerable additional business. Safety also demands a double track as soon as the business of any road will justify it. With a double track from Syracuse to the Hudson river, the trains may be divided, thereby lessening their great weight, and increasing the accommodation to the public.

It will require about 5000 tons of iron additional to lay this track. The iron is all contracted for in England, and over 1000 tons of it is delivered, free of all charge, is equal to about \$47 per ton. The weight of this bar is nearly 70 pounds to the yard.

The iron for the first track was all made in this country. The cost of 5000 tons contracted in England and now arriving, is more than \$100,000 less than that of the same quantity made in this country. The iron last purchased has been subjected to such tests as to give confidence to its quality.

It is intended to proceed in laying down this track as soon as the weather will permit, in the ensuing spring, and it is to be hoped that the whole may be laid during the year.

Locomotive Engines and Cars.—The company has fifteen locomotive engines, six of which are new and of the first class. They are of an average weight of about twenty tons each. Four are of less dimensions and of the second class. Five are of still less capacity, and are of the third class. All these engines are in working order, and the whole number is considered adequate for the road for some time to come. Since the Oswego road has been opened, this company has supplied the motive power for all its business.

In addition to this, a portion of the engines having become disabled on the Auburn and Syracuse railroad by accident, this company has daily supplied the requisite power to do the freight business since the ninth day of November last. The supply of engines would therefore seem to be ample for the business of this company.

Passage, Freight, and Gravel Cars.—The

stock of passenger cars is seventeen 8 wheel and nine 4 wheel cars, which will be sufficient for the business for some time to come. Having added seven of the best class of cars the last year to the former outfit, it is believed that in this respect no additional outlay will be required, at least for the present year.

The stock of freight cars is also abundant for the present business of the company. It consists of 86 covered 8 wheel cars, and of 19 open 8 wheel cars, and 18 open 4 wheel cars.

This is quite equal to our proportion upon the line, and as the most of them stand idle during the summer, it is not anticipated that there will be required any additional outlay for this service for the year. While alluding to the fact that these cars stand idle during the summer, it is deemed proper to state, that it has been found necessary to construct very extensive buildings to preserve them from exposure and decay while not in use. There are covered in these buildings more than 1800 feet of double track (or more than two-thirds of a mile of single track). And these are filled for five months in the year with cars that are out of employment. A good covered 8 wheel car for freight, such as the company uses, costs about \$700.

The company has 65 of 4 wheel gravel cars, which are necessary for the grading, graveling, and reconstruction of the road.—They have cost at least \$10,200.

Canal Tolls, and Freight.—The canal tolls imposed upon this line of railroad, have the effect largely to diminish the business of transportation. They are always added to the price charged by the company, and are of course paid by the producer, consumer, or owner of the property transported. Very much of the property carried upon the railroads is of a class that never was carried upon the canal, and to the transportation of which that means of conveyance is not adapted. Pork in the hog is carried upon the railroad to a considerable extent. The expense of packing is saved. It sells as soon as killed at a higher price than could be obtained if it was kept till the spring, when the cheap fatted pork of the Western States reduces the price. Poultry, fresh fish, and other fresh meats, are also sent to market by railroad. In addition to this, fat cattle, sheep, and hogs, are all carried alive upon the railroad. The waste by driving is saved to the owner. In all these, and many other articles that cannot be sent by the canal, a large new encouragement might be offered to the farmers of the interior, if the railroad companies were able to carry them without toll. The price of transportation would be so much reduced as to increase the quantity sent to market. If the railroad company can by the transportation of property derive a portion of the necessary revenue, then it can reduce its fare for the transportation of passengers to a corresponding amount. It will be found that wherever low fare is charged upon railways in other States, the transportation of property form a large part of the whole business.

The following fact shows the effect of claiming canal tolls upon this line:

This company has lately been applied to, from Cortland county, for the price of transportation of butter by railroad to New York, in order to compare it with the price charged from Binghamton by way of the Erie railroad. The canal tolls must determine the question; and hereafter, much of such property in this intermediate range of country will, to avoid tolls, be sent by the Erie railroad, which otherwise would go by this route. The tolls will become, in that event, a legal discrimination against this line, and against the trade of the towns along its route.

Passenger Trains, and Interruptions by Cattle.—As soon as the new rail was laid so as to allow of an increased speed, a meeting of the representatives of the several companies comprising the line was held at Syracuse, and a schedule of time was arranged, to take effect on the 23d day of October last; and on the day appointed, the several companies commenced operating the line according to the new schedule. Since then the company has kept its business up to the time agreed upon, with much uniformity. It is believed that the trains are run with as much regularity, and at a speed equal to most of the important lines of railway in the country.—The great number of stops required for the delivery and receipt of mails, and for way passengers, will preclude a higher rate of speed, if all such stops are to be made as heretofore.

It has been supposed that express trains would be run for through mails, and for through passengers, which shall only stop for the necessary supplies of wood and water. In this way only can a higher rate of speed be attained.

As has heretofore been suggested by this company, in reports made to the legislature, there is great hazard in attempting a high rate of speed, on account of cattle and other domestic animals, which are allowed by their owners to run at large. They will stray on to the railroad, if so allowed, though the greatest care may be exercised by the company to prevent it. It is entirely impossible to watch all the fences at night. Cattle and horses will break them down—and the owners of the adjoining lands are often unmindful of their own fences. In the night it is not possible to see them in season to stop and avoid them. With the present iron rail and the track filled up to within two or three inches of the top of the rail with gravel, the train is very liable to be thrown off when running over any obstruction. The hazard of injury to passengers from this cause is greater than from any other, and it will be increased in proportion to the speed, if the owners of domestic animals are not required to restrain their going at large. It is the decided opinion of many persons of sound judgment and experience, that cattle guards, as they are constructed by excavating the track, and required by the general law, are not safe or proper. Whenever cattle get upon the track, and run before the trains, as they are most sure to do, they are generally killed in these guards. This very often occurs. As the nature of the business, and the reasonable

demands of the public are entirely inconsistent with the uncontrolled running at large of cattle; and as the company is held to strict liability to the passenger in case of injury, it is submitted that owners of cattle should keep them enclosed or abide by the consequences. The are required by law, in the State of Massachusetts, to take care of cattle, and to keep them off from the railroad, under penalty.— Accident from this cause is rare in New England, as we are advised.

Rate of Fare.—At the same time that the arrangements for increased speed were made, the fare of passengers was reduced upon this road twenty-five per cent. This was as soon as it could be done—because, if it is to result in an increased business, it was indispensable that the iron track should be completed before there was an attempt to provide for a larger business. The reduction took effect on the 1st day of November, and it is hoped that it may produce a satisfactory result. It will require time to test its effect. The present rate of fare on this road is less than three cents per mile for first class passengers.

Two dividends have been made during the year: One of four per cent. on the capital on the 15th of February, amounted to forty thousand dollars. The other was made on the 15th of August last, after the capital had been increased to one million five hundred thousand, and amounted to sixty thousand dollars.

The company has four engine houses.— Those at the terminations of the road are large. One at Oneida and one at Rome are designed only for a single engine. The one at Rome has not been used as an engine house for the past season, and will be applied to some other purpose hereafter.

There are three shops on the road for the repairs and alterations of engines and cars.— The principal shop is at Syracuse. There is one at Oneida and another at Utica.

The number of engines and cars has been stated above.

There were two regular passenger trains daily upon the road each way until the 26th day of April, when a third train was put on. The third train did not run on Sunday. Since the 16th of July another train was taken off on Sunday.

The whole number of miles run by passenger trains during the year, was 100,594 miles.

The whole number of mile run by freight trains during the year, was 49,000 miles.

The whole number of miles run by all other trains, was 54,000 miles.

Whole number of miles by engines and trains, 203,594 miles.

The average number of men employed during the year has been about 550. These consisted of mechanists, blacksmiths, carpenters, joiners, car-makers, superintendents, clerks, engineers, and common laborers.

Statement of the number of persons injured in life or limb during the year 1848.—A man by the name of Matthew Conoly was found on the track at Oneida after he had been run over by the train. He died soon after. He was an intemperate man, and was supposed

to have been intoxicated when he was run over.

A man by the name of John Downwald was found dead upon the track west of Rome. No account can be given of the manner of his death, whether he was laying upon the track resulting from a fit or disease, or whether he was run over when walking. The engineer did not see him, and the best inference is that he must have been laying on the track.

A boy at Rome was jumping on the cars contrary to directions, and fell under the wheels. He was so injured that he died in a few days.

Three laborers upon the road have been seriously injured by falling under the trains and being run over. They were all employed upon the gravel trains. Two of them were injured in jumping on to the trains when in motion. One of them fell from the gravel car when standing up. The men were always cautioned against exposing themselves, but is impossible to make them take proper care.

A passenger on approaching the Manlius station, jumped from the train when in motion, against the caution of the conductor, and was somewhat injured.

Another passenger at Green's Corners, not getting on to the train in season, attempted to run after it, and in doing so fell into a culvert and was injured.

None of these accidents in any measure arose from the carelessness or negligence of any person in the employment of the corporation.

The several tables hereto annexed, and which forms a part of this report, show the several matters as to which explanations and a report are required to be made.

Statement of "the amount expended for the purchase of land, for the construction of the road, for buildings, and for engines and cars, respectively," by the Syracuse and Utica railroad company, in the year 1848.

Amount expended for land.....	\$4,583 16
For construction of new track.....	\$302,313 76
" Permanent fixtures, including buildings.....	9,455 11
" New locomotives.....	39,583 72
" New freight and other cars.....	35,464 01
" New passenger cars.....	13,969 69
" construction of second track.....	46,000 00

Statement of "the amount and nature of indebtedness, and amount due the Syracuse and Utica railroad company," made Jan. 1, 1849.

The company owe the sum of \$80,000 on bonds which were issued two years ago.— Half of this is due January 1, 1850, and the remainder January 1, 1851. The money borrowed on these bonds was applied to the purchase of iron, &c., for the new track.— The interest is payable half yearly.

In the progress of the business there is a constant indebtedness from month to month, and which is mainly paid every month. All the labor employed on the road, of every description, is paid monthly. There are, however, running accounts for materials, for sup-

plies, etc., that are not always actually paid every month; though they are payable on demand. Of this nature are accounts for engines, cars, oil, iron, etc.

Amount due to the Corporation.—There is due to this company from the Albany and Schenectady railroad company the sum of \$3658 41, payable in five annual payments, with interest.

There is due to this company from the Oswego and Syracuse railroad company an amount unadjusted, for the use of engines and cars, and for the construction of an embankment at Syracuse.

There is due from the Auburn and Syracuse railroad company an amount unadjusted, for the use of locomotive engines, and the service of men on the engines in drawing freight from and to Auburn since the 14th day of Nov. last.

There is due to this company, from sundry persons, the sum of \$29,453 58 for old iron sold them.

There is due to the company, from Samuel R. Allard, of Canastota on bond and mortgage, for land sold to him, the sum of \$400 58.

The foregoing embraces the amount due to the company, except the current monthly dues for freight, which are paid generally during the month for the earnings of the preceding month, and also except the amount due for the transportation of the mail. This compensation has not been paid regularly, and it is claimed that a sufficient allowance has never been made by the post-office department.

Statement of receipts by the Syracuse and Utica railroad company in the year 1848.

98,889½ through passengers to Oct. 31, 1848, at \$2.....	\$197,779 00
15,261½ thro' passengers to Nov. and Dec., at \$1 50.....	22,892 25
114,151 total thro' passengers	220,671 25
27,290½ Emigrant passengers,	22,232 40
75,369 Way " "	53,928 33
216,807½ Total pass'rs.	296,831 98
Received for trans. of Freight.....	70,491 60
" " U. S. Mail,*.....	13,876 38
" Miscellaneous sources,....	2,169 83
" Sale of old materials,....	21,301 65
" 1st issue of New Stock,....	223,000
" 1st instal'm't on 2d issue of New Stock.....	50,000
	\$677,671 44

* This amount includes the earnings of previous years, which has not heretofore been promptly paid.

Statement of amount paid out for repairs, engines, cars, buildings and salaries, by the Syracuse and Utica railroad company in 1848.

The amount paid for salaries is \$2850 yearly, and is included in the table on page 16, under the head of "Superintending," etc. All the other officers of the company are paid monthly, and hold their offices from month to month.

The amount paid for repairs of road, which includes repairs of all buildings, is.....	\$22,323 03
" Locomotive engines.....	12,823 76
" Passenger cars.....	2,701 20
" Freight and other cars.....	6,426 21

Statement relative to the Syracuse and Utica railroad company, made pursuant to the 16th section of the Act entitled, "An act for the construction of a railroad from Attica to Buffalo," passed May 3, 1836.

Amount expended for construction of old track, and for land, to Jan. 1, 1848, as per statement last year... \$1,102,582 18
 Amount expended for land in 1848... 4,582 16

\$1,107,165 34
 The total cost of construction, including the above, and including first new track, buildings, outfit, and permanent fixtures, to Jan. 1, 1849... \$1,892,036 42
 Add amount expended on account of 2d track..... 46,000
 And amount charged to "depreciation of property," Jan. 1, 1845, for reduced value of engines, cars, &c. 30,000

\$1,968,036 42

There is a large constant depreciation of property, and at this time there is an amount at least equal to \$350,000, that should be set to that account. The old superstructure is entirely gone, except what was derived from the sale of old iron. The engines and running property are constantly depreciating, and every few years large additions are required.

The following is an account of all monies expended for the purposes of the road, for repairs, and otherwise, in 1848.

Superintending, collecting & clerk hire	\$5,641 20
Baggage and station hands.....	8,000 96
Engineers and firemen.....	11,692 69
Fuel for engines.....	25,582 06
Oil.....	3,246 82
Repairs and alterations of engines....	12,823 76
" " passage cars..	2,601 20
Cattle killed on road.....	385 00
Repairs of roadway.....	22,323 03
Incidental to transportation.....	16,360 74
Taxes assessed on road.....	9,352 04
Repairing locomotive and shop tools..	711 38
Repairing freight, stake, and dirt cars,	6,426 21
New " " " " " " " " " " " "	35,464 01
" passage, baggage, and mail " " "	13,969 69
" track.....	302,313 76
Permanent fixtures.....	9,455 11
New locomotive engines.....	39,583 72
Interest on bonds.....	5,460
Second track.....	46,000

\$577,383 38

Income of the road for the year ended Dec. 31, 1848.

Received for the trans'n of passengers	\$296,831 98
" " freight....	79,491 60
" " U. S. mail,	13,876 38
" miscellaneous sources.....	2,169 83
" sale of old materials.....	21,301 65
" new stock.....	273,000 00

\$677,671 41

JOHN WILKINSON, President.

Syracuse, January 11, 1849.

FACTS BEARING ON THE RAILWAY SYSTEM.

By Wyndham Harding.

Many years experience on some of the best English railroads, must necessarily enable an intelligent and observing man to speak and write many facts, which may be useful to all engaged in the management, or interested in the profits, of our American railroads—therefore we give to our readers the following article by WYNDHAM HARDING, Esq., which we find in the London Railway Chronicle, of October 7th, 1848, with the remarks of the editor of that valuable Journal, preceding it. We have but one object in republishing these long arti-

cles from the English Journals, viz:—to give our readers an insight into the working of the system in England, where they have the means, and apparently the disposition, to try experiments, from which much good often results—we hope therefore that Mr. Harding's "facts" may be examined and tested by some of the able engineers in the management of our American railroads; and we also request them to make this Journal the medium of communicating to the public the result of their examination of his views and facts—as in no other manner, it seems to us, can they better compare the working of the American with the English railway system.

"We have received the following account, says the Railway Chronicle, of an elaborate paper read at the last meeting of the British association, by Mr. Harding. We had intended to make some observations on it, but we find it is better to print it as we have received it, lest our own observations should either oblige us to abridge and spoil the paper to compass its printing, or to run it out to a length rendering it necessary to divide it into two or more numbers. The statements it contains, if carefully collected, are highly favorably to the railway system, and fix us in that opinion which we have always held, namely, that, if the railways be well managed, they are sure to rally with the return of prosperity, and hold as high a position as they have ever held. Time, and a little confidence, are wanted to bring them round. The fact that strikes us forcibly on this point is, that the number of passengers, per mile, have actually increased with the increase of railways. That Mr. Harding has established in two such years as '43 and '47, the former being a year of growing prosperity, and the latter one of declining, the panic year, when the number of miles opened was more than double. The average distance, too, travelled by each passenger is greater in the latter than in the former year. That, however, may be met by a reduction of fares. The question to the shareholders would be, what has been the annual profit per mile, or rather per cent. That is the true test of the success of the system. Mr. Harding does not appear to have touched this point.

"Our author is a strong advocate for the low fares, and, within limits, he is right—That has been pretty well proved. Low fares must not, however, be indiscriminately applied. Where there are the elements of traffic in a great degree, and where they only want to be brought out, low, or rather reasonable fares, would be the best means of doing it; but in a limited traffic low fares would do very little good and may do harm. For example, of what use would it be to set up very low fares between two insulated towns of limited trade and population! People will not travel simply because the travelling is cheap. Mr. Harding is aware of this, for, in the remarkable case of the Glasgow and Paisley railway, which he has cited, he distinctly says, that the same system might not produce the same results on lines in other localities. We quite agree with him. There is, no doubt, a fare peculiar to every district, which will produce the maximum profit, but the difficulty is to find it. The peculiar fare,

possible, is not constant, but varies with the times.

"The modern railway system of Europe may be said to date from 1830, when the construction, by Mr. G. Stephenson, of the Liverpool and Manchester railway, with its locomotive engines, was completed. After that date we heard no more of such prophecies as the following (from the Quarterly Review, in 1835,) which it is not useless to record as a lesson of caution to us for the future:—'As to those persons who speculate on making railways generally throughout the kingdom, and superseding all the canals, all the wagons, mails and stagecoaches, postchaises, and in short, every mode of conveyance by land, and by water, we deem and their visionary schemes unworthy of notice. What, for instance, can be more palpably absurd and ridiculous than the following paragraph'—in which a prospect is held out of locomotives travelling twice as fast as stagecoaches. 'We should as soon,' adds the reviewer, 'expect the people of Woolwich to suffer themselves to be fired off upon one of Congreve's ricochet rockets as trust themselves to the mercy of such a machine, going at such a rate.' The modern railway system has, however, not only done this, but it has given rise to new habits in the present generation, and has proved to be the great mechanical invention of the nineteenth century, as the steam engine was of the eighteenth. As it is still in its infancy, it is especially the province of statistical inquiry to watch its growth, so that on the one hand timely remedies may be applied to its defects, and on the other, free scope may be given to its beneficial tendencies. Valuable papers have been contributed by Messrs. Laing, Porter, Graham, and others, analyzing the traffic on railways during the infancy of the system to the year 1843. Shortly before that period there had been a pause in railways. During two years only five miles had been sanctioned, but the period which has since elapsed comprises the memorable mania years of 1845 and 1846. Under this excitement intelligence and emulation have been stimulated among the managers of railways to the utmost, and the system has rapidly advanced. The consolidation of lines under a few great companies, by the process styled amalgamation, has proceeded; the atmospheric, an entirely new system of traction, has been brought forward: the electric telegraph, conveying intelligence at the rate of 280,000 miles a second, has been widely introduced; express trains, travelling at nearly the highest attainable speeds, have been established—and the length of railways in operation has been doubled. It therefore becomes a matter of interest to inquire to what the results of so active a period point. Have low fares answered? Has the third class traffic, the most important to the bulk of the people, been encouraged, and has it been found wise, not only for the users but for the owners of railways, to encourage it or the reverse? Has the increase of speed been successful, and are we likely to travel faster or slower hereafter? How have the receipts kept up while the length of railway

has been doubled? Did the first 2,000 miles get the cream of the traffic, as has often been thought, and has the average receipt per mile consequently fallen off? Should the experience of the past, in short, give us confidence in urging on the system at the extraordinary rate at which we are now doing it, or not? In the following investigation and collection of facts it has been attempted to throw some light upon these points: the recent publication of the official railway returns for 1846 and 1847 afforded peculiar facilities for the purpose. The following paper refers to English, Scotch and Welch lines only—the Irish lines are excluded, the economical condition of Ireland being different from that of this country, and there being but few railways open in that country:—

Comparative Lengths of Railway open in 1843 and 1847, and Receipts thereon.

The lengths of English, Scotch and Welch railways open June, 1843, were.....	1,990
Ditto, open at the commencement of 1848.....	3,597
The gross receipts returned for the year 1842, were.....	£4,740,000
Ditto for the year ending, June 30, 1847.....	8,326,772

“After making the necessary corrections in the above figures, the average receipts per mile of railways in 1842, were £2,489; in 1847, £2,596. We therefore arrive at the important fact, that, although the mileage of our lines has been doubled, the receipts have been more than doubled. This must be regarded as a favorable general feature in the state of railways. There was much reason to fear that, as the first railways ran between the great towns, or traversed the manufacturing districts, the railways which were next opened would show a great falling off in receipts. Hitherto, then, we find that this is not so—a fact which may give us confidence as regards the great length of railway which has been sanctioned by Parliament, but which is not yet open.

Lines Sanctioned but not Open—The length of railway sanctioned by Parliament at the commencement of 1848, but not then open, was 7,150 miles. a considerable portion of this is in progress, more or less rapid. On the 1st of May, 1847, 5,209 miles were returned as in progress, on which 218,792 persons were employed, or 42 per mile.*—These new railways are principally designed for the accommodation of the agricultural parts of the country. We will presently refer to the prospects of railways in such districts. When the railways now in contemplation are completed and it is probable that the greater portion will be so in the course of the next five years, we shall have upwards of 10,000 miles of railway open—on which, judging from the numbers employed on lines now open,† (viz., 14 per mile,) 140,000 persons will be permanently employed, at good wages—representing, at five to a family, three quarters of a million of the gross population. The importance of this addition to our internal communications will be appreciated, when it is remembered that there are only about 4,000 miles of inland navigation and 30,000 miles of turnpike road open for traffic in the country.

Analysis of Traffic—General Features. The gross traffic for the year ending June

30, 1847, was, as we have seen, £8,366,000. There were conveyed, during that year, from the returns of the Board of Trade, in round numbers, 7,000,000 tons of merchandise and goods, 8,000,000 tons of coal, 500,000 horned cattle, 1,500,000 sheep, and 100,000 horses.

Of the gross sum, £8,366,000, the passenger receipts were.....	£5,024,000
The receipts from all other sources—goods, cattle, carriages, parcels, mails, &c.....	3,342,000
	£8,366,000

In every £100 of receipts, the passenger traffic, therefore, forms 60 per cent.; the traffic receipt from other sources, 40. In 1842, these proportions were as 64 to 36. The proportions of traffic receipts from other sources than passengers (being principally goods and cattle traffic) have thus increased, since 1842, as 40 to 36, or 11 per cent. The total number of passengers carried in the year (ending June 30,) 1847, was 47,484,134, as compared with, in 1842, 22,403,478. The average distance travelled by each passenger was, in 1842, 13 miles; in 1847, it was 16 miles. the numbers and proportions of classes were—

	In 1847.	In 1842.
First class.....	14.2	20.2
Second class.....	38.3	45.4
Third class.....	47.5	34.4

Thus, the third class passengers (which have increased in number since 1842, from 6,000,000 annually to 21,000,000,) now form nearly half of the whole number travelling, whereas, in 1842, they formed only about one-third. Only one-third of the third class passengers have availed themselves of the Parliamentary trains, arbitrarily, (and, as it appears to me, unfair,) imposed upon railway companies in 1844. The following table, comparing the fares of the metropolitan railways in the year ending June, 1843, with those in the year ending June 1847, shows the great reduction which has taken place in fares during the last four years. To make the comparison more appreciable, the fares are taken as for 100 miles in pence.

Railway.	Fare for 100 Miles.					
	1st. Class.		2nd Class.		3d Class.	
	1843	1847.	1843	1847.	1843.	1847.
London & North-western.....	334.8	218.1	241.2	144.6	131.2	93.3
Great Western.....	303.1	274.4	208.5	187.8	118.3	100.0
London & South-western.....	312.0	245.0	210.0	168.0	120.0	96.0
Eastern Counties.....	294.1	210.0	227.4	141.5	164.7	93.3
North'n & Eastern.....	217.4	—	165.4	—	110.6	—
Southeastern.....	227.0	214.0	150.0	152.0	87.5	90.0
Lon. & Brighton.....	350.0	263.0	225.0	171.0	150.0	109.0
Average.....	303.5	237.4	210.3	160.8	128.6	96.7
Difference per ct. —	—	21.8	—	23.8	—	25.0

This reduction in fares, coupled with the increase in the number of trains, and the speed of travelling, must be regarded as the principal cause of the great increase of the number of passengers since 1848.

“We have already seen that the numbers in 1847 and 1842, are as 47,484,134 to 22,403,478. If we take into account the number miles opened at those dates respectively,

the annual number per mile was in 1842, 11,772, and in 1847, 14,806.

The proportion of third class passengers has, we have seen, thus satisfactorily increased between 1842 and 1847. The third class traffic has, however, developed itself very differently on different lines; and it may be well to inquire into this. The statement subjoined, shows the third class traffic of two Metropolitan companies—(the Eastern Counties and the Great Western;) two North of England companies—(the Lancashire and Yorkshire and the Newcastle and Berwick;) and two Scotch companies (the Edinburg and Glasgow and Glasgow and Greenock.)

Year ending June 30, 1847.

Name of Railway.	Length in Miles.	Number 3rd class Passengers conveyed.	Proportion in every hundred of 3rd class Passengers
Glasgow, Paisley & Greenock.....	..	059,534	83.3
Newcastle & Berwick.....	65½	944,890	79.5
Edenburgh & Glasgow.....	46	836,025	72.8
Lancashire & Yorkshire.....	109	2,090,624	72.3
Midland.....	285	2,366,892	65.4
Eastern Counties.....	177	1,044,158	50.3
Great Western.....	104½	419,663	14.6

From this it appears, that the Great Western company, on a line 241 miles long, have only carried 419,663, the Edenburgh and Glasgow company, on a line 46 miles long, have carried 836,025; the Midland company, 285 miles long, 2,366,892; and that while, on the Great Western, only 15 out of every 100 passengers conveyed are third class, on the Eastern Counties 50 out of every 100, and on the Glasgow, Paisley, and Greenock, 83 out of every 100, are third class passengers. Although it is true, that the different character of the population and other circumstances will affect, to some extent, the relative number of third class passengers on different lines, the disparity here is so great, that we can come to no other conclusion, than that the arrangements of such a line as the Great Western as to third class passengers must be such as to preclude hundreds of thousands of third class passengers yearly from using the railway who, with greater facilities, would be glad to use it. I say this with confidence, because, as manager of the Glasgow and Greenock railway, where the third class system has been more developed than on any line in the country, (and where we carried passengers at a profit for one farthing a mile,) I had an opportunity of observing the real advantage and comfort which very cheap travelling is to the working class. As the results of the working of that line afforded a remarkable instance of the effects of low fares, I have thought that it might not be uninteresting to record them. The river Clyde

* In this return, the number of miles returned as in progress, are more than those really in construction, the number of men employed per mile is less than the truth.

† These returns are not complete, and they require some correction, in respect to the same articles being sometimes conveyed over several different lines, and therefore counted over more than once.

runs beside the Glasgow, Paisley and Greenock railway, which is 23 miles long. The steam boats have long afforded an excellent mode of transport between Glasgow and Greenock, the fares by boat before the railway opened being from 1s to 2s, and the time occupied was about two hours. Glasgow, with a population of 270,000, was at one end of the line, Greenock, with a population of 36,000, at the other end of the line, and various summer watering places, lie at the mouth of the Clyde; below Greenock. On the line where Paisley (population 60,000) and Port Glasgow (population 7,000.) Between Glasgow and Paisley was a canal on which there were passenger boats drawn by horses at a speed of six miles per hour. These facilities gave rise to a great traffic before the railway was opened—the yearly number travelling along the course of the railway being 1,185,340, and the average fare 1s 4d. Notwithstanding this, after the railway was opened (in 1843) the numbers travelling by all means of conveyance were found to exceed 2,000,000, or to have increased 100 per cent., the average fare having in the meantime fallen to 10d. This was the gross result; but the fares of the railway (originally 2s 6d, first class and 1s 6d, second class for 23 miles) were varied from time to time; and as I closely observed the effects of these variations, having caused an account to be taken of the number travelling by steam boat and canal as well as by railway, it may be well to state the results of these variations of fares:—

First Alteration.—In 1842, uncovered, open, third class carriages, at a fare of 6d for the 23 miles, or about 2d, per mile, were introduced on the railway between Glasgow and Greenock, where upon the annual number of railway passengers between those places increased 224,000; being an increase of 32 per cent. of the total number travelling, either by railway or steamboat. The number of first and second class fell off at the same time 30 per cent., the passengers having transferred themselves from the higher class carriages into the open third class carriages, tempted by the difference of fares between 4 5d per mile and 2d per mile. The gross receipts, however, increased simultaneously 15 per cent.; the working expenses, on the other hand, did not appreciably increase, although the average number of passengers, per train, increased from 72 to 117.

Second Alteration. The third class fares were subsequently, in 1843, raised from 6d to 1s, with the hope of increasing the revenue. The whole number travelling by railway and steamboat immediately fell off 18 per cent. The first and second class railway passengers increased by 10 per cent., but the gross receipts fell off more than 10 per cent. The effect was also tried of making the third class carriages more comfortable, by covering them in. This was found not to increase the number travelling, but it did reduce the number of first and second class passengers by 16 per cent., and therefore caused considerable loss to the company. The same experiment was repeated on the second class

carriages; they were made more comfortable by inserting glass windows instead of wooden shutters, and by carrying the interior partition higher. The number of first class passengers shortly fell off by 12 per cent.; but beyond this the second class passengers did not appreciably increase; this experiment, therefore, also resulted in loss. The results of these experiments were then—1st. That a reduction of fares to 2d per mile even from so low a rate 2d per mile increased the number travelling, by nearly a quarter of a million, or by two-thirds of the whole population of the district. As these people were generally of the less affluent classes, it appears that they were actually drawn out of the noisome streets of Glasgow to the north of the Clyde, by the temptation of a very low fare, and immediately that the fare was raised they were driven back again into the city. 2nd. That under the circumstances of the line in question, cheap and rapid travelling increased the number travelling; but improving the lower priced carriages did not, however, appear to act in the same way, but merely tempted passengers from the higher class carriages—those from the second class into the third class carriages, and from the first to the second class:—of course it by no means follows that similar results would ensue on lines in other localities; each case must be determined by its peculiar conditions. 3d. That no limit can be assigned to the number of travellers which cheapening and quickening the means of conveyance will create. The introduction of the railway, even where steamboats already afforded a most pleasant, rapid, and cheap communication, increased, we see, the number travelling from 110,000 to 2,000,000—2,000,000 being five times the whole population of the district. I doubt whether either at home or abroad so large a proportion of travellers to the whole population is to be found.—The traffic between Glasgow and Paisley is probably the most remarkable instance on record of the increase of travelling caused by increased facilities. In 1814, there was only one coach a week between Glasgow and Paisley, conveying about 2,000 passengers per annum: we multiply this by five, to allow for the greater number of gigs and private vehicles then in use, we only get 10,000 passengers per annum conveyed between the two places. In 1842, the number travelling by public conveyance between Glasgow and Paisley, were upwards of 900,000. Now as the population between 1814 and 1842, had only about doubled itself, while the traffic, as we see, had multiplied itself ninety fold, it follows that the increased facilities of transport had increased the number travelling relatively to the population forty-five times; that is to say, that for every journey which an inhabitant of Glasgow or Paisley took in 1814 he took forty-five journeys in 1842. *These results, I conceive, place it beyond a doubt, that we should spare no effort to make railway travelling cheap and within the reach of all classes.*

“Now, there is only one true way of en-

couraging cheap travelling, and that is by keeping down the original cost and the annual expenses of railways. All the other contrivances, which the public are inclined to trust, such as legislative restriction on profits, and so on, are mere quackery.—Even competition is inapplicable to railways, and is not to be relied on.* Mr. R. Stephenson, the engineer, put the whole case into one sentence when he said, to have combination is practicable, competition is impossible. The experience of all railway competition shows that this is true; when, therefore, under the plea of competition unnecessary outlay is being incurred, the public may rest assured that they will ultimately suffer for it in the charge they will have to pay.

“Mr. Hill Williams, the actuary, has compiled some useful tables, to show arithmetically how far a remunerative charge for the conveyance of passengers and goods on railways is modified by the original cost, and other circumstances.

“The following is an extract showing the effect of increase cost of construction—

“Total yearly traffic, number of passengers or tons of goods, 90,000.

Fixed charge per mile on every Passenger or ton of Goods requisite in order to give common interest, 5 per cent., on the outlay.

Original cost of construction per mile.	Fixed charge per mile.
£15,000.....	1.00d.
20,000.....	1.33
25,000.....	1.66
30,000.....	2.00

We see from this that the fixed charge on ev-ton of goods or passengers must average 2d. per mile to return common interest on a railway costing £30,000, whereas if the railway cost £20,000 1 2/3d. per mile would be sufficient.

“After a series of similar investigation, the author concludes as follows:—The result of the preceding inquiry is, it appears to me, on the whole satisfactory. The railway system has doubled itself in the last three years. Fares have been greatly reduced. Third class passengers have largely increased. The importance and value of the traffic in goods and cattle relatively to the passenger traffic, have become more apparent. The number of trains is greater and the speed of some of the trains has been effected without any falling off in the average receipts on each mile of railway in working, but with an increase probably sufficient to meet the increase of the working expenses attendant on the increased accommodation now afforded by railways; whatever falling off in dividends there may have been, is, therefore, to be attributed, in a general view of the subject, to the capitalisation of loans and the creation of fictitious capital by the purchase of railways at premiums, and, therefore, at sums beyond what they actually cost. These being profitable speculations when shares were high, were pushed to such an extent as now to press severely on the original share capital

* Evidence Select Committee on Railway Act Enactment, 1846.

† Appendix No. 7, Select Committee on Railway Act Enactments, 1846.

of railway companies. The great evil of the last three years is the extravagant outlay of money which has taken place, an outlay which, instead of being checked by the legislature, has been encouraged to the utmost by the mode of inquiry adopted. This has inflicted on the railway system a burden which it will never be able to throw off, and which the public will always have to bear with them in a higher rate of charge for conveyance than would with common prudence have been necessary. It only remains to stop the extravagance with a strong hand. The very existence of the railway companies depends on the economy they can practice in making and working their railways; and nothing which on the face of it involves increased outlay, be it diversity of gage and its consequence—the mixed gage, or the more plausible plea of competition, should be countenanced either by railway companies or by the legislature if we wish to secure for ourselves the full fruits of that admirable invention which England and English engineers who have followed in the steps of George Stephenson have given to the world."

Experiments with Galvanized Wire and Hemp Ropes.—An experiment was tried last week in Woolwich Dockyard, to ascertain the comparative strength of wire and hemp ropes. A wire rope, three inches round, and a hemp rope of three strands, hawser laid, common make, seven inches round, were spliced together, and placed in the testing machine, and on the hydraulic power being applied, the hemp rope broke in the middle on the strain reaching 11½ tons, the wire rope remaining apparently as strong as when the experiment commenced. A wire rope, 3¼ inches round, was then spliced with an 8 inch hemp shroud rope, and on the power being applied the hemp rope broke in the middle, with a strain of 10½ tons, the wire rope continuing apparently uninjured.

The *Carlisle Journal* gives the following particulars of Mr. Stephenson's first celebrated engine, the "Rocket," which was bought in the year 1837, from the Liverpool and Manchester, by Mr J. Thompson, of Kirkhouse, the lessee of the Earl of Carlisle's coal and lime works. Here the engine was worked for five or six years on the Midgeholme line, a local line, belonging to Mr. Thompson, for forwarding his coals from the pits towards Carlisle. Soon after the engine was placed on the line the great contest for East Cumberland took place, when Sir J. Graham was superseded by Major Aglionby; and it was used for conveying the Alston express with the state of the poll from Midgeholme to Kirkhouse.—Upon that occasion the "Rocket" was driven by Mr. Mark Thompson, and accomplished its share of the work, a distance of upwards of 4 miles, in 4¼ minutes; thus reaching a speed of nearly equal to 60 miles an hour. On the introduction of heavier and more powerful engines, the "Rocket" was "laid up in ordinary," in the yard at Kirkhouse, where it now stands, no less a monument of the genius of the inventor, than as a mark of the esteem in which his memory is held by Mr. Thompson. Such an engine, says the journal—the first constructed on the principle which has brought railways to such a height of perfection in this country and throughout the world—ought to have its abiding place in the British Museum.—*Artizan.*

Messrs. Staitt and Petrie's Patent Electric Light.—This invention has excited considerable interest from the apparent simplicity of the means employed, and from the important results which will follow, should it become commercially successful. The light is evolved from two points of charcoal, placed perpendicularly, nearly in contact, and brought into a state of intense action by a galvanic battery. The state is not one of combustion, one charcoal point being merely abraided, as it were, while the length of the other is gradually increased. This renders a self-acting movement necessary to

keep the points in their proper relative positions.—The charcoal points are placed within a glass receiver, the atmospheric air being excluded. The light is one of intense brilliancy. The patentees state that it can be supplied at a cost not exceeding one penny an hour for a light equal to that of 100 wax candles.—*Artizan.*

CORROSIVE SUBLIMATE.

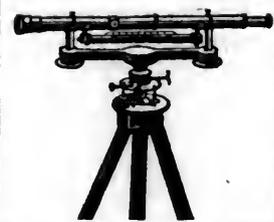
THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

DIRECT ACTION ENGINES FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS, AND ALSO THE ANNULAR RING PISTON ENGINES, of Messrs. Mauldsley, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent, **THOMAS PROSSER, C. E.,** 28 Platt street, New York. May 6, 1848.

CHILLED RAILROAD WHEELS.—THE undersigned, the *Original Inventor of the Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money. **A. TIERS,** Point Pleasant Foundry,

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. **A. T** Kensington, Philadelphia Co., } March 12, 1848. } 11tr



Road Depots, etc. **ANDREW MENEELY,** West Troy, May 12, 1847. 1y*21

TO MACHINISTS & MANUFACTURERS.

The Subscribers have taken the **READING CAR AXLE MANUFACTORY**—and are prepared to execute orders for *Axles of every description*, and Wrought Iron Shafts for Steamboats, Mills, etc., made from superior material, at short notice. Address *Reading, Pa.* **ANDREW TAYLOR & CO.** August 5, 1848—3m*

RAILROAD IRON—SHEET IRON—BRASIER'S RODS—HOOPS—SCROLL—BANK'S BEST—& OTHER GOOD MAKES OF ENGLISH IRON.

100 Tons Railroad Iron—Staffordshire make—56 pounds per yard—shipped from Liverpool 20th July, expected to land on wharf from 10th to 20th September.

Also have Invoices of Sheet Iron, Brasier's Rods, Hoops, Scroll, and Band Iron, Banks best, and other good makes of English Rolled Iron, to arrive, suitable for Railroad Axles, etc., etc., equal in quality to American Rolled Iron. I have agency of several best makers in England and Wales, and can import for Railroad Companies, and others, on best terms, and at much less prices than they can be supplied from American Mills.

DAVID W. WETMORE, 218 Water street. New York, Sept. 9, 1848. 3w*

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington. **SIZER & CO.** Springfield, Mass. January 29, 1848. 1f

WILLIAM JESSOP & SONS, CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufactory, **PARK WORKS, SHEFFIELD,** Double Refined Cast Steel—Square, flat & octagon. Best warranted Cast Steel—Square, flat & octagon. Best Double and Single Shear Steel—Warranted. Machinery Steel—Round. Best and 2d gy. Sheet Steel—for Saws and other purposes. German Steel—flat and sqr., "W. I. & S." "Eagle" and "Goat" Stamps. Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms, by **WM. JESSOP & SONS,** 91 John Street, New York; Also by their Agents—Curtis & Hand, 47 Commerce St., Philadelphia. Alex'r Fullerton, & Co., 119 Milk St., Boston. Stickney & Beatty, South Charles St., Baltimore. May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES.

Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **JOAN F. WINSLOW, Agent,** Albany Iron and Nail Works,

RAILROAD IRON AND LOCOMOTIVE TYRES

imported to order and constantly on hand by **A. & G. RALSTON,** Mar. 20th 4 South Front St., Philadelphia. 1y

RAILROAD IRON—2500 TONS HEAVY RAIL

now landing, and expected shortly to arrive, for sale on most favorable terms by **DAVIS BROOKS & CO.** July 19th, 68 Broad street, New York.

RAILROAD IRON.

1000 tons T Rails, weighing about 60lbs. to the yard, of the latest and most approved pattern, for sale by **BOORMAN, JOHNSTON, & CO.,** 119 Greenwich st., New York. Jan. 20, 1849. 6w

DEAN, PACKARD & MILLS, MANUFACTURERS OF ALL KINDS OF RAILROAD CARS,

SUCH AS PASSENGER, FREIGHT AND CRANK CARS, — ALSO — SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and SHAFTHING FOR FACTORIES.

The above may be had at order at our Car Factory, **REUEL DEAN, ELIJAH PACKARD, ISAAC MILLS,** } SPRINGFIELD, MASS. 1y48

JAMES LAURIE, Civil Engineer.

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures. October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to **JAMES HERRON,** Civil Engineer, Navy Yard.

Jan. 1. 10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents, 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition. 92v1 ly

NORWICH CAR FACTORY, NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of

RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ: PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF

ENGINE TENDERS AND SNOW PLOUGHS. TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

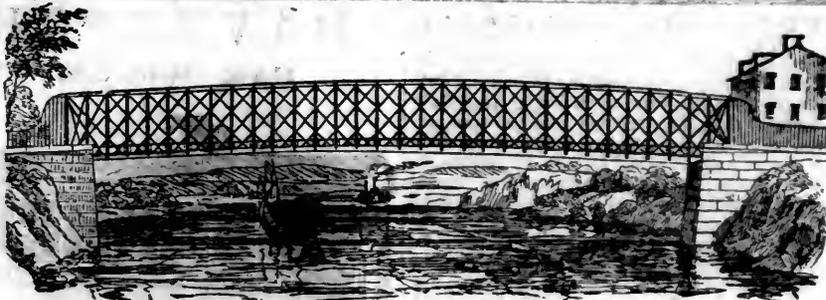
Any communication addressed to

JAMES D. MOWRY,

General Agent,

Norwich, Conn.,

Will meet with immediate attention. 178 1795



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of **W. RIDER & BROTHERS, 58 Liberty Street,** where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

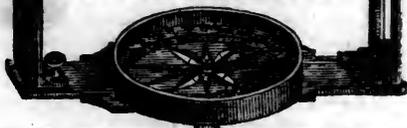
THOMAS PROSSER,

Patentee.

28 Platt street, New York.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,

Surviving partner of **STANCLIFFE & DRAPER.**



No 23 Pear street, below Walnut, 1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to **Ellicott's Scales**, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

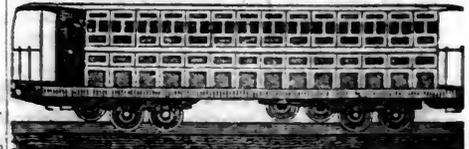
The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st. Office, No. 3 North 5th street, Philadelphia, Pa.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight WAYS, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally. Cincinnati, Ohio, October 2, 1848. 411f

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President Mount Savage Iron Co., Troy, N. Y. **ERASTUS CORNING, Albany.** **WARREN DELANO, Jr., N. Y.** **JOHN M. FORBES, Boston.** **ENOCH PRATT, Baltimore, Md**

November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gear-work of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

President of the Newcastle Manuf. Co.

HUDSON RIVER RAILROAD. NOTICE.—PROPOSALS FOR SPIKES.—

Proposals will be received at the office of the Company, No. 54 Wall-street, until the 15th day of February next, for a quantity of Wrought Iron Railroad Spikes, from fifty to two hundred tons, (of 2000 lbs.) to be delivered at such wharf or wharves on the line of said Railroad as may be designated by the Chief Engineer in the employment of said Company. The Spikes to be nine-sixteenths of an inch square, headed and sharpened, suitable for the purpose, and to be of such lengths, not less than six, nor more than seven inches, as may be required by said Engineer. The Spikes to be made of the best quality of iron, and put into suitable kegs, with weight and size of Spike marked on the head.

The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the Company to require.

JOHN B. JERVIS, Chief Engineer.
Office Hudson River Railroad Co.,
New York, 10th Jan., 1849. } 3t2

FULLER'S PATENT INDIA RUBBER SPRINGS.—

The Commissioner of Patents has dissolved the interference which had been declared against this Patent. The Patentee is ready to supply the springs upon the shortest notice, in any quantity, and at a moderate cost. They have now been in use for nearly 4 years, with complete success. They are made of the best materials, are economical, both as to cost and wear; are light and very easy in their motion.

The patent was granted to W. C. Fuller, in October 1845. G. M. KNEVITT, Agent.
Office, 78 Broad street New York, and at Messrs. James Lee & Co., 18 India Wharf, Boston.
Jan. 13, 1849.

NICOLL'S PATENT SAFETY SWITCH

for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee
G. A. NICOLLS,
Reading, Pa. ja15

IRON BRIDGES, BRIDGE & ROOF BOLTS,

etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

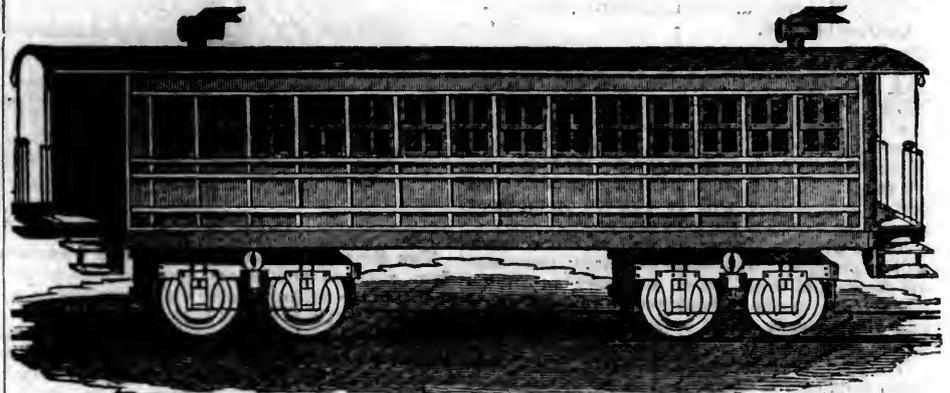
During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|------------------------|---|
| Charles Cook, | } Canal Commissioners of the State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | |
| Willard Smith Esq., | } Engineer of the Bridges for the Albany Basin. |
| Messrs. Stone & Harris | |
| Mr. Wm. Howe, | } Railroad Bridge Builders, Springfield, Mass. |
| Mr. S. Whipple, | |
| | } Engineer & Bridge Builder, Utica, N. Y. |
| | |

January 1, 1849. 1y*

DAVENPORT & BRIDGES' CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes. 10f

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

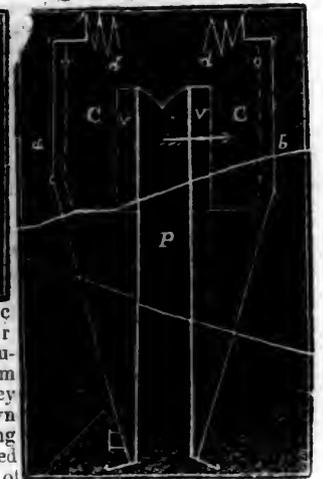
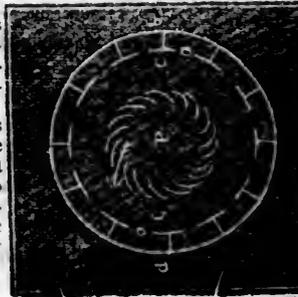
REEVES, BUCK & CO., Philadelphia.
ROBERT NICHOLS, Agent,
No 79 Water St., New York.

RAILROAD IRON, PIG IRON, ETC.

- 600 Tons of T Rail 60 lbs. per yard.
 - 25 Tons of 2½ by ½ Flat Bars.
 - 25 Tons of 2½ by 9-16 Flat Bars.
 - 100 Tons No. 1 Gartshrorrie.
 - 100 Tons Welsh Forge Pigs.
- For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark-Arrester recently patented by the undersigned.



Our improved Spark Arresters have been extensively used during the last year on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits:

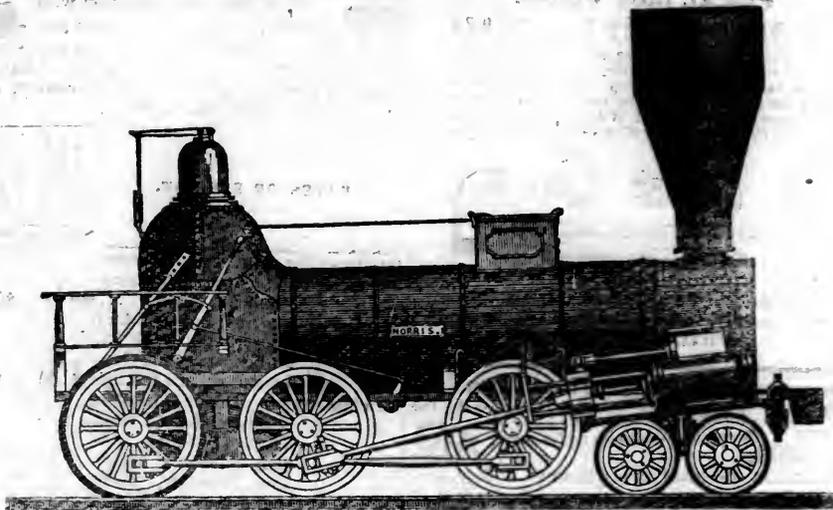
- R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliot, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms. Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844. ja45

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.
 Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO., 63 Broad street.

New York, Sept. 16, 1848, 39tf

Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St. below 13th,

Nov. 10, 1847. [tf.] Philadelphia, Penna.

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

••• Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.

ja45

TO LOCOMOTIVE AND MARINE EN- gine Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 1t

TO RAILROAD COMPANIES AND MAN- ufacturers of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
 a45 N. E. cor. 12th and Market sts., Philad., Pa.

LAWRENCE'S ROSENDALE HYDRA- latic Cement. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 321y

MATTEWAN MACHINE WORKS.

THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also, *Tenders, Wheels, Axles,* and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen,* or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING, Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting, and *Drilling Machines,* of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at

39 Pine Street, New York.
WM. B. LEONARD, Agent.

FAIRBANKS' RAILROAD SCALES.

THE SUBSCRIBERS are prepared to construct at short notice, *Railroad and Depot Scales,* of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and despatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon Railroads, either in the United States or Great Britain; and the manufacturers refer with confidence to the following in the United States.

- Eastern Railroad, Boston and Maine R. R.,
 - Providence Railroad, Providence & Wor. R.R.,
 - Western Railroad, Concord R. R.,
 - Old Colony Railroad, Fitchburg R. R.,
 - Schenectady Railroad, Syracuse and Utica R. R.,
 - Baltimore & Ohio Road, Baltimore & Susq. R. R.,
 - Phila. & Reading Road, Schuylkill Valley R. R.,
 - Central (Ga.) Railroad, Macon and Western R.R.,
 - New York and Erie Railroad;
- and other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents { FAIRBANKS & CO., 81 Water st. N. York.
A. B. NORRIS, 196 Market st., Philad.
April 22, 1848. 1y*17

PATENT HAMMERED RAILROAD, SHIP and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y. The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Eting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

RAILROAD IRON.

THE NEW JERSEY IRON CO.'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to DUDLEY B. FULLER, Ag't

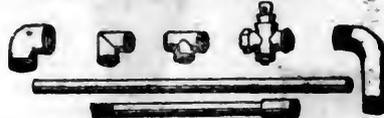
139 Greenwich Street.
New York, October 25, 1848.

TWO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse E. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

BOSTON AND PROVIDENCE RAILROAD. On and after Monday, October 2d, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m. and 3 1/2 p.m. Leave Providence at 8 1/2 a.m. and 3 1/2 p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10 1/2 p.m. Leave Dedham at 7 1/2, 10 1/2 a.m., 1 1/2, 4 1/2, and 9 p.m.

Stoughton Trains—Leave Boston at 11 1/2 a.m. and 4 1/2 p.m. Leave Stoughton at 8 1/2 a.m. and 2 1/2 p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2 and 10 1/2 p.m. Leave Dedham at 8 10 1/2, a.m., 1 1/2, 4 1/2 and 9 p.m.

WM. RAYMOND LEE, Sup't.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848. WINTER ARRANGEMENT.

December 4th.—Fare \$4.

Leave Philadelphia 8 a.m. and 4 p.m.

Leave Baltimore 9 a.m. and 8 p.m.

Sunday—Philadelphia only at 4 p.m.

" Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C.

Through tickets Philadelphia to Charleston, \$20.

Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 11 1/2 p.m. daily

PITTSBURG AND WHEELING.

Through ticket, Philadelphia to Pittsburg, \$12.

" " Wheeling, 13.

All through tickets only sold at office, Philad.

WILMINGTON ACCOMMODATION.

Leaves Philadelphia at 11 and 4 p.m.

Leaves Wilmington at 8 a.m. and 4 p.m.

N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

SOUTH CAROLINA RAILROAD.—A

Passenger Train runs daily from Charleston, on the arrival of the boats from

Wilmington, N. C., in connection

with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily.....\$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia..... 22 00

The South Carolina Railroad Co., engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr, Agent.

GEORGIA RAILROAD. FROM AUGUSTA to ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class.	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 86
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 70
	Molasses, per hogshead.....	8 50	13 50
	" " barrel....	2 50	4 25
	Salt per bushel.....	0 18	
	Salt per Liverpool sack.....	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows....	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton. F. C. ARMS, Sup't. of Transportation.

Augusta, Ga., July 15, 1847. 44*1y

THE WESTERN AND ATLANTIC

Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer.

Atlanta, Georgia, April 16th, 1846 1v1

CENTRAL RAILROAD-FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight. Rates of Passage, \$8 00. Freight—

On weight goods generally... 50 cts. per hundred.

On measurement goods..... 13 cts. per cubic ft.

On brls. wet (except molasses and oil).....\$1 50 per barrel.

On brls. dry (except lime)... 80 cts. per barrel.

On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred

On hdds. and pipes of liquor, not over 120 gallons.....\$5 00 per hhd.

On molasses and oil.....\$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission. THOMAS PURSE, Gen'l. Sup't. Transportation.

Gen'l. Sup't. Transportation.

BALTIMORE AND OHIO RAILROAD.
MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2 and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay. House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:
 Leaves Baltimore at.....9 a.m. and 3 1/2 p.m.
 Arrives at.....9 a.m. and 6 1/2 p.m.
 Leaves York at.....5 a.m. and 3 p.m.
 Arrives at.....12 1/2 p.m. and 8 p.m.
 Leaves York for Columbia at...1 1/2 p.m. and 8 a.m.
 Leaves Columbia for York at...8 a.m. and 2 p.m.

FARE.

Fare to York.....	\$1 50
" Wrightsville.....	2 00
" Columbia.....	2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.
 Through tickets to Pittsburg via stage to Harrisburg..... \$9
 Or via Lancaster by railroad..... 10
 Through tickets to Harrisburg or Gettysburg... 3
 In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at.....5 1/2 p.m.
 Returning, leaves Owning's Mills at.....7 a.m.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.
 The Train from Philadelphia arrives at Reading at 12 18 M.
 The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville, 92		\$3 50	and \$3 00
" " Reading, 58		2 25	and 1 90
" " Pottsville, 34		1 40	and 1 20

Five minutes allowed at Reading; and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. 8t

JAMES HERRON, Civil Engineer,
 OF THE UNITED STATES NAVY YARD,
 PENSACOLA, FLORIDA,
 PATENTEE OF THE
HERRON RAILWAY TRACK.
 MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.
 For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m. Freight train at 1 p.m.

Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 28 and 8 p.m.
 Fordham, 8 03 and 9 15 a.m., 1 20 and 6 15 p.m.
 Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.
 Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m.
 White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.
 Pleasantville, 8 15 a.m. and 5 15 p.m.
 Newcastle, 8 a.m. and 5 p.m.
 Mechanicsville, 7 48 a.m. and 4. 48 p.m.
 Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m. Returning, leave Croton Falls 10 a.m. and 9 1/2 p.m. ON SUNDAYS, the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m., 4 p.m. Croton Falls for City Hall, 7 30 a.m., 4 30 p.m. Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m. White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine. The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st. A car will precede each train 10 minutes to take up passengers in the city. Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87c., to Newcastle 75c., to Pleasantville 62c. to White Plains 50c. 25tf

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.

Accommodation Trains daily, (Sundays excepted.) Leave Norwich, at 6 a. m., 12 m. and 2 1/2 p. m. Leave Worcester, at 6 1/2 and 10 a. m., and 4 1/2 p. m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads. New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 a. m., from Norwich at 7 a.m.
 Fares are Less when paid for Tickets than when paid in the Cars. 5t
 S. H. P. LEE, Jr., Sup't.

BOSTON AND MAINE RAILROAD.

Winter Arrangement. Commencing Nov. 13, 1848. Trains leave Boston as follows, viz: For Portland at 7 A.M. and 2 1/2 P.M. Great Falls at 7 a.m., 2 1/2 and 3 1/2 p.m. Haverhill at 7 and 11 1/2 a.m., 2 1/2, 3 1/2 and 5 p.m. Lawrence, at 7, 9, 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6 and 10 p.m. Reading 7, 9 & 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6, 7 1/2 & 10 p.m. Trains leave for Boston as follows, viz: From Portland at 7 1/2 a.m., and 3 p.m. Great Falls at 6 1/2 and 9 1/2 a.m., and 4 1/2 p.m. Haverhill at 7, 8 1/2 and 11 a.m., 3 and 6 1/2 p.m. Lawrence at 6 1/2, 7 1/2, 8 1/2, 11 1/2 a.m., 12 1/2, 3 1/2, 6 1/2 p.m. Reading at 6 1/2, 7 1/2, 9 1/2, 11 1/2 a.m., 1 1/2, 3 1/2, 7 1/2, 9 p.m. MEDFORD BRANCH TRAINS. From Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 6, 9 p.m. From Boston at 7 1/2, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 10 p.m. The Depot in Boston is on Haymarket Square. CHAS. MINOT, Sup't. Boston, Nov. 7, 1848.

NEW YORK ANDERIE RAILROAD LINE. SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M. Fare between New York and Otisville, \$1 50; way-fare in proportion. For Milk—Leave Otisville at 5 1/2 o'clock, morning and evening. For Freight—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.) No freight will be received in New York after 5 o'clock, P. M.

Freight for New York will be taken by the trains leaving Otisville at 10 1/2 o'clock, A. M.; Middletown at 11 1/2, A. M.; Goshen at 12 1/2, P. M.; Chester at 1 o'clock, P. M., etc., etc. For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont. 24tf H. C. SEYMOUR, Sup't.

LITTLE MIAMI RAILROAD COMPANY Fall and Winter Arrangement, 1847. On and after Monday, September 20th,

until further notice, a Passenger train will run as follows: Leave Cincinnati daily at 9 A. M., for Millford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4 1/2 a.m. Upward train arrives at Springfield at 2 1/2 p.m. Downward train arrives at Cincinnati at 10 1/2 a.m.

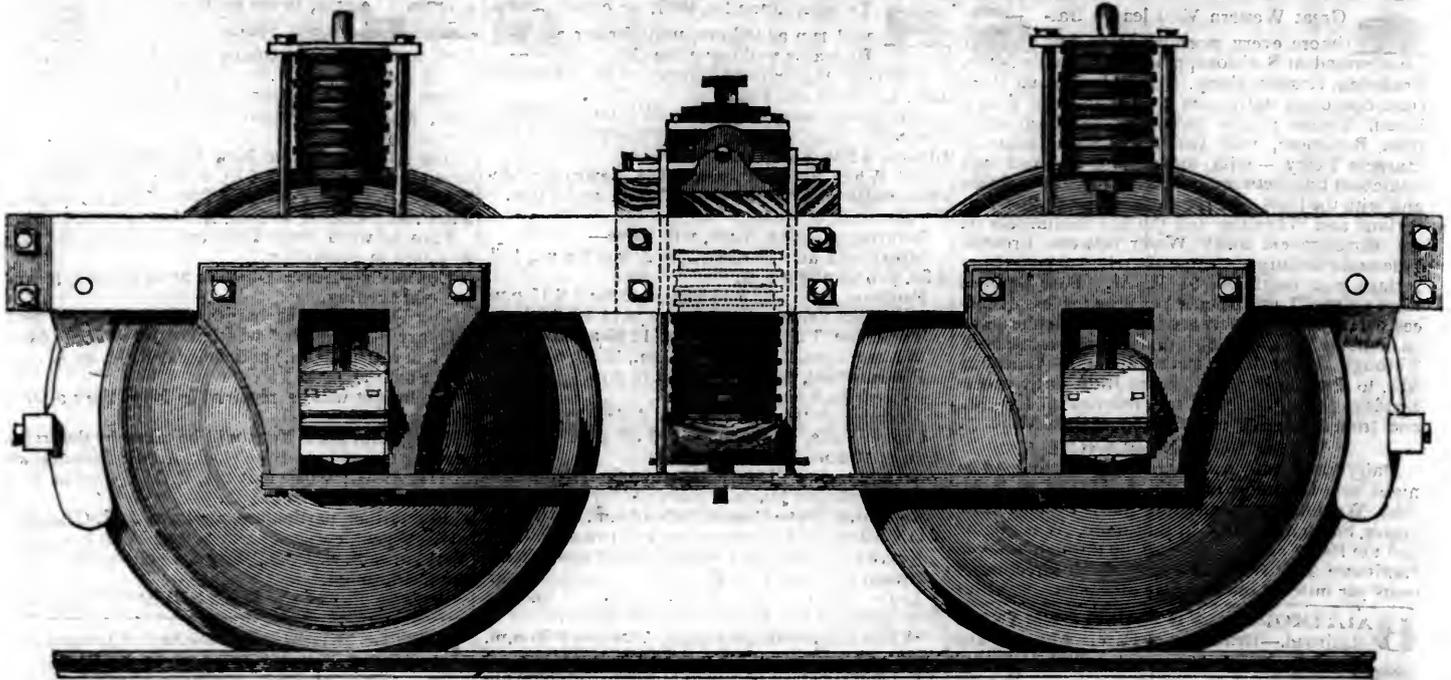
Freight trains will run each way daily. Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road: A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail. Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine. A line of Hacks runs daily in connection with the train between Deerfield and Lebanon. Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.

From Springfield to Bellefontaine by stage, over a good Summer road.....	32 "
From Bellefontaine to Sandusky city by railroad.....	102 "
FARE—From Cincinnati to Lebanon.....	\$1 00
" " " Xenia.....	1 50
" " " Springfield..	2 00
" " " Columbus..	4 00
" " " Sandusky city 7 00	

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville. Tickets can be procured at the Broadway Hotel, Dennison House, or at the Depot of the Company on East Front street. Further information and through tickets for the Stage lines, may be procured at P. Campbell, Agent on Front street, near Broadway. The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount. 47tf W. H. CLEMENT, Sup't

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose, is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article, from the pen of Mr. HALL, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New-ten special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movement of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniatta Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
19 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

AMERICAN RAILROAD JOURNAL.
OFFICE AT No. 98 NASSAU STREET,
(Opposite the Herald Buildings.)
NEW YORK.

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One-page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
D. K. MINOR.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, February 3, 1849.

RAILROAD IRON.

THE Undersigned are prepared to Contract for the delivery of ENGLISH RAILROAD IRON, of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc., Iron.

THOMAS B. SANDS & Co.
22, South William-Street.
New York.

Feb. 3rd.

MY THANKS AND GRATITUDE are due, and tendered, to those who have so generously, and so promptly, responded to my circulars, both of a personal, and a business character. Their answers are of the kind which are both useful and gratifying and will not be forgotten.

To those from whom replies have not yet been received to calls for balances due, I must say that their delay may defer my departure longer than I contemplated, and therefore must again request them to remit without delay.

D. K. MINOR.

Hereafter the journal will be issued promptly on the day of publication. The change of location and proprietorship will account for any recent delays.

Several articles on hand are necessarily excluded this week. Among others, one on the *The Progress and Prospects of Boston, her Public Spirit and Success*; and another on the *"Progress of Railways,"* showing the opening of new roads in 1848; and several commercial articles of great interest.

Our exchanges are full of railroad items. This shows the necessity of a Journal devoted to this great interest. Our future numbers will embrace a greater variety of items of local interest.

To Railroad Companies and others.

We propose to enlarge our paper by increasing the number of pages. We hope to advertise the running of every railroad in the country and Canada, also the sailing of packets and steam vessels.—By this means the journal will be a full travelling directory for the Union. In that case we shall issue quarterly an extra, giving tables of distances and fare on each line, and a railroad map. A copy of this extra we will then place in every depot and station in the country. The plan, so far, meets universal favor.

Portland, Maine.

We cut the following from the many article of the HERALD of last week, and beg leave to endorse its statement.

"The increase in the foreign trade of Portland, Maine, during the past year, compared with the year previous, has been very great, being more than one hundred and fifty per cent, as will be seen by the annexed statement:—

COMMERCE OF PORTLAND, MAINE—VALUE OF IMPORTS.			
<i>Mds. Imported. Duties collected. Goods ware.</i>			
1847....	\$228,663 00	109,229 00	191,610 35
1848....	616,045 00	153,710 90	475,266 32

Incr. 1848 387,382 00 44,480 99 183,655 87
 This increase is the more extraordinary on account of there not having been an increase in the aggregate importation of the country in the same period. Portland is rapidly growing in importance as a commercial port. The railroad in the course of construction, connecting it with Montreal, and opening the trade of an immense back country, must increase the wealth and population of Portland a very large per cent. With one of the best and most accessible harbors on the Atlantic coast, we see no reason why it should not become a place of great importance."

"It is all owing to the railroad," is the common expression of all the people of that beautiful city. No place in the country has made more actual progress in the last two years.

The receipts of the Providence and Worcester railroad for the year 1848 were \$193,844 42, and its expenses \$53,869 71; showing the net earnings to be \$109,974 71. The cost of the road was \$1,873,895 76.

Accident on the Providence Railroad—This morning, about half-past five o'clock, as the steamboat train from Providence was approaching the Canton station, the steam arch of locomotive exploded, instantly killing the engineman, Mr. Lucius Cummings. Mr. Cummings's head was blown to pieces, separating it from his shoulders. The fireman received no material injury. The locomotive was

detached from the cars by the concussion, and ran over half a mile, when the fireman succeeded in stopping it by means of the brakes. The escape of the fireman was most miraculous, as the forward part of the engine, where he was standing, was completely destroyed, pieces of the boiler being thrown a great distance.

Mr. Cummings was a worthy man, having a high character in his vocation. He leaves a family.

The passengers represent the noise of the explosion as resembling the discharge of a heavy cannon. Many of them were much frightened, and attempted to jump from the cars. After quiet had been restored, and the cause of the accident had been ascertained, the passengers started for the Canton depot, which was just ahead. Near the bridge they found the body of Mr. Cummings lying at the side of the track. A portion of the head was twenty or thirty yards from the trunk. The remains were conveyed to the depot. In a short time, the fireman, with the remnants of the engine and tender and two of Harnden's cars, returned. He represents that he was stunned by the explosion, and when his senses returned, he found that he was lying on the wood of the tender, with everything in ruins around him.—He jumped to the brakes and stopped the engine.—At the time of the accident the train was going about 30 miles an hour. The fireman had one side of his whiskers scorched off, probably by the flash of the explosion.

Doings of Railroad Companies.

The St. Lawrence and Atlantic Railroad held its annual meeting at Montreal on the 17th of January last. The Report of the Directors has been received by us only through the papers. It gives a very satisfactory account of the doings of the past year. Thirty miles of road have been put in operation the past season, extending from Langeuil to St. Hyacinthe, the line of the road for 100 miles definitely located, and the whole distance to the boundary surveyed, making the entire distance 127 miles. The 30 miles cost about \$700,000, and the whole line is estimated to cost about \$3,100,000, agreeing with the original estimate of A. C. Morton, Esq., while acting as Chief Engineer of the whole line to Portland. The whole distance from Portland to Montreal is about 275 miles—68 miles of which was opened in 1848.

Three Directors annually retire by rotation. John Torrance, J. Young, T. A. Stayner,

were chosen Directors in course, and Alfred Larocque to fill a vacancy. Messrs. Young and Stayner were in the old Board. The Directors express great confidence in the new undertaking.

The Great Western Railway of Canada.—We had the pleasure of meeting in New York the present week, two gentlemen connected with this road, Mr. TIFFANY, chairman of the company, and Mr. WILSON, its agent, both of Hamilton. We learn that this company is an applicant to the Canadian Parliament for aid. *The Great Western* and the *Portland and Montreal* railways are regarded as the two ends of a trunk line for Canada, to be connected at Hamilton on the northern shore of the St. Lawrence. The Portland road is regarded as having claims to immediate assistance from the amount already expended by individual enterprise, and the application of the Great Western road proceeds upon the idea of a pro rata grant upon the sums to be hereafter actually expended from individual subscription.

Boston, Concord and Montreal Railroad.—An act was passed at the recent session of the Legislature of New Hampshire extending the charter of the Boston, Concord and Montreal railroad from its northern terminus to the town of Lancaster, there to connect with the Portland and Montreal railroad.—This indicates a change of opinion in that State, and we find in a recent number of the *Belknap Gazette*, published at Meredith, an editorial article, from which we give extracts, not for the purpose of joining either side in any discussion that may come up, but simply to give a full view of passing events in connection with railways.

"It was originally designed that the connection of this road, with the great railroad from Montreal to Portland, should be by way of the Passumpsic river and Stanstead. This arrangement, or understanding was entered into, not because it was the *best* or *only* route that could be adopted, but mainly because at that time it *seemed* to be a practicable arrangement. Other routes, or other arrangements, had not then been considered.

"The Passumpsic interest deserted their *first love* in the early history of the enterprise. They went over to what to them seemed their *interest* required; and they did this at a time when its effects upon the Montreal road were calculated to be most crippling—they did it at a *time* and in a *manner* that would have been disastrous, perfectly overwhelming, to any corporation, or any interest, not possessing intuitive perceptions as to its future and final destiny. Their betrayal was severely felt at the time, but the feeling will be the other way, bye and bye. But it is not our intention to stir up old matters. The *future* prospects of the people of this part of New Hampshire, in regard to their favorite rail-

road project, is what we are to discuss.

"The Montreal and Portland railroad is in progress. A portion of the route at each end has been completed, and they are both now in operation. The Canadian Parliament is undoubtedly favorably inclined to the project; and it is understood will aid in its construction. The city of Portland has lent its aid to the amount of a million of dollars to the construction of their part of the road. All idea of the *failure* of the enterprise must have passed away.

It being then understood that the Montreal and Portland railroad is to be built, the next question that arises is, how are we to connect with it? What *has* been the intention is lost sight of in the inquiry, what is *now* the expectation?

"We commenced this article by alluding to the recent legislation upon this subject in this State. The charter of the Boston, Concord, and Montreal railroad, extended originally to the north line of Littleton. Charters were granted at the last session of the Legislature connecting the Montreal with the St. Lawrence road at Lancaster, either by way of the Amonoosuc valley or the Connecticut, as shall be found best. In granting the charter to the Atlantic and St. Lawrence railroad, in and through this State, the right to connect with it was reserved, so that the chain by *charter* is now complete by this route, from Boston to Montreal. *Charters* are one thing, it is true, and the *building* of the roads are another thing. The one is secured in this case—the other is in progress.

"The Boston, Concord, and Montreal railroad, it is now conceded, has the ability and the will to complete its road to the mouth of the Amonoosuc river. Thirty-six miles from that point will connect this road with the great line from Montreal to Portland. The people in that region are wide awake upon the subject, and are determined to put the road through. They have the ability, and will do it.

"The grades upon this route are most favorable, the line is short, the people are wide awake, and why should the project not go forward? It was originally designed to be the great inland route from Boston to Montreal, and it must be so. The slight change of line from the valley of the Passumpsic to the Connecticut is of little consequence on the great scale, but it will be important to the interests of the Montreal, in this State—it brings the whole matter under New Hampshire control—it shortens the distance, lightens the grades, and relieves us from the necessity of waiting for a branch to be constructed from Sherbrook to Stanstead, and also the road up the Passumpsic river. New Hampshire has a great interest at stake in the progress of this work—she understands herself, and will profit by it.

"There seems now to be nothing in the way, but to urge forward the undertaking with all commendable zeal. Let our road be pushed along as it has been, cautiously, but with firmness of purpose, and persevering energy. When it is completed the ex-

tension of it will have so far progressed as to be ready to form the grand junction, and the line will be complete from Boston to Montreal, over the BOSTON, CONCORD, AND MONTREAL RAILROAD."

The Northern Railroad in New York. (Ogdensburgh,) has renewed their application to the Legislature of New York, for the right to bridge the lake near Rouse's Point.

The Connecticut River Railroad Co., held their annual meeting in Boston, last week, and the following gentlemen elected directors for the year ensuing. Erastus Hopkins, of Northampton, H. W. Clapp, of Greenfield, James K. Mills, Samuel Henshaw, E. H. Robbins, Lemuel Pope, N. H. Emmons and Geo. B. Blake of Boston, and Junius S. Morgan of Hartford.

H. W. Clapp, of Greenfield, was subsequently elected president.

Railroad from Hartford to Plainfield.—A correspondent of the New Haven Register, writing from Hartford on the 17th, says:

"Some enterprising men, largely interested in the Hartford and Willimantic road, now being built, concluded that the New York and Hartford roads would come to no definite arrangements, have caused a survey to be made from this city to Bristol, a distance of 17 miles; and last evening, a meeting of those interested was called, and it was unanimously resolved to extend the Willimantic road through Hartford and Bristol, intersecting the canal road at Plainville; thus giving our people a chance to go through to New York by *land*. The whole expense of the road, from the city to Bristol, is not to exceed \$250,000, and the stock is already taken, and it will be in operation at the same time as the Willimantic road on the first of Nov. next."

The Hartford and New Haven, and the New York and New Haven Railroad Companies, have made no arrangements for a connection of the two lines. For the present, they run their trains so as to accommodate travellers who choose to be carried across the city, and ticket through from New York to Boston for \$5 00.

Ocean Steam Navigation.

The public are not generally aware of the rapid extension, within a year or two past, of the Ocean Steam Navigation interest in this country. For a long time past, every year has witnessed a great increase of steamboats for the ordinary river, lake and coastwise routes. The number of these boats, or the amount of their tonnage, including those upon the great lakes and western rivers it is not very easy to ascertain; and we have not at hand, for this number, the materials from which to give a satisfactory statement.—But a new branch of adventure is now just commenced. Though far behind England in the number of our Ocean Steam-

ers, we are rapidly gaining upon her in the aggregate amount of tonnage, embracing all the various descriptions of merchant vessels. The rapid increase of ocean steamers in the last eighteen months, augers well for future success in rivalling England in this branch of our commerce.

The merchants of New York, with that commercial sagacity and energy which has always characterised them, are now pushing this great branch of the marine service—Ocean Steam navigation—with a vigor little dreamed of, in other parts of the country.—All other ship building is literally being driven from the city, from the demand for vessels of this description. It is a marvel to the people of other lands, that individual enterprise can accomplish such wonders. We have taken pains to gather a few facts on this subject for this number of the Journal, in the assurance that nothing we could furnish could be of more interest to our readers.

Spoford & Tileston's Line of New York and Charleston Packets were first in point of time, consisting of the *Southern*, Capt. Berry, of 1,000 tons, and the *Northern*, Capt. Budd, of 1100 tons. The Hulls were built by *W. H. Brown*, the engines at the *Novelty Works*, by *Stillman, Allen, & Co.*

There is also running, in connection with this line, between Charleston and Havana, the steamer *Isabel*, of 1100 tons, Capt. Rollins, built at Baltimore, and a fine specimen of naval architecture.

The Ocean Steam Navigation Company, put afloat in the latter part of 1837, the *Washington*, under the command of Capt. Johnson, of 1750 tons, and the *Hermann*, of 1650 tons, under command of Capt. Crabtree, now regular mail steamers, between this city and Southampton and Bremen. The hulls of these vessels were built by *Westervelt & Mackay*, the engines at the *Novelty Works*, by Messrs. *Stillman, Allen & Co.* The same parties are now building the *Franklin*, of 2200 tons, for the same line.

Charles H. Marshall, associates, and put to sea in 1848, the *United States*, of 2,000 tons, running as a packet to Havre. The hull was built by *Wm. H. Webb*, the engines by *T. F. Secor, & Co.* The *United States* is commanded by Capt. Hackstaff, and has had extraordinary success so far.

Howard's New Orleans Line, in which *Charles Morgan* and *Isaac Newton*, are interested, has the *Crescent City*, of 1500 tons, Capt. Stoddard commander. The hull built by *W. H. Brown*, the engines by *T. F. Secor, & Co.* The same parties are now engaged on a steamer to be called the *Empire*

CITY, for the same line to be of about 1800 tons.

M. O. Robert's Line to Chagres, now has the steamer *FALCON*, of 1000 tons, in command of Capt. Thompson, built by the parties last named. She is now in the naval service between New York and Chagres, touching at the West Indies, she belongs to the *United States Mail Steamship Company.*

Geo. Law's Line between New York and New Orleans is to consist of the *OHIO*, 2500 tons, and the *GEORGIA*, 2750 tons. The hull of the *Ohio*, built by *Bishop & Gimerson*, the engines by *T. F. Secor, & Co.* The hull of the *Georgia*, built by *Smith & Dimon*, the engines by *T. F. Secor, & Co.* One is to be ready to sail in May, the other in July next.

S. L. Mitchell's Line of New York and Savannah Packets has the *CHEROKEE*, Capt. Lyon, of 1200 tons, and the *TENNESSEE*, of the same size, still unfinished. The hulls built by *W. H. Webb*, the engines by *Stillman, Allen & Co.*

The Pacific Mail Steamship Company Line, under the management of Howland and Aspinwall, consists of the *CALIFORNIA*, 1050 tons, Capt. Forbes, master; the *PANAMA*, Capt. Stout, of 1087 tons; the *OREGON*, Capt. Pearson, of 1099 tons; they are to run between Panama and San Francisco.—The hulls of these ships were built by *W. H. Webb*, the engines for the *California* and the *Oregon* built by *Stillman, Allen and Co.*, the engine of the *Panama* was built at the *Allaire Works.*

James Canningham, of Boston, built two sea going steamers for the Eastern waters. The *Admiral*, of 700 tons, was built in 1847, by *Lawrence & Sweden*; and the *Senator*, of 900 tons, built in 1848, the hull built by *W. H. Brown*, the engines by *H. R. Dunham & Co.* The *Senator* is going to San Francisco, having been recently purchased for this purpose; *Woodhull & Minturn* agents. She is a favorite boat wherever known.

Jas. Brown, E. K. Collins, E. Riggs, & W. S. Weimore have given notice of their intention to apply for a charter under the corporate name of "*The United States Mail Steamers Co., New York and Liverpool Line*," with a capital of \$2,500,000. These parties are building the *Atlantic* and the *Pacific*, both of which were launched on Thursday, the present week. The hull of the *Atlantic* built by *W. H. Brown*, the engines by *Stillman, Allen, & Co.*, of the *Novelty Works.* The hull of the *Pacific* by *Jacob Bell*, the engines at the *Allaire Works.* Neither time nor space allow of our giving an account of the excitement at their launching. *E. K. Collins*, the accomplished gen-

tleman; who has charge of their building, gave his friends a cordial welcome on board the steamer *Telegraph* on the occasion.

These boats are of the same size, 3000 tons each, and built in the same manner.—They are smaller than the iron steamship *Great Britain*; but with that exception, the largest vessels afloat. For strength of material, elegance of finish, and convenient arrangement, they are intended to surpass every thing known in the shape of vessels. They are each 290 feet in length, 46 feet in breadth, and 32 feet in depth of hold. Each boat will be worked with two engines, with 95 inch cylinders, and 9 feet stroke—having wrought iron wheels 35 feet in diameter. These boats will cost from \$500,000 to \$700,000 each, and are to be finished without reference to expense. They are intended to test the practical skill and ability of American mechanics. No one doubts their entire success. It is understood that the same parties intend to place three new boats in the line, making five in all, as soon as the same can be constructed.

New York is not only the commercial emporium of the Union, but she is gaining in commercial superiority more rapidly than the average growth of the commerce of the country. The following shows the relative increase in the tonnage of the four great shipping states, made up to the 30th of June each year:

	1839.	1844.	1846.	1847.
New York	468,593	588,576	655,695	747,024
Massachusetts	526,364	501,207	541,520	577,310
Maine	282,288	307,431	358,123	384,353
Louisiana	109,076	161,769	181,258	213,538

On the 31st of Dec., 1847, the tonnage of Maine was 466,711. The following list shows the comparative increase of tonnage of the seven leading commercial cities of the Union, June 30, 1847. The returns for 1848 are not yet published; they will show a great comparative increase of tonnage owned in New York.

New York	646,043
Boston	260,032
New Orleans	212,697
Philadelphia	152,616
New Bedford	119,827
Baltimore	100,455
Portland	74,046

The English parliamentary returns of shipping show a most extraordinary increase of steam vessels, including the various descriptions, for ocean, coastwise, channel, or river service.

In 1814 there was a solitary steam vessel in the United Kingdom; in 1826 they had increased to 230; in 1836, to 561; and in 1846, to 963; averaging a larger size each year.

The British ocean steamers are so officered and manned that they are capable of being connected to warlike uses at once, serving

the double purpose of a commercial and war-like marine, at the same time connecting by means of their mail service connecting her with every portion of the globe. Ocean steam vessels, are the reliance of England, in her efforts at maintaining her supremacy of the sea.

Our government will gradually abandon the construction of the old fashioned sailing ships of war, and adopt the far more valuable forms of steam ships, ensuring thereby greater efficiency and despatch in the naval service—improving with our commercial intercourse with every quarter of the globe.

Commercial.
IRON.

The following statement of the selling price of Merchant Bar Iron, in Liverpool, has been prepared with very great care, and shows some of the most remarkable facts in the history of trade.

On the introduction of railways into general use, railway bars, at first, commanded a price varying from £1 10s. to £2 per ton. During a few past years ordinary rails have been furnished at a shade only below the quotation price of merchant bar.

per ton.		per ton.	
1817—February....	£8 10	1836—December	10 10
March.....	9 10	1837—February,	10 5
July.....	10 10	March....	9 15
August.....	12 0	May.....	9 0
October....	13 0	June.....	8 10
1818—February..	12 15	July.....	7 5
April.....	11 15	August... 6 15	
May.....	11 5	Do 15th	7 5
June.....	10 15	Do 19th	8 0
August....	10 0	Do 31st	8 15
September..	11 10	Sept.....	9 10
December..	12 10	December	9 15
1819—May.....	11 10	1838—January..	9 10
June.....	11 0	December	9 15
1820—March....	10 10	1839—January .	10 5
June.....	9 10	May....	10 0
1821—Do.....	9 0	June....	9 15
1822—Do.....	8 10	Sept.....	9 10
1823—Do.....	8 0	1840—January..	9 0
1824—January... 8 15		December	8 0
July.....	9 15	1841—April....	7 15
September..	10 0	1842—January..	6 10
October....	11 0	December	5 5
Do.....	13 10	1843—April....	5 0
Do.....	10 0	June....	4 10
November..	12 10	1844—January..	4 15
December..	13 0	March... 4 15	
1825—January... 14 0		April.... 5 5	
February.. 15 0		August... 5 15	
March.... 14 10		October.. 5 15	
April..... 14 0		December 5 15	
August.... 13 0		1845—February,	8 0
Do..... 12 10		March... 10 10	
September.. 11 10		April.... 9 10	
1826—January... 11 0		Muy..... 9 10	
April..... 10 10		July..... 8 10	
May..... 9 10		1846—April.... 9 0	
October.... 10 0		August.. 9 0	
1827—March.... 9 10		Nov..... 11 0	
1828—Do..... 8 0		1847—January.. 10 10	
1829—Do..... 7 0		April.... 9 10	
1830—Do..... 6 0		July.... 9 15	
1831—Do..... 6 0		August... 9 7 6	
1832—Do..... 5 10		December 8 5	
1835—February . 6 5		1848—Jan. 4th.. 8 0	
September . 7 0		Do. 28th.. 7 0	
October.... 7 10		Feb. 25th.. 7 15	
November.. 8 0		March.... 7 0	
December.. 8 5		April.... 6 15	
1836—January... 10 10		May.... 6 5	
April..... 11 10		June.... 6 0	
July..... 11 5		October.. 5 10	
October.... 11 0		Nov..... 5 5	
November.. 10 15		December 4 15	
		1849—Jan. 15.. 5 5	

Advancing Backwards.
We find the following item in the tribune of this morning:—
“The bill for the Repeal of the Charter of the Erie and Ohio Railroad Company (passed at the last session) was passed by the Pennsylvania House of Representatives yesterday. It had previously passed the Senate.”
This is not in accordance with the spirit of the age, and is labor in vain, as there must, and will, be a connection between all the great lines of railroad, and especially between New York, Pennsylvania, and Ohio. M.

Railway Accounts,
Mode of Presenting them for Moving Stock.
We complete in this number, the report of Captain Huish to the Northwestern railway company. We will also give in our next, the remarks of the editor of the *Chronicle*, differing with the Captain, on the same subject.

“It would make this too voluminous to insert the whole of their reports; an analysis and average only is given, and reference is made to the documents which, in their collective form, can be examined by any director who may wish to look at them. I am not prepared to say that, even now, we have been enabled to gather together the whole of the company's property, but the following is certain, and it is evident that any omission goes to improve the aggregate present value:—

Statement showing quantity and estimated actual value for sale of articles included in amount charged to capital for "Working Stock of 1,462,901l. December 31, 1847.

Engines.	Goods.	Passengers.	Total.	Value.	
				Per Engine Average.	Total.
	No.	No.	No.	£ s.	£
South'rn division	71	109	180	1499 10	269,900
North'rn division	65	134	199	1321 0	262,879
Manchester and Birmingham..	8	25	33	1400 0	46,200
Engines condemn ed, and used in pumping, bal- lasting, &c., S. Division.....	..	..	12	750 0	9,000
Engines sold, less received for six —deducted fr'm capital account to Dec 31, 1847	..	..	15	....	6,775
Works in Pro- gress: Locomotive de- partment—			439		
South'rn division	..	..	..	....	3,610
North'rn division (Crewe)	..	..	..	27410 0	32,894
Ditto (L & M)	..	..	..	5484 0	
Tenders—			No.	Price.	
South'rn division	..	..	187	250 0	46,750
North'rn division	..	..	191	274 0	52,334
Manchester and Birmingham..	..	..	31	300 0	9,300
Tools, movea- ble machine- ry, &c., in en- gine shops—					31,800
South'rn division	..	..	..	....	23,687
North'rn division	..	..	..	....
Manchester and Birmingham..	..	..	..	....	3,119
Amount advan- ced to Sharp, Brothers, on ac- count of unde- livered engines	..	..	..	....	5,000
Total for locomotive account.....				£803,248	

Pass'gr Vehicles.	Southern Di- vision.	Northern Di- vision.	Manchester & Birmingham.	Total.	Value.	
					Average Price.	Total.
	No.	No.	No.	No.	£.	£.
State carriage....	1	..	..	1	900	900
1st class 6 wheels.	20	8	..	28	420	11764
do. 4 do.	144	136	38	328	320	104960
Mails.....	16	16	..	32	250	8000
Composite.....	25	6	4	35	200	7000
Second-class....	178	178	45	401	220	88220
3d class (closed)..	52	80	18	150	170	25500
do. (open)....	43	..	..	32	75	80
Post-offices.....	3	..	5	8	390	3120
Horse boxes.....	136	54	20	210	105	22050
Carriage trucks..	149	56	12	217	88	19096
Parcel vans.....	13	6	7	26	180	4680
Guard vans.....	42	18	2	62	175	10850
Bullion vans....	4	5	..	9	100	900
Post-office tenders,	6	7	..	13	210	2730
Luggage vans....	..	5	..	5	220	1100
Parcel carts.....	..	14	5	19	20	380
Milk trucks.....	..	2	..	2	60	120
Brake wagons....	..	4	..	4	30	120
Convict Carriage Truck.....	..	1	..	1	160	160
	842	601	183	1626		
Works in progress & store in hand, charged and ac- tually paid for..	£. 3882	£. 5475	£. 1200	..	..	10557
Lamps, Tackles, couples, & other carriage furni- ture—	..	..	..	..	..	3865
Northern divtion, Southern division, Manchester and Birmingham...	..	..	..	..	..	2646
	..	..	..	..	..	711
Total for carriage account.....				£335,425		

Goods' Vehicles.	Southern Di- vision.	Northern Di- vision.	Manchester & Birmingham.	Total.
6 ton large Goods' Wagons.....	831	100	29	2745
4½ " ordinary do. }	1593	192	..	2129
3½ " small do.... }	510	1077	542	495
Cattle wagons.....	382	83	30	653
Coal trucks (iron).....	..	..	..	12
Timber trucks.....	12	..	..	77
Brake wagons.....	53	24	..	117
Sheep vans.....	17	..	..	4
Powder magazines...	4	..	..	4
Iron trolleys.....	4	..	..	..
	1913	2877	1446	6236
Viz:—				£. s.
South'rn div., 1913, at 72l 10s. each average				138692 10
Northern div., 2877, at 56l. each.....				161112 0
Manchester and Birmingham, 1,446, at 41l. 10s.....				60009 0
Crib Rails.				£. s.
Northern Division.....	Sets	154	5 10	842 0
Southern Division.....	901	5 0	4505 0	
Manchester & Birmingham	100	5 0	500 0	
Goods' Sheets.				Value
	No.	£.		
S. Div. { Camden.....	1520	3800		
{ Int. Station..	378	756		
N. Div. { North.....	1400	4100		
{ Central.....	706	1588		
Manchester & Birming- ham.....	750	1750	..	11994 0
	4754	11994		

Machinery and Stores.		
Paid for (including last valuation less 10 per cent.)		
Southern Division	£ 1758	1583 0
Northern Division	5008	4508 0
Moveable machinery, &c., and wagon chains, couplers and lamps, used in working goods' traffic.		
S. Div. { Wagon chains, hooks, and shackles	3367 8	
Other items (estimate)	2500 0	
Northern Div. "	2500 0	
Manchester and Birmingham	1000 0	
Horses	157	3855 0
Total for goods' account.....£396,967 18		

ABSTRACT.		
Locomotive account	£803,248 0 0	
Carriage "	335,425 0 0	
Waggon "	396,967 18 0	
Total.....£1,535,640 18 0		

No account is here taken of screws, jacks, levers, and other engine furniture—of stationary engines 3,220. included in last valuation—or of stores (other than wheels) paid for in carriage department of southern division.

The present total cost to the 31st December, 1847, of working stock, as standing in the books against the company, is 1,462,901. It follows, therefore, that the present market value of the whole is 72,739 more than the original cost—the market value of each article being less than formerly, and the effective value greater, and both combining to prove that the above is far short of the full real improvement of the stock.

Nor will this result surprise, when the following facts are taken into consideration:—

The amount written off the Southern division, for depreciation up to the 30th of June, 1846, was—		
Locomotive	£91,054 10 1	
Carriages and wagons	143,911 9 11	
On Grand Junction section there was credited to moving stock capital to June 30, 1848..... 54,045 17 10		
On the 30th of December, 1847, the item under consideration was written off the amalgamated stock..... 30,462 18 0		
319,474 15 10		

To which must be added the price of 37 new engines and tenders, added to the stock of the Grand Junction out of revenue, and beyond the ordinary repairs since 1842, at 1,800 per engine and tender..... 66,600 0 0		
Add manufacturer's profit on stock manufactured by the Grand Junction company for new lines, say... 45,000 0 0		
£431,074 15 10		

being the amount by which the capital has been practically reduced in a very few years.*

The excess value of the stock thus ceases to be a matter of astonishment, and a question arises, whether, in order to correct the account, the amount of capital ought not fairly to be increased, not merely by such excess, but by the real value of the improvement. This leads us to the remaining point for consideration—viz., the relative position of other companies.

* A large amount should be added to this for new carriages and wagons charged to revenue, besides the stock added by the Liverpool and Manchester company previous to amalgamation; but I have not had time to obtain a correct return of them.

NOTE.—I may here mention also, that the total current charge for locomotive power, since the various lines now consolidated as the London and North-Western were opened, and charged in the half-yearly statements, is 1,971,843. From the best returns I can obtain, it appears that the expense of repairs is from 25 to 30 per cent. of this amount.—Thus a sum approaching 600,000. has been expended in repairs on a stock costing less than 700,000.; in other words, the whole has been nearly renewed out of revenue, exclusive of allowance for depreciation.

No satisfactory rule has yet been laid down to determine the proportion which the moving stock of a concern should bear to the mileage and the receipts.

It is an interesting question, and worth a very careful inquiry. Time does not now permit my investigating it minutely, but the practice of other companies will be some guide. Mr. Hudson, at the last meeting of the Midland company, stated, that with the ordinary traffic of a trunk railway, 3000/ a mile might be assumed as a very moderate allowance for stocking a line. The following table is prepared from information derived, in most cases, direct from the companies:—

London and North-Western.....	1555 1	3822 76	5922 92	11301 29	14622 900	2632	130	25 10	4547
London and South-Western.....	1188	617 88	1840 85	2460 13	4467 62	2810	189	36 3	3647
Great Western.....	2484	119 496	3667 37	5210 40	8205 73	3229	159	31 6	7317
Midland.....	417	218 460	327 150	5860 34	13877 10	3327	237	47 4	4939
London, Brighton, and South Coast.....	1421	300 71	1927 42	2248 81	4622 92	3224	193	39 5	7317
Lancashire and Yorkshire.....	201	1005 02	945 43	2340 8	6532 99	3263	336	67 7	5461
Edinburgh and Glasgow.....	51 1	317 81	590 33	908 14	2310 00	4080	265	53 0	5461

Statement showing Mileage worked by—amount charged to Capital for Working Stock, and comparative rate of such charge per mile per Cent. on, and per Pound of, last Half-year's Earnings, of the following Railways, on the 31st December, 1847.

+ The working stock of the London and North-Western company included plant for the Chester and Holyhead line, 60 miles of which has since been opened, bringing down the mileage to 2,376.

† Includes single line from Redbridge, on Southampton and Dorchester line.

‡ Earnings of lines proper, only. Mileage calculated as if 159 miles double line.

Thus we see that the average is more than 3,300/ a mile; but that, had these companies the same traffic per mile as the London and North-Western, their mileage charge would be—

South-Western.....	£4,547
Great Western.....	3,647
Midland.....	5,934
Brighton.....	4,939
Lancashire and Yorkshire.....	7,317
Edinburgh and Glasgow.....	5,461
London & North-Western being...	2,632

It follows, therefore, that these companies have provided a great excess of stock, which our experience denies, or that they are paying dividends out

of capital, a supposition which cannot be entertained, or (which I take to be the real solution of the question) that the London and North-Western company are undercharged for stock, by having, at various times and in different ways, deducted too large an amount, at the expense of their revenue, and, consequently, of the dividend of their proprietors.

The following table will show the progressive increase of the charge for stock for the London and North-Western railway, and the mileage, since 1840. Statement showing total amount charged to Capital and rate per mile for "Working Stock," from December 31, 1840, to December 31, 1847, inclusive, by the companies now amalgamated as London and North-Western.

Year.	Total Charge.	Total Mileage worked.	pr m.le.
1840....	£602,999 0 0	233 1/2	£2579
1841....	628,700 8 11	260 1/2	2411
1842....	685,916 12 4	260 1/2	2630
1843....	687,546 16 1	285 1/2	2406
1844....	708,959 16 8	285 1/2	2481
1845....	805,691 12 7	303 1/2	2654
1846....	1,135,987 11 7	502 1/2	2491
1847....	1,462,900 3 8	555 1/2	2632
1848....	{ Opening of Chester } { and Holyhead line. }		615 1/2 2376

In considering this table, it must be remembered that not only is the accommodation given much greater than formerly, but that, in consequence of the heavy reductions in charge, both of passengers and goods, a much larger service has to be performed to produce the same return as heretofore. Thus, in 1840, three merchandise trains each way daily was sufficient on the London and Birmingham; now there are 15; yet the mileage stock is less!

I had prepared further statistical proof of this position; but this report has already become so long that I forbear to enter upon it. Should the Board desire it, the subject can be further analysed. I must beg leave to add one more table, also derived from authentic sources, showing the stock of wagons used by the various leading companies. I submit this, because remarks have occasionally been made as the large number possessed by the London and Northwestern company.

Statement showing comparative Stock of Wagons and other Vehicles used for Merchandise and Mineral traffic, belonging to the following companies, on the 31st December, 1847.

Lines.	Total.				Per mile worked.	
	Goods wagons	Cattle wagons	Coal wagons	Miscellaneous		
No.	No.	No.	No.	No.	No.	
Lon. & N. western.	1845	612	653	97	6207	11 1/2
Midland.....	3600	300	2500	..	6400	141
Eastern Counties.....	1037	639	529	70	2295	10
Great Western.....	896	..	..	30	922	3 1/2
York & N. Midland	861	..	826	34	1721	91
York, Newcastle & Berwick.....	1991	..	9798	..	11788	74
Edinburgh & Glasgow.....	917	..	..	..	917	18
Lancaster & Yorkshire.....	2593	..	..	..	3000	15

The Great Western wagons are of twice the capacity of those on the narrow gauge, and their merchandise traffic is one-third of the London and Northwestern company's.

The Midland coal wagons can be used for goods also.

It will thus be seen, that if the comparative traffics are taken into account, the London and Northwestern Company carries on its trade with a very much less stock than any one of the companies enumerated.

Having thus endeavored to submit the facts of the case, it remains only very briefly to state the deductions which I draw from them. I am sensible of the incompleteness of these remarks; but the pressure of daily duties, and the necessity for placing the report in your hands before the close of the half-year, have compelled me to hasten its issue.

First, then, it appears to me that a desire fully to maintain the working stock has led the directors in to opposite extreme; and that a portion of the fair earnings of the half year has been, from time to time, applied towards extinguishing the capital of the concern, instead of being divided among the proprietors, or being carried to the reserve fund for the maintenance of the future dividend.

Secondly, that a depreciation fund, or allowance, although it may have been to some extent prudent in the earlier period of the concern, is no longer required; but that with the large establishments of the company, there is full capacity for maintaining the efficiency of the plant.

Thirdly, that the condition of the company's stock is highly satisfactory, and contrasts very favorably with that of any other company.

Fourthly, that adopting the general practice of railway companies, the working stock of the London and Northwestern, reduced by repeated credits to £1,462,901 or 2,632l. per mile, ought, at only 3,000l. a mile, to stand at 1,845,000l., or 382,099l. more; but that as the earnings per mile are larger than those of any of the companies named, a still greater allowance might in fairness be made.*

Fifthly, that the market value of the working stock is 72,739l. more than it stands in the books to have cost the company; and that taking the effective value as only 10 per cent. more than the original cost, the real working value of the stock is now at least 200,000l. more than was paid for it.

Sixthly, that, in strict justice, the difference between the first cost and the present real value belongs to the existing proprietors, and might be available for division or transfer to a reserve fund; and

Lastly, that though this may be deemed undesirable, there was at least no reason whatever for setting aside, out of the profits of the last half year, the sum of 30,462l., and that it fairly belonged, and should be re-transferred, to the credit of the surplus fund.

I remain, Gentlemen, your faithful servant.

MARK HUISSON.

Advantages of Railway Villages to Railway Companies.

A writer in England upon this subject says, of the future value of railway property—

"So long as the present law exists, this state of things will continue—the law which prohibits railway owners from holding property to benefit the railway indirectly. A private company may purchase land and make a road through it, and build houses on each side of the road. Why should a railway company be debarred from acquiring land by purchase on their borders and building houses and streets thereon? The value of a street is estimated by the value of the buildings and property on each side; and the value of the railway would be increased in the same way, when once the railway proprietors were permitted to become owners of buildings. The railway itself would be a secondary consideration, and cheap fares and numerous trains would be an infallible result. Railway companies would soon lay out farms and build factories, and let out power and supply water and gas and manure, and open mines and quarries, and teach landed proprietors to go and do likewise, when once this stumbling-block were removed. They

*The earnings of the Companies enumerated above, for the week ending 17th June, 1848, as reported in *Herapath's Journal*, were—

London and Northwestern	£101 per mile.
Great Western	83 "
Lancashire and Yorkshire	78 "
Edenburg and Glasgow	65 "
London and Brighton	55 "
Eastern Counties	52 "
London and Southwestern	51 "
Midland	50 "

The London and Northwestern receipts apply only to the line and branches proper.

contain, dormant, the elements of prosperity, far greater than their most sanguine projectors ever dreamed of in their calculation of tolls and fares."

The pamphlet thus concludes:—

"Railways are not in excess. They can scarcely ever be in excess. As well say streets are in excess. Cost of railways may be in excess, but there has never been a railway made that will not attract population to its borders, when the interests of the railway owners and the land proprietors shall be one and the same. Inferior land, bordering on a railway, is far more valuable than the richest at a distance. Given the rails, all else can be made to follow. They will be far more valuable as a means of access to the property along their borders, than as communications between distant towns.

"National prosperity, as well as individual interest, is mainly concerned in the early solution of this problem. And if the railway interest be not thus bonded with national progress, the result will infallibly be a short-sighted policy—"killing the goose for the sake of the golden egg"—a constantly decreasing value in railway property, and an ultimate falling into the hands of the State, when possibly there may be a less amount of jobbing, but there will also be a stereotyping of the system; and then farewell to progress.

"At present railways appear at their lowest ebb; but if this thing shall come to pass, as in justice it ought, and as, if you be but courageous, it will, men would then take new heart. London and Birmingham would in such case, be better worth their 250l. than ever they were yet. The mile lineal would come to represent the mile square; the toll trustees would rise into the landed proprietor; the long-stage proprietor would become the innkeeper, and the short-stager would grow into a householder. Gas would be made in the original coal-pits, and every spring of pure water would be converted to man's uses. Under such system, all the stations would become market towns and bazaars. The sheep-men would then be safer for ever, for it would be impossible to have great fluctuations in the value of property so secured.

"Monopoly, indeed! It would be desirable to have all England, Ireland, and Scotland living under such monopoly. We might as well complain of house-lords' or landlords' monopoly, having the right ourselves also to become land or house lords. There is something monstrously absurd in the fact that railway proprietors have the right to build houses and rent them to their own servants, but not to a servant's brother or son, or the stranger within their gates. If there be a case in which the *laissez-faire* principle may be trusted to act, it is in the construction of material property. Individual welfare will herein be found synonymous with national progress. Organisation is the one thing needful in civilised communities, and no institution is so powerful for organisation as are railways, if they be only left unmolested to work out their own prosperity. We give charters to water companies, and gas companies, and manure companies, and canal com-

panies, and railway companies, and banking companies, and building companies separately, and yet prevent a company from uniting together to work out conjointly all these things urgently for better advantage. Give them but free scope, and, in addition to all these, they will become provision purveyors to the community far more economical than we have yet beheld. If ever the true principle of communism—i. e., the general welfare of all the individuals of the community—is to be worked out, it must be by a railway system of free-trading companies, the essence of all free trade being free transit.

"Will you, gentlemen, explain to your sheepish proprietary that the present writer has no ill-will whatever to railway prosperity, but would simply impress upon them the desirability of not regarding their market quotations, but looking to intrinsic value.—They have a property which has, it is true, cost more than was needful, and which it has been sought to protect by a costly fallacy of oppositions, but which property is still intrinsically more valuable than has yet appeared, and which will yet stir up Capel-court to its foundations, when the time comes round with the seasons, that the human temperament grows sanguine under the influence of plentiful food, abundant capital, and a rising trade. England is yet far from her culminating point; and, if circumstances should dispose her to expend her surplus capital on herself instead of on her neighbours, the payment even of the National Debt will prove no very problematic affair. Large sums are only large to people of small means; and an increasing population, with means increasing in proportion, practically diminishes the amount of the natural obligations, by facilitating the means of meeting them."

The writer laughs at the idea of objections being taken to monopoly, while the whole country is open to the construction of competing lines, which he contends ought only to be originated as streets, when rightly developed. The monopoly would only be of the same kind as that of a builder, against whom the public is protected, by the competition of all other builders.

Companies, no doubt, labor under disadvantages, owing to the jealous caution of the legislature; and we trust they will join together to free themselves from this hardship. Upon the same principle that we contended for the policy of employing steam-boats to develop the traffic, so do we contend for the right to erect dwellings to make the traffic permanent.

The London and North Western railway are about to set a good example, in publishing full and undeniable accounts of all their transactions. We trust it will be followed. At any rate, those who fail will be marked as black sheep, and their shares will tail in the market. There ought to be no difficulty about this. Looking at the question broadly, there cannot be a doubt that such a line as the Eastern Counties' with a traffic of 16,000l. per week, must be right. Supposing we take their expenses in round numbers at 8,000l. per week, it would leave a balance of 5 per cent. on a capital of eight millions. Nothing

can be very wrong in such a case; but still the public at large do not know the whole amount of liabilities, and therefore are the shares unduly depressed in the market. The steadiness wherewith the traffic on the Eastern Counties' railway increases, is a definite proof that agricultural lines, held in contempt at the outset, are really the most valuable and permanent. The reasons for this, and the means of their greater development, will be a subject of future notice.

Prosperity is doubtless a pleasant thing; but uninterrupted prosperity is an unfailling corrupter of industry. Adversity, though unpleasant, is a wholesome chastener; and we are amongst the number of those who believe that railways will take a higher stand than they have ever yet done, after passing through their present slough of despond.

For the American Railroad Journal.
Railroads in Maine.

THE ATLANTIC AND ST. LAWRENCE RAILWAY.

The plan of connecting by railway, the St. Lawrence at Montreal, with the Atlantic at Portland, originated in clear perception in advance of its accomplishment, of the great change, which has now taken place in the commercial policy of Great Britain.

The British government, has grown to be, the great commercial nation of the earth, principally through the agency of her navigation laws, and her protective policy. For nearly two hundred years, or since the Navigation Act of 1651, the shipping interest of Great Britain gradually advanced, till it actually overshadowed that of every European rival; and the system of protection to colonial industry, had cemented, in apparently, indissoluble bonds, the scattered portions of her wide spread empire.

It was seen however, that the spirit of change was at work at home. The doctrines of Free Trade, had for ages, been urged by speculative minds and theoretical writers, without effect, till the *Anti Corn Law League* pressed more closely home, to the apprehension of the masses, the chance of obtaining cheaper food. The thought that this was within their reach, had only, to be once believed, and nothing could stay the march of this new movement for cheaper food, till its consequences should be measured by the experience of a future generation. I speak of it, only as a fact, not for the purpose of discussion, whether the name of Cobden shall be hereafter embalmed in history as the founder of an improved system of policy, or executed as the daring innovator and destroyer, are questions which future time will decide. To him, more than to any other man must be conceded the responsibility and the honor.

Sooner than its friends had dared to hope in such a result, the principle of Free Trade triumphed in the councils of the British government, and a policy is this day to be entered upon, which strikes off, forever her colonial empire, and soon leaves her without a foothold on the continent of North America.

Regarding this continent as under one commercial land, from the Rio Grande to the northern or upper side of the St. Lawrence valley, and from the Atlantic to the Pacific, the plan and the importance of the Portland and Montreal railway, will be readily understood and appreciated.

From the Gulf of Mexico to the St. Lawrence valley, extends a mountainous ridge, distant from one to two hundred miles from the Atlantic coast—beyond which, extends the vast basin drained by the Mississippi and the St. Lawrence. This basin,

is the great grain growing region of the earth, compared with which, the wheat fields, whose products come to the shores and the Black Sea and the Baltic, sink by comparison into trifling importance. The very conception, of the magnitude of this region and of its capacity to support life, impresses the imagination as the most extraordinary thought the world ever realized, and the mind becomes exhausted in attempting to measure the growth of population, which in a few generations shall inhabit it under the influences, now at work, to carry forward the majestic march of freedom and civilization in the new world.

It is only twenty-three years, since the waters of Lake Erie, were brought to the Hudson. In less time than that, Ohio, Indiana, Illinois, Michigan, Missouri, Wisconsin and Iowa, have grown into importance and become exporters of bread-stuffs. There is still beyond these giant states, yet in their infancy, a region larger than the original thirteen, still to come into the Union as states; whose soil is of equal fertility, and into which the ploughshare has never entered—beside the northern shores of the St. Lawrence now under British rule.

To devise the means of bringing the products of this region to the sea is the great work of our times. It has occupied the first minds of the country, from the time of Washington, to our day. He proposed to smite the waters of the James' river and the Kanawha. Clinton took the lead in connecting Lake Erie with the Hudson, and from Georgia to Maine various projects have been entered upon or proposed, with the same general purpose.

Had either the St. Lawrence or the Mississippi, found the Atlantic coast in a desirable latitude, with a good harbor at its mouth, the greatest city of the world would have there grown up. Instead of this, how strangely have these great rivers been guided, one to the inhospitable north, amid icebergs and dangers, the other to the quicksands of the Gulf of Mexico, and the diseases, and the hurricanes of the tropics.

Looking at the natural, or geographical features of this continent, if one was asked between what points the line of artificial communication should be opened, to afford the greatest facility for bringing the products of the west to the sea, he would say, at those points where you can connect by railway one of these great national outlets of the western trade, with the ocean, in the shortest distance, and there find a good harbor—easy access, and open at all seasons of the year. Those points are Montreal and Portland, and one of the best harbors on the coast, is there found.

At the time of projecting the Erie canal, the idea seems never to have occurred that the Niagara river could be made navigable below Lake Erie, for vessels of the same size as those common to the lakes. The Welland canal, has changed completely, the relation of things as then subsisting. If this canal was under our government or on our side the St. Lawrence, Buffalo, and the Erie canal beyond Oswego, would lose their relative importance at once. To this condition they must eventually come, under the inevitable progress of the natural laws of trade, when all commercial restriction, upon this continent ceases.

The Welland and St. Lawrence canals were undertaken by Canada, for the purpose of diverting trade from the Erie canal, through the St. Lawrence river. It was never so much as dreamed, at that time by the Canadians, that protection to colonial industry was to be withdrawn. The difference in that paid from the Atlantic cities, was more than

the price of freights from Montreal to Europe over made up, by the protective duty. Take this protection away from Canada, and trade would seek other routes than the difficult and dangerous one through the St. Lawrence. This idea was the first thought, in the progress of the plan for using these canals and seeking a better outlet to the sea by railway to Portland.

Herein may be seen the difference between the projects of the Portland and Montreal railway, and the former ones, which occupied the attention of the people of Maine, one proposing to reach Quebec, the other Lake Champlain and Ogdensburg.

The Welland and St. Lawrence canals gave birth to the idea of the Portland and Montreal railway. Before they were undertaken, the project of a railway to the St. Lawrence from Portland was impracticable if not absurd. To attempt to confound the one idea with the other, is as absurd, as it would be to regard the Halifax and Quebec railway project, as identical with Whitney's plan of a railway to Oregon.

The idea of the Portland and Montreal railroad was purely commercial. Montreal is at the head of sea navigation on one side, and the foot of the canal navigation on the other. She is the natural basin of the incoming and outgoing trade. If the navigation from Montreal to Europe was as easy, and freights as cheap, at all seasons of the year, as from June to September, she might aspire to be the second city of the Continent. Flour can be brought from Chicago to Montreal for 30 cents a barrel. If the navigation acts are repealed, and all commercial restriction taken off, flour would in the summer months take the St. Lawrence route. But, in the present condition of things it will be cheaper to take produce from Montreal to Portland by railway (when it is completed), and ship the same from the latter part to Europe and the Atlantic cities. The cost of the whole line of 275 miles will not exceed \$7,000,000, or less than the expense of the railway from Boston to Albany, and the grades more favorable, not exceeding fifty feet to the mile. By this route flour can reach the harbor of Portland for 60 cents a barrel, from Lake Michigan.

After the opening of the railway from Boston to Albany the thought of a cheaper route for western produce to reach the sea coast of New England was never suggested till the plan of the Portland and Montreal railway was urged. Since then the whole region of country, between Buffalo and Montreal, and between New-York and Portland, have been alive to the discussion of the rival routes. Among all these schemes, Portland railway project has alone gained the confidence of the people of Canada and Montreal; and its claims are now generally admitted.

Hardly had the thought of the merchants of Montreal been tuned to the question of this railway, before our draw-back law of 1845 came into operation. The effect of this law had been predicted, and its consequences to Montreal foretold; still her merchants, at first, regarded the suggestions of danger to their trade as fanciful, or of little moment, until they saw the import trade of Montreal passing quietly into New York hands, and Canada West no longer her most valuable customer.

In 1846 the last hope of the British colonies was served by the passing of Sir Robert Peel's measure, abolishing the corn laws, which goes into effect February 1st, 1849.

From this time forward all inducement for British connection ceases in Canada, and a similar law in regard the timber duties bears with the same

effect on the lower provinces of New Brunswick and Nova Scotia. The consequence of this state of things is no longer problematical. These provinces must be independent of Great Britain. The recipients bill has only to be passed by Congress, and free trade with Canada established, and Maine assumes at once her proper position in the commercial operations of the times. Portland must become the shipping port of a large portion of Canada, and a competitor with New York for the trade of Lake Erie and the upper lakes. The relations of this road to the lower provinces, and the Atlantic cities, requires more space than one number of this journal can spare. This topic will be hereafter noticed.

Feb. 1, 1849.

J. A. P.

AMERICAN RAILROAD JOURNAL.

Saturday, February 3, 1849.

VALEDICTORY.

With this number our direct connection with the American Railroad Journal as editor and publisher ceases; a few words at parting with old and valued friends, may not be amiss, or unacceptable.—For nearly eighteen years the Railroad Journal has been our hobby, our pride and our pleasure. That it has done something towards advancing the railroad interests of the country few will deny—but that it has realized our idea, or equaled our desires, no one acquainted with us, will for a moment suppose.

We commenced the Journal against the general opinion of friends—some deemed it visionary, and others almost questioned our sanity; while the general inquiry was, "where do you expect to find material for such a publication?" To us, however was given—by the experiments on the Stockton and Darlington, and Liverpool and Manchester rail roads, from 1827 to 1831—a clear perception of the astonishing capacity of railways with steam power—and the inspiration of hope, that our own cherished country might participate largely in their influences. The astonishing results of the experiments with the locomotive, on the Liverpool and Manchester railway, in October 1829, convinced us that a new agency had been set to work, which would, if properly directed, greatly advance the interests, and enhance the pleasures, of mankind; and to aid in the improvements of this new agency of progress, was a prominent inducement to the commencement, and we may truly say has been a strong incentive to the continuance, of the Journal. That new agency, which, at the commencement of the Journal, was little understood, has since grown to be a mighty power, pervading almost every civilized nation of the earth; yet it is still in its infancy, and by no means duly appreciated or understood.

To sustain the Journal, till it reached a successful position, required exertions and sacrifices, which few were aware of; yet with all our efforts we have not been able, at all times, to give it the requisite attention to make it what the railway interest of the country demanded. It has, however, been gradually extending its circulation until it reaches every state in the Union—except Iowa, Arkansas and Texas—and also Canada, New Brunswick, Cuba, England, France and Germany.

One thing we may now say—though it may be said to argue little for our sagacity—we have rarely ever solicited a subscriber to the Journal, and never a personal favor on its account—and, whilst we desire to acknowledge many, very many, courtesies from those in charge of different lines of railway, it is our pride, and our pleasure to be able to say, that pecuniary, or personal advantage, has not been

the first and greatest motive for carrying it on. This will, and probably should, be regarded as a fault—by some not to be excused. Be it so then—in the estimation of others but to us it is a rich reward to have been instrumental, during so long a period, in the advancement of an enterprise which contributes so largely to the necessities, the comforts, and the wealth of the masses—the millions—even though we only share equally with them in the benefits resulting from our labors.

But more ample means, and higher attainments, than we possess, are required to meet the demands of the age, and make the Journal what it may, and should be; and it was to us most desirable that it should pass into the hands of those who were deeply imbued with the spirit which originated, and has so long sustained it—a measure not so easily secured, yet, we are gratified to be able to say, it has been successfully accomplished—and the Railroad Journal, with all its appendages, has been transferred to those who are abundantly able, and fully determined, to make it what the present advanced state of the railway cause requires and demands.

In thus retiring from the Journal, at a period of all others since its commencement, the most auspicious—that it may, in other, and abler, and equally devoted hands, become more useful—we feel that we are still devoting our best efforts to the cause, and therefore take pleasure in the introduction, to our readers and our friends, of our successor, *Henry V. Poor, Esq.*, late of Bangor, Maine, who is to be the resident editor in New York; and whose extensive acquaintance, especially in New England, will give him important advantages; and whose reputation, we feel assured, guarantees success to the Journal.

Mr. Poor assumes the station under the most favorable auspices. In its management he will have the assistance of gentlemen of ability and large experience—known as among the most sagacious and far-seeing minds of the country—and whose practical acquaintance with railways will ensure for it the result of experience and sound judgment from different parts of the country. He has also ample means at command to enlarge and improve the Journal to meet any increasing demand upon it. We therefore desire—in taking leave of our favorite pursuit, our long cherished medium of pleasure and usefulness, and our numerous, generous and indulgent friends, and the friends of the great railway interest—to solicit for our successor, the continued support, and cordial co-operation, of all who have sustained us in our labors; and we earnestly commend him and the Journal to their confidence. We would urge upon all the friends of railways, the importance of prompt and vigorous efforts to extend the circulation, and the usefulness, and the income, of this *their own organ*, that the editor may be cheered on in his arduous labors, the system be improved and extended, and the millions of capital invested liberally rewarded, and mankind largely benefited; while, for ourself, we only desire to carry with us, to our far off home, the confidence, and the kind wishes of all, *only* in proportion as we have endeavored to serve all. From the new field of labor to which we are going, with thousands of other American hearts, we intend to send some messages to our friends through the columns of the Journal.

D. K. MINOR.

As we shall not leave New York until about the 15th of February, we shall be gratified by the receipt of communications from our old friends, to cheer us on our way across the *Isthmus of Panama*,

where we propose to spend a fortnight in the examination of the route of the proposed railroad, and from which we may make our first report.

INTRODUCTORY.

The undersigned have become proprietors of the American Railroad Journal. It will be published hereafter at 54 Wall street, under charge of HENRY V. POOR, as resident editor, assisted by several contributors, some of them already known as leading railroad men in the country.

In assuming this charge, the inquiry will at once arise, among the readers of the Journal, as to the manner in which it will be hereafter conducted.—We promise, at the outset, nothing but a devotion to its management of all the ability and industry with which we are endowed.

The Locomotive Railway System has now become the great necessity of man—the great instrument of civilization and progress—the great idea of modern times. It has already done more to relieve the burdens of labor—to minister to man's wants and necessities, and to elevate him in the scale of being, than any other agency that has ever been exerted.

The Locomotive Steam Engine we regard as the greatest achievement of man—the most extraordinary instrument of good, the world has yet reached—throwing far into shade, the fabled deities of ancient mythology—practically realizing the boasted virtues of the lamp of Alladdin.

It brings to man, in some good degree, the gratification of his highest wish, his loftiest earthly aspiration. It traverses the earth with a speed outstripping the swiftest bird upon the wing, carrying—not thought or language alone, but—man, living, breathing, sensitive man—instinct with new life—new energy—new powers, conscious almost of new facilities and a new creation. Without danger, and without fatigue, it enables man to transfer himself to distant regions of space, and participate in the enjoyments—the physical gratification, and the various pleasures of social existence in a manner before unknown. Labor is relieved of its most dreaded burdens, and humanity raised, in aspiration, and pursuit, from the sensual to the ideal. Suspend for a single year, or for a single month, the railways of the world, and society would feel a shock, like that occasioned by a disturbance of the law of gravitation, or the withdrawal of the sun from the heavens.

The influence and the value of the Locomotive Railway System are now beginning to be felt in every civilized community. Though still in its infancy, it has done much for humanity, wherever its blessings have been realized, by changing the conditions of labor, and giving to man far greater means for the gratification of his higher nature, and enjoying the refinements of intellectual and social life. It gives to every community the productions the ideas of every other—disclosing or creating new sources of enjoyment, and multiplying, to an infinite degree, every susceptibility to pleasureable emotion. It practically prolongs our being, not to one, but to a fourfold degree, enhancing, in the same ratio, all the joys of existence.

Its social and political advantages are less appreciated, than its commercial. It will not have achieved its highest work, till it has harmonised political differences, and elevated all men to the highest social condition of which they are capable. When the net work of railroads shall cover the continent from the St. Lawrence to the Rio Grande, and from the Atlantic to the Pacific, there need be no fear of discussing the value, or the permanency, of the

Union. The Union of the states will not then be a mere paper constitution, but a social and practical reality. And, when the iron bands of the railway shall stretch their unbroken lines from the Straits of Gibraltar to the banks of the Neva, the masses of Europe will no longer be taxed for the support of standing armies to maintain the Balance of Power.

Whoever, therefore, labors in this field, has more than the ordinary rewards of toil. He is working for humanity—for progress—for the highest good of his race.

Profoundly impressed with these views, we intend in accordance with their spirit to conduct the Journal. The vast amount of practical talent now devoted to the railway interest, and its kindred branches, requires far higher powers, and greater energy, than we can bring to its management. Our hope is, that we may be able to secure, and concentrate some portion of this talent in its columns, and make it truly, and fully represent, the leading ideas of the railway interest of this country. This interest, already one of great strength and energy, is daily receiving vast accessions. The world is impressed with great ideas. This continent is hourly becoming more important in the social, political and commercial movements of the times. New regions of territory have been opened to us during the past year, which have awakened in many portions of the Union a spirit of adventure, which has seen no parallel since the discovery of America. The revolutions in Europe of 1848, will give new energy to the cause of emigration, and the next few years will witness changes in this country, greater than any previous experience of the past. We are entering upon a new career of prosperity and success, with the great agencies of modern progress in our hands.

There is danger of over-action in the cause of railways, as well as in other branches of business. It is no longer wise for capitalists, and stockholders in railways, or business men of any sort, to leave the work to so few hands as heretofore.

Others, besides directors, engineers and contractors, require to possess some knowledge of the practical workings of railways, and their relations to property and life.

The Railroad Journal was started in 1831, before any similar publication was attempted in this country, or elsewhere.

In Great Britain, and on the continent of Europe, since then, several journals have sprung up—many of them among the most profitable of the publications of the day—devoted to this interest. It is believed, therefore, that the time has come when public wishes and the railway interest, will justify an enlargement of our Journal. Within a few years past, the ordinary newspapers of the day have been compelled to give much space to this branch of industry, from the growing inquiring of the public mind. More elaborate discussion of principles, and of scientific discoveries, are now demanded, in addition to the ordinary intelligence of the movements of railway companies, to meet the spirit of the times. This spirit we hope to be able in some manner to gratify.

The history, the influence, and the improvements of the railway, as well as a careful inquiry into the management of railroad directors, and officers, are now wanted. The mechanic arts, steam navigation, commerce and mining—especially in connection with locomotion and the progress of industry—come within the range of our purposes. We hope to make it a desirable channel of communication for all the public companies, and furnish such details as will give the business man, and the travelling

public, their best guide to every portion of the continent. Merchants—Railroad Companies—Builders of Machinery—Patentees—Inventors—Iron Dealers—Contractors—and all Steamboat, Stage, and Packet Lines, will find this a desirable channel of communication. The paper circulates among these various interests in all the States of the Union, but three—Iowa, Arkansas and Texas—in the District of Columbia—Canada—N. Brunswick—Cuba—Great Britain—France and Germany. Descriptions and details of working machinery, are the best advertisements their builders can publish. The fame of Stephenson dates back to, if it does not rest upon, the fortunate results of the public experiments made with the Rocket in 1829, though Braithwaite had surpassed him in the model and the general finish of the locomotive.

Second only in importance to the railway system is steam navigation. This agency has opened the west to the hardy emigrants from the Atlantic states, and brought the products of its soil to market. This agency will still go on, hand in hand, with the railway—its handmaid, rather than its rival. England is encircling the globe with ocean steamers, and we are just starting on a similar career. A single year has accomplished, in our midst, results that a few years ago would have required the labor of a whole generation.

In resigning into our hands a work so long and so faithfully conducted by Mr. MINOR, he has expressed himself in a manner that may lead our readers to expect too much from us.

No one can feel more sensibly than we, the magnitude of such a task. We assure all the friends of railroads of our desire to give all the strength to the Journal which their patronage will justify. If the field of labor could yield a tolerable return from the day it was started till now, may we not hope for more abundant reward in this day of railway success? In the hands of Mr. MINOR, it has grown with the growth and strengthened with the strength of the railway system. If he has been unable to give to the Journal, the last few years, all the attention which its increasing patronage seemed to require, no one who has followed it through its whole course, can fail to have been impressed with the zeal and the ardor of his early devotion to this great cause—his unvarying independence and integrity of opinion. He has been a projector and pioneer.—Few men have left so enduring a monument of industry, of public spirit and success. He has seen the railway, from its humblest beginning, grow into strength and into manhood, till it embraced one of the great interests of business, and has become the great necessity of our times. His exertions have been largely instrumental in accomplishing this result. The railway interest in this country owe him a debt of gratitude which we are quite certain cannot become either outlawed or forgotten.

Equal industry and perseverance at this day, will certainly ensure abundant success to the Journal.—The pledge of our highest endeavor is all the guarantee we offer.

JOHN H. SCHULTZ & CO.

The Law of Progress.

Were a cool-headed, sagacious man to rise up in our midst, and assure us, that within the next dozen years, the average rate of travel upon our best railroads would be forty, fifty, or sixty miles an hour—what should we think of him? And yet, beyond all question, what these roads are now doing, upon the average, compared with what was expected of them, by reasonable men, about a dozen years ago,

is more astonishing. In other words, it is more probable that within the next dozen years, the average rate of travel on our best roads, will be forty, fifty or sixty miles an hour, than it was about a dozen years ago, that we should do what we are now doing every day—look at the prodigious augmentation of locomotive power—at the style, strength, finish, and safety of our cars—at their comfortable width, and amazing steadiness, upon the broad gauge—the numberless inventions for lessening the jar—the spring seats, the compressed air, the India rubber applications, and other contrivances: and then say whether, at the end of another dozen years, refreshment and sleeping rooms, card rooms and smoking rooms, are not more likely to be established, than were the luxuries we now enjoy, twelve years ago?

Let another man appear, and keeping his eye upon what has happened since the telegraph system was first established, assure us, that within a like period, they would cross the ocean, traverse Europe, and complete the circuit of the world, enabling us to talk together, people with people, as with our next door neighbors, by the help of the Atlantic or Pacific; nay, that we should, in all human probability, be enabled to maintain a correspondence with our friends in all parts of the earth, and without the help of wires, or any better acknowledged medium than the atmosphere, simply by adjusting two magnets by the same scale, so that each would answer the other, by repeating the marks made by that other—should we not insist upon sending him to a mad house? And yet, what we are doing now by the help of Morse's telegraph, is more wonderful, compared with what we were doing then, by express riders, and signals, and carrier pigeons. Had we been told then, that people, a thousand miles apart, would talk together, by the help of wires, just as if they were in adjoining rooms, and not being able to make themselves heard through the partition, were driven to a correspondence by writing.

Bear in mind what has just been done by the help of astronomy, navigation, and mathematics, by this new application of the simultaneous power, in fixing the longitude of certain places. Let us ask ourselves where these extraordinary developments are to stop. Miracles are matters of hotly occurrence. We are doing impossibilities every day. And we must continue in the same career—otherwise our blood will stagnate in the arteries of our children.

America is now the great laboratory of the world. Here is the chamber of power. Here the germinating principle of a new system. Here—and here only—can the experiments demanded by MAN, for the bettering of his condition, politically, socially, and morally, be tried upon a scale worthy of MAN, worthy of his hopes, and worthy of his belief. The mechanic arts are only part and parcel of that system, whose workshop is the universe—and are, and always must be, from the very nature of things, dependent upon the political organization of society. Where men are free, thoughts are free. And where living is cheap, and the field of enterprise open to all alike—with no penalties in view, men are not afraid to venture boldly. At the worst, they are only laughed at if they fail. They are never ruined for life as in other countries. Hence the amazing number of original discoveries among us, by ignorant men: men really ignorant of the first principle of mechanics, and often wholly unacquainted with the laws they seem to set at defiance—hydraulics, hydrostatics, projectile, momentum, traction, etc.—God prosper them all, nevertheless. The Chinese may go on, age after age, making ivory trinkets of

the same shape, with the same tools; the English working over their old materials, in the best possible manner, but seldom stepping aside for inquiry, lest they may never find their place again, among their fellow craftsmen, if they happen to be belated for a single day; but our Americans have another, and a very different mission. They are bound to try their hands at everything; to be "everything by turns, and nothing long," that the world may be regenerated.

Law.

REFUSAL OF ENGINEER TO CERTIFY.—Dec. 13, 14, 1848, in the Vice Chancellor's Court. *In re McIntosh v. the Great Western*, demurer to a suit by the executors of the late Mr. Hughs McIntosh, a contractor employed by the Great Western, praying for a declaration that the withholding, on the part of Mr. Brunel, of the certificates necessary to entitle the contractor to payment, was a fraud upon the latter; and for an account of what was due from the company; and for payment. A portion of the contracts, which were entered into in 1836, related to works upon three miles of the line between Ealing and Hendon, the stipulated payment being 27,956*l.* The contract was under seal, dated Nov. 5, 1836. It was thereby agreed that Mr. McIntosh would perform the works to the satisfaction, in all things, of the company, and their principal or assistant resident engineers. It was also provided that, in case of any variation in the works, the contractor should perform them agreeably to the former stipulations. If the work should be impeded or delayed through the act of the company, an extension of time and allowance of extra enumeration were to be determined by the engineer; but no work was to be considered as executed unless done to the satisfaction of the principal engineer, and unless it should have been certified by him to have been so executed. According to the statements in the bill, the truth of which was assumed for the purposes of the argument, the works had been properly performed according to the contract, and notice had been given by the contractor for the engineer to examine the works and give his certificate. But the bill charged that although it was the duty of the engineer so to certify, he refused to do until another contract had been completed by Mr. McIntosh; and the bill also charged that in so refusing, Mr. Brunel was acting in collusion with the company, and under their direction and authority. The case was argued at considerable length on Tuesday last; and yesterday, the Vice Chancellor said the case was substantially this: A tradesman and customer contracted together that the former would execute for the latter works of considerable magnitude, in consideration of being paid according to their value—that value being to be decided by a third person, specified, who, when satisfied of the due execution of the work, was to certify accordingly, and the tradesman was not to be entitled to receive anything without such certificate. The works were then executed by the tradesman to the satisfaction of the customer and the third person, but payment was refused for want of the certificate without any just cause. His Honor thought that a state of things which would entitle the tradesman to relief in equity against the customer; the case of the tradesman being that of the plaintiffs here, and the case of the customer that of the company. His Honor thought the demurer of the company unsustainable. It had been argued that the refusal of the engineer was a breach of covenant on the part of the company, for which an action would lie; but if it were, that was not sufficient to defeat the plaintiffs' right to relief in equity under the circumstances of the case; nor did his Honor think that the position of the engineer, as being employed by the company, a sufficient objection to the case of collusion stated by the bill, he having been, under this contract, appointed to functions analogous to those of an arbitrator. It had scarcely been contended that the case of the secretary differed from that of the company, but for Mr. Brunel it had been argued that his demurer stood upon wholly different and independent grounds. The charges in the bill, however, were such, that upon the whole Mr. Brunel appeared to be made a party with as much fitness and propriety as Mr. Saunders; and against both the discovery, which could not be obtained on oath from

the company, might, his Honor thought, be properly prayed and that was all the bill sought from them. The demurer must therefore be all overruled.—*Railway Chronicle.*

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THE PATENT DOUBLE CYLINDERS,
AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Mauldsley, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,
THOMAS PROSSER, C. E.,
28 Platt street, New York.
May 6, 1848.

PATENT HAMMERED RAILROAD, SHIP and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. JOHN F. WINSLOW, Agent.

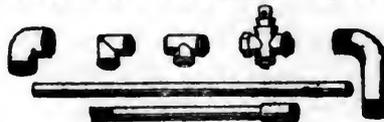
Albany Iron and Nail Works, Troy, N. Y.
The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Etting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

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The Subscribers are prepared to construct at short notice, *Railroad and Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and despatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon Railroads, either in the United States or Great Britain; and the manufacturers refer with confidence to the following in the United States.

Eastern Railroad,	Boston and Maine R. R.,
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Old Colony Railroad,	Fitchburg R. R.,
Schenectady Railroad,	Syracuse and Utica R. R.,
Baltimore & Ohio Road,	Baltimore & Susq. R. R.,
Phila. & Reading Road,	Schnylkill Valley R. R.,
Central (Ga.) Railroad,	Macon and Western R.R.,
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A. B. NORMIS, 196 Market st., Philad.
April 22, 1848. 1y*17

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington. SIZER & CO.
Springfield, Mass.

January 29, 1848. tf

WILLIAM JESSOP & SONS, CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufacture,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—Square, flat & octagon.
Best warranted Cast Steel—Square, flat & octagon.
Best Double and Single Shear Steel—Warranted.
Machinery Steel—Round.

Best and 2d gy. Sheet Steel—for Saws and other purposes.

German Steel—flat and sqr., "W. I. & S." "Eagle" and "Goat" Stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms, by WM. JESSOP & SONS,
91 John Street, New York,

Also by their Agents—

Curtis & Hand, 47 Commerce St., Philadelphia.

Alex'r Fullerton, & Co., 119 Milk St., Boston.

Stickney & Beatty, South Charles St., Baltimore.

May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES,

Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,

RAILROAD IRON AND LOCOMOTIVE

Tyres imported to order and constantly on hand

by A. & G. RALSTON,
Mar. 20tf 4 South Front St., Philadelphia.

RAILROAD IRON—2500 TONS HEAVY

Rail, now landing, and expected shortly to arrive, for sale on most favorable terms by

DAVIS BROOKS & CO.
July 19th, tf. 68 Broad street, New York.

RAILROAD IRON.

1000 tons T Rails, weighing about 60lbs. to the yard, of the latest and most approved pattern, for sale by BOORMAN, JOHNSTON, & CO.,
119 Greenwich st., New York.

Jan. 20, 1849. 6w

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

JAMES LAURIE, Civil Engineer.

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures. October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred; and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to **JAMES HERRON,** Civil Engineer, Navy Yard.

Jan. 1. 10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents, 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition. 92v11y

NORWICH CAR FACTORY, NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of

RAILROAD CARS, OF EVERY DESCRIPTION, VIZ: PASSENGER, FREIGHT AND HAND CARS, ALSO, VARIOUS KINDS OF ENGINE TENDERS AND SNOW PLOUGHS, TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice. Orders executed with promptness and despatch.

Any communication addressed to **JAMES D. MOWRY,** General Agent, Norwich, Conn.,

Will meet with immediate attention. 1y8



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

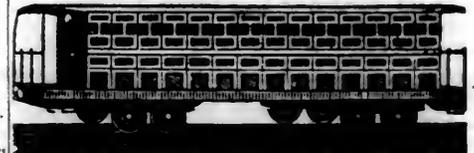
These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

CAR MANUFACTORY, CINCINNATI, OHIO.



HECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally. Cincinnati, Ohio, October 2, 1848. 41t

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President Mount Savage Iron Co., Troy, N. Y. **ERASTUS CORNING, Albany.** **WARREN DELANO, Jr., N. Y.** **JOHN M. FORBES, Boston.** **ENOCH PRATT, Baltimore, Md**

November 6, 1848.

THE NEWCASTLE MANUFACTURING

Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted; also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention. **ANDREW C. GRAY,**

President of the Newcastle Manuf. Co. 245

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of **STANCLIFFE & DRAPER.**



No 23 Pear street, below Walnut, 1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to **Ellicott's Scales**, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons. **ELLICOTT & ABBOTT.**

Factory, 9th street, near Coates, cor. Melon st. Office, No. 3 North 5th street, Philadelphia, Pa.

HUDSON RIVER RAILROAD.
NOTICE.—PROPOSALS FOR SPIKES.
 Proposals will be received at the office of the Company, No. 51 Wall street, until the 15th day of February next, for a quantity of Wrought Iron Railroad Spikes, from fifty to two hundred tons, (of 2000 lbs.) to be delivered at such wharf or wharves on the line of said Railroad as may be designated by the Chief Engineer in the employment of said Company. The Spikes to be nine-sixteenths of an inch square, headed and sharpened, suitable for the purpose, and to be of such lengths, not less than six, nor more than seven inches, as may be required by said Engineer. The Spikes to be made of the best quality of iron, and put into suitable kegs, with weight and size of Spike marked on the head.

The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the Company to require.

JOHN B. JERVIS, Chief Engineer.
 Office Hudson River Railroad Co., }
 New York, 10th Jan., 1849. } 3t2

FULLER'S PATENT INDIA RUBBER SPRINGS.—The Commissioner of Patents has dissolved the interference which had been declared against this Patent. The Patentee is ready to supply the springs upon the shortest notice, in any quantity, and at a moderate cost. They have now been in use for nearly 4 years, with complete success. They are made of the best materials, are economical, both as to cost and wear; are light and very easy in their motion.

The patent was granted to W. C. Fuller, in October 1845. G. M. KNEVITT, Agent.
 Office, 78 Broad street New York, and at Messrs. James Lee & Co., 18 India Wharf, Boston.
 Jan. 13, 1849.

NICOLL'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee
 G. A. NICOLLS,
 ja45 Reading, Pa.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|------------------------|-------------------------------|
| Charles Cook, | } Canal Commissioners |
| Nelson J. Beach, | |
| Jacob Hinds, | } State of New York. |
| Willard Smith Esq., | |
| Messrs. Stone & Harris | } Engineer of the Bridges for |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Railroad Bridge Builders, |
| | |
| | } Engineer & Bridge Builder, |
| | |
| January 1, 1849. | Utica, N. Y. |

1y*

DAVENPORT & BRIDGES'
CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country.
 Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes. 10/f

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO.,
 Philadelphia.
 ROBERT NICHOLS, Agent,
 No 79 Water St., New York.

RAILROAD IRON, PIG IRON, ETC.

- 600 Tons of T Rail 60 lbs. per yard.
 - 25 Tons of 2 1/2 by 1/2 Flat Bars.
 - 25 Tons of 2 1/2 by 1/2 Flat Bars.
 - 100 Tons No. 1 Gartsrhorie.
 - 100 Tons Welsh Forge Pigs.
- For Sale by A. & G. RALSTON & CO.
 No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark-Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year, on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits

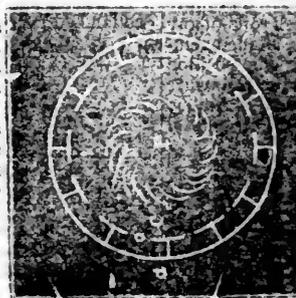
R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chitenden, Sup't M. P. Central Railroad, Detroit, Mich; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

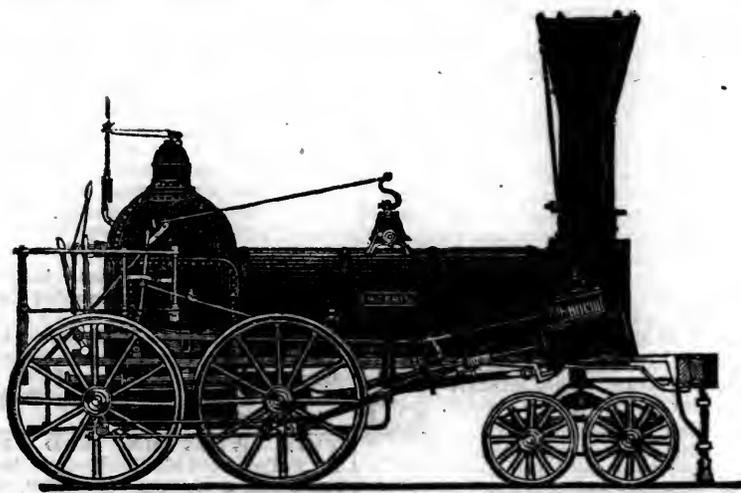
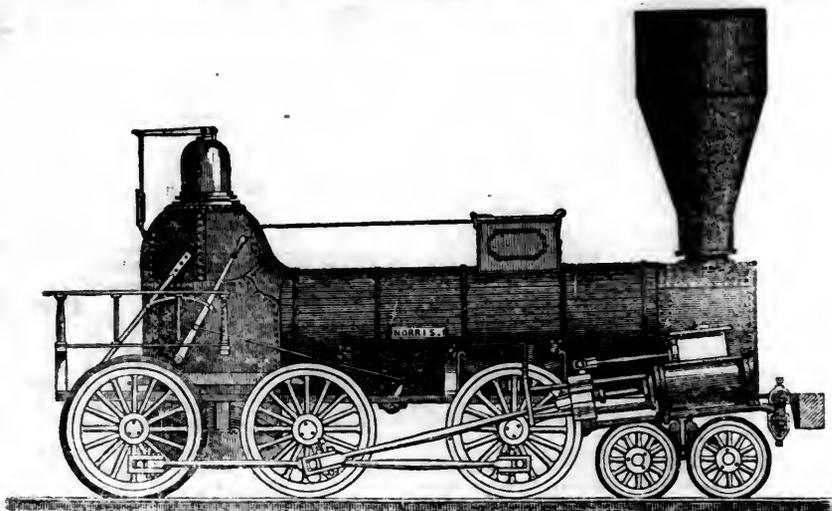
N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

The letters in the figures refer to the article given in the Journal of June, 1844.

ja45



**NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,**



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callen-ders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

T & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO., 68 Broad street.

New York, Sept. 16. 1848, 39tf

Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St. below 13th,

Nov. 10, 1847. [tf.] Philadelphia, Penna.

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

* * Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.

ja45

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia. 1t

TO RAILROAD COMPANIES AND MANUFACTURERS of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE, a45 N. E. cor. 12th and Market sts., Philad., Pa.

LAURENCE'S ROSENDALE HYDRAULIC Cement. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight paper-cans, by JOHN W. LAWRENCE, 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 321y

MATTEWAN MACHINE WORKS.

THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive **LOCOMOTIVE ENGINE** department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also, *Tenders, Wheels, Axles,* and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen,* or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting, and *Drilling Machines,* of the most approved patterns, together with all other tools required in machine shops, may be had at the **Mattewan Company's** Shops, Fishkill Landing, or at

39 Pine Street, New York.
WM. B. LEONARD, Agent.

RAILROAD IRON.

THE NEW JERSEY IRON CO.'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to **DUDLEY B. FULLER, Ag't**

139 Greenwich Street.

New York, October 25, 1848.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after **MONNDAY, Oct. 2, 1848.**

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11½, a.m. 12, 2½, 3½, 4½, 6, a.m. Salem, 7, 9, 11½, a.m. 12, 2½, 3½, 4½, 6, p.m. Manchester, 9, a.m. 3½, p.m. Gloucester, 9, a.m. 3½, p.m. Newburyport, 7, 11½, a.m. 2½, 4½, p.m. Portland, Me. 7, a.m., 2½, p.m.

And for Boston,

From Portland, 7½, a.m., 3, p.m. Portsmouth, 7, 9½, a.m. 5½, p.m. Newburyport, 7½, 10½, a.m., 3, 6, p.m. Gloucester, 7½, a.m., 3½, p.m. Manchester, 8, a.m., 3½, p.m. Salem, 7½, 8½, 9, 10½, 11:40, a.m., 2½, 3, 4½, 7, p.m. Lynn, 7½, 8½, 9½, 10½, 11:55, a.m., 2½, 3½, 4½, 7½, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave **EAST BOSTON** for Lynn and Salem, at 10½ o'clock, p.m.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 7½, 8½, 10, 11:25, a.m. 2, 3½, 6½, p.m. Salem for Marblehead, 7½, 9½, 10½, a.m., 12½, 3½, 5½, 6½, p.m.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9½, a.m., 4½, p.m. Salem for Gloucester at 9½, a.m., 4½, p.m. Trains leave Gloucester for Salem at 7½, a.m., 3½, p.m. Manchester for Salem at 8, a.m. 3½, p.m. Freight Trains each way daily Office 17 Merchants' Row, Boston:
Feb. 3 **JOMN KINSMAN,** Superintendent.

ESSEX RAILROAD.—SALEM TO LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover. On and after Monday, October 2, 1848, trains leave daily (Sunday excepted,) Eastern Railroad Depot, Washington-st. Salem for South Danvers at 7.45, 9, a.m., 12.45.

3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45. 3.15, pm.
Salem for Lawrence, 9, am., 3.15, pm.
Danvers " 9.10, am., 3.25, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10 am., 4.20, pm.
South Danvers for Salem at 7.15, 8.45, 11.30, am. 2, 5.45, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 5.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30, am., 5, pm.
* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD. On and after Monday, October 2d, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.
Accommodation Trains—Leave Boston at 8 a.m. and 3½ p.m. Leave Providence at 8½ a.m. and 3½ p.m.
Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10½ p.m. Leave Dedham at 7½ 10½ a.m., 1½, 4½, and 9 p.m.
Stoughton Trains—Leave Boston at 11½ a.m. and 4½ p.m. Leave Stoughton at 8½ a.m. and 2½ p.m.
Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.
On and after Wednesday, Nov. 1, the **DEDHAM TRAIN** will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½ and 10½ p.m. Leave Dedham at 8 10½, a.m., 1½, 4½ and 9 p.m.

WM. RAYMOND LEE, Sup't.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848. WINTER ARRANGEMENT.

December 4th.—Fare \$4.
Leave Philadelphia 8 a.m. and 4 p.m.
Leave Baltimore 9 a.m. and 8 p.m.
Sunday—Philadelphia only at 4 p.m.
" Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C.

Through tickets Philadelphia to Charleston, \$20.
Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 11½ p.m. daily.

PITTSBURG AND WHEELING.

Through ticket, Philadelphia to Pittsburg, \$12.
" " " " Wheeling, 13.

All through tickets only sold at office, Philad.

WILMINGTON ACCOMMODATION.

Leaves Philadelphia at 1½ and 4 p.m.
Leaves Wilmington at 8 a.m. and 4 p.m.
N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

SOUTH CAROLINA RAILROAD.—A

Passenger Train runs daily from Charleston, on the arrival of the boats from

Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.
Fare through from Charleston to Montgomery daily \$26 50
Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr, Agent.

GEORGIA RAILROAD. FROM AUGUSTA to ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton. 271 miles.	Between Charleston and Dalton. 408 miles.
1st class. Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class. Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class. Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 86
4th class. Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
Cotton, per 100 lbs.....	0 45	0 70
Molasses, per hogshead.....	8 50	13 55
" " barrel.....	2 50	4 2
Salt per bushel.....	0 18	
Salt per Liverpool sack.....	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows...	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS,

Sup't. of Transportation.

Augusta, Ga., July 15, 1847. 44*1y

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,

Chief Engineer.

Atlanta, Georgia. April 16th, 1846. 1v1

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight.

Rates of Passage, \$8 00. Freight—
On weight goods generally... 50 cts. per hundred.
On measurement goods..... 13 cts. per cubic ft.]
On brls. wet (except molasses and oil)..... \$1 50 per barrel.
On brls. dry (except ime).... 80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred
On hhd. and pipes of liquor, not over 120 gallons..... \$5 00 per hhd.
On molasses and oil..... \$6 00 per hhd.

Goods addressed to **F. WINTER, Agent,** forwarded free of commission.
THOMAS PURSE, Gen'l. Supt. Transportation.

BALTIMORE AND OHIO RAILROAD.
MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:
 Leaves Baltimore at.....9 a.m. and 3½ p.m.
 Arrives at.....9 a.m. and 6½ p.m.
 Leaves York at.....5 a.m. and 3 p.m.
 Arrives at.....12½ p.m. and 8 p.m.
 Leaves York for Columbia at..1½ p.m. and 8 a.m.
 Leaves Columbia for York at..8 a.m. and 2 p.m.

FARE.

Fare to York.....	\$1 50
" Wrightsville.....	2 00
" Columbia.....	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.
 Through tickets to Pittsburg via stage to Harrisburg.....\$9
 Or via Lancaster by railroad..... 10
 Through tickets to Harrisburg or Gettysburg.. 3
 In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at.....5½ p.m.
 Returning, leaves Owning's Mills at.....7 a.m.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.
 The Train from Philadelphia arrives at Reading at 12 18 M.
 The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville, 92		\$3-50	and \$3-00
" Reading, 58		2-25	and 1-90
" Pottsville, 34		1-40	and 1-20

Five minutes allowed at Reading; and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. 81f

JAMES HERRON, Civil Engineer,
 OF THE UNITED STATES NAVY YARD,
 PENSACOLA, FLORIDA,
 PATENTEE OF THE
HERRON RAILWAY TRACK.
 MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—
 Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.
 For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., and 5 30 p.m.
 For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m.
 Freight train at 1 p.m.
 Returning to New York, will leave—
 Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 2 28 and 8 p.m.
 Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m.
 Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.
 Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m.
 White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.
 Pleasantville, 8 15 a.m. and 5 15 p.m.
 Newcastle, 8 a.m. and 5 p.m.
 Mechanicsville, 7 48 a.m. and 4. 48 p.m.
 Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m. Returning, leave Croton Falls 10 a.m. and 9½ p.m.
ON SUNDAYS, the trains will run as follows:
 Leave City Hall for Croton Falls, 7 a.m., 4 p.m.
 Croton Falls for City Hall, 7 30 a.m., 4 30 p.m.
 Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m.
 White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.
 Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.
 The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st. A car will precede each train 10 minutes to take up passengers in the city.
 Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87c., to Newcastle 75c., to Pleasantville 62½c. to White Plains 50c. 25tf

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.
 Accommodation Trains daily, (Sundays excepted.)
 Leave Norwich, at 6 a. m., 12 m. and 2½ p. m.
 Leave Worcester, at 6½ and 10 a. m., and 4½ p. m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.
 New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.
 Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a.m., from Norwich at 7 a.m.
 Fares are Less when paid for Tickets than when paid in the Cars. S. H. P. LEE, Jr., Sup't.

BOSTON AND MAINE RAILROAD.
 Winter Arrangement.
 Commencing Nov. 13, 1848.
 Trains leave Boston as follows, viz: For
 Portland at 7 A. M. and 2½ P. M.
 Great Falls at 7 a.m., 2½ and 3½ p.m.
 Haverhill at 7 and 11½ a.m., 2½, 3½ and 5 p.m.
 Lawrence, at 7, 9, 11½ a.m., 2½, 3½, 5, 6 p.m.
 Reading 7, 9 & 11½ a.m., 2½, 3½, 5, 6, 7½ & 10 p.m.
 Trains leave for Boston as follows, viz: From
 Portland at 7½ a.m., and 3 p.m.
 Great Falls at 6½ and 9½ a.m., and 4½ p.m.
 Haverhill at 7, 8½ and 11 a.m., 3 and 6½ p.m.
 Lawrence at 6½, 7½, 8½, 11½ a.m., 12½, 3½, 6½, p.m.
 Reading at 6½, 7, 7½, 9½, 11½ a.m., 1½, 3½, 7½, 9, p.m.
MEDFORD BRANCH TRAINS.
 From Medford at 6½, 8, 10½, a.m., 2, 4, 6, 9 p.m.
 From Boston at 7½, 9½ a.m., 12½ 2½, 5½, 6½, 10 p.m.
 The Depot in Boston is on Haymarket Square.
 CHAS. MINOT, Super't.
 Boston, Nov. 7, 1848.

NEW YORK ANDERIE RAILROAD LINE.
SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.
 The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M.
 Fare between New York and Otisville, \$1 50; way-fare in proportion.
 For MILK—Leave Otisville at 5½ o'clock, morning and evening.
 For FREIGHT—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)
 No freight will be received in New York after 5 o'clock, P. M.
 Freight for New York will be taken by the trains leaving Otisville at 10½ o'clock, A. M.; Middletown at 11½, A. M.; Goshen at 12½, P. M.; Chester at 1 o'clock, P. M., etc., etc.
 For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.
 24tf H. C. SEYMOUR, Sup't.

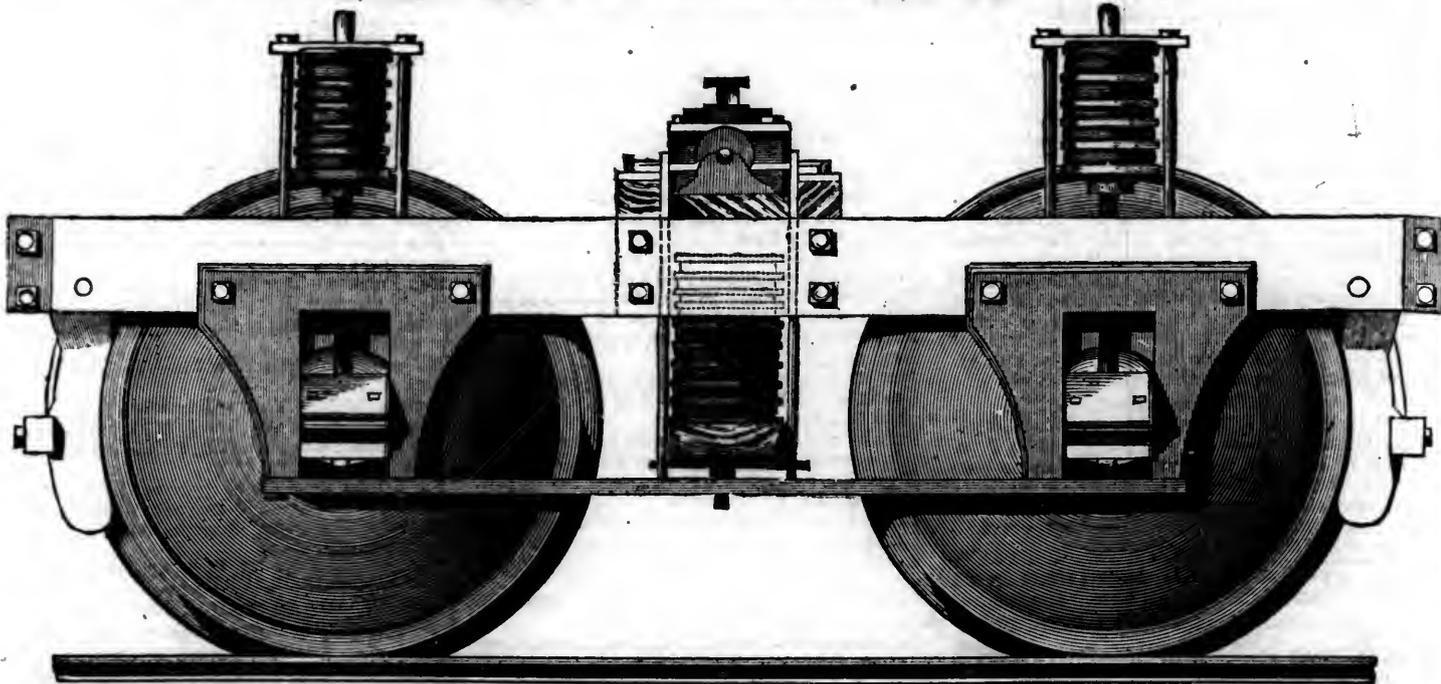
LITTLE MIAMI RAILROAD COMPANY.
 Fall and Winter Arrangement, 1847. On and after Monday, September 20th, until further notice, a Passenger train will run as follows:
 Leave Cincinnati daily at 9 A. M., for Milford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4½ a.m. Upward train arrives at Cincinnati at 2½ p.m. Downward train arrives at Cincinnati at 10½ a.m.

Freight trains will run each way daily.
 Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:
 A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.
 Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.
 A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.
 Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.
 From Springfield to Bellefontaine by stage, over a good Summer road.....32 "
 From Bellefontaine to Sandusky city by railroad.....102 "
FARE—From Cincinnati to Lebanon.....\$1 00
 " " " Xenia..... 1 50
 " " " Springfield.. 2 00
 " " " Columbus... 4 00
 " " " Sandusky city 7 00

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.
 Tickets can be procured at the Broadway Hotel, Dennison House, or at the Depot of the Company on East Front street.
 Further information and through tickets for the Stage lines, may be procured at P. Campbell, Age t on Front street, near Broadway.
 The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount.
 47tf W. H. CLEMENT, Sup't

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose, is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article, from the pen of Mr. HALE, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 281

CORROSIVE SUBLIMATE. THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

AMERICAN RAILROAD JOURNAL. PUBLISHED BY J. H. SCHULTZ & CO. NOS. 9 & 10 PRIME'S BUILDINGS, (THIRD FLOOR,) 54 WALL STREET, NEW YORK CITY.

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One square ".....	2 50
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One column " ".....	3 00
One square " ".....	1 00
Professional notices per annum.....	5 00

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor, HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 6.] SATURDAY, FEBRUARY 10, 1849. [WHOLE No. 669, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, February 10, 1849.

St. Lawrence and Atlantic Railway.

We take pleasure in announcing the appointment Mr. Gzowski, (recently engaged on the public works in Canada) as Engineer of the St. Lawrence and Atlantic Railroad Co. We are gratified to learn from Mr. Gzowski, whom we had the good fortune to meet in New York, the present week, that the necessary arrangements are going on to definitely locate the whole line of the road between Montreal and Portland as soon as may be, and carry the work forward to completion.

At the organization of the two companies in Maine and Canada, A. C. MORTON, Esq., was made Chief Superintending Engineer over the whole line, with a view to the adoption of an uniform system of construction and management. An agreement was entered into, establishing the gauge of *five feet six inches*, and providing for a joint operation of the two roads when completed, make the two companies, to all intents and purposes, one.

In April last Mr. Morton resigned this joint charge, on account of ill-health, produced mainly from over-exertion in superintending the surveys and locations over this long line, and retained his position as Chief Engineer of the Portland Company only. He was urged by the Canadian Company to take the entire charge of their work, but preferred remaining at Portland. The Canadian Company have gone on the past season without a Chief Engineer until the recent appointment of Mr. Gzowski. We learn from him that the prospect of a speedy location of the entire line is favorable, that the chief engineers of the two companies have compared notes on the previous surveys, and that the most entire harmony of opinion exists in regard

to the general progress of the work, and the carrying out of the previous plans of the two companies. We congratulate the friends of this great *international railway* upon their flattering prospects of success. If the proposed aid is granted by the Parliament of Canada, in regard to which there seems to be no doubt, this whole line can be finished in a comparatively brief period. It is the measure of all others to preserve to Montreal the continuance of her prosperity and her business.

To Railroad Companies and others.

We propose to enlarge our paper by increasing the number of pages. We hope to advertise the running of every railroad in the country and Canada, also the sailing of packets and steam vessels.—By this means the Journal will be a full travelling directory for the Union. In that case we shall issue quarterly an extra, giving tables of distances and fare on each line, and a railroad map. A copy of this extra we will then place in every depot and station in the country. The plan, so far, meets universal favor.

The Hon. Mr. HOLMES, of Montreal, has given notice of a motion to be introduced into Parliament to inquire if the ministry have taken all needful measures to protect the navigation of Lake Champlain and the Richlieu River, in accordance with the treaties now existing between Great Britain and the United States.

Subscribers to the Journal desiring information in regard to Railroad Companies, the value of stocks, the names of agents, superintendents, or other officers, can probably be supplied by calling on the Editor.

Reciprocity Bill in Canada.

The Hon. Mr. Merritt, the father of the Welland Canal, has introduced a bill into the Parliament of Canada, for the enactment of a Reciprocity Bill, in terms similar to the one pending before Congress. The bill introduced by Mr Grinnell into Congress, on behalf of the Committee on Commerce, is as follows:—

"A BILL.

To admit certain articles of the growth or production of Canada into the United States free of duty upon the condition that the like articles of the growth or production of the United States are admitted into Canada free of duty.

“Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when the President of the United

States shall issue his proclamation that the articles hereinafter enumerated, being of the growth or production of the United States, are admitted into the province of Canada by law free of duty, that on and after that day, the like articles, being of the growth or production of said province of Canada, shall be admitted into the United States free of duty, when imported direct from said province, so long as the said enumerated articles are admitted into said province of Canada from the United States free of duty, unless otherwise directed by Congress, to wit: Grain and breadstuffs of all kinds, vegetables, fruits, animals, hides, wool, tallow, horns, salted and fresh meats, ores of all kinds of metals, timber, staves, wood and lumber of all kinds.”

Portsmouth, Great Falls, & Conway Railroad.

We learn that the books of the company for the Portsmouth Branch will be opened on the first of next month. Some gentlemen in Boston are so confident of the speedy progress of the enterprize that they have already contracted for the rails for this branch.

Rutland and Burlington Railroad.

On the Rutland and Burlington road the work has been so far completed that the rails will be laid from Bellows Falls to Ludlow, 28 miles, early in the Spring. From Burlington to Brandon, 51 miles, it is hoped that the rails may be had early in the Spring; from Brandon to Rutland, 16 miles, it is believed, the road will be in operation by the 1st of July,—to Cuttingsville, 10 miles, in September,—and the whole line, it is expected, will be railed by the 1st November next.

Depreciation of Working Stock, or Mode of Presenting Railway Accounts.

The following remarks by the Railway Chronicle, in relation to the report of Captain Huish, on this subject, will be read with interest and profit by those who have read that report with care.

Capt. Huish has written a very interesting report on this subject, as it affects the London and North-Western railway. It is printed for the use of directors only, so that we cannot make extracts from it; but it has suggested to us the following remarks. His papers, we should observe, a very elaborate and interesting one, and although his view of “real effective value” differs from ours, we nevertheless consider it a, very valuable report.

There is one, and only one sound princi-

ple, as our intelligent readers will readily comprehend, for the maintenance of the stock of a railway (which includes the permanent way), viz., that you shall at every period that you divide profit, be able to produce (before you divide) value in stock or money for the sum at which the stock stands in the capital account. If you cannot do this, your profits have eaten up some of your capital—in other words, you have been paying dividend out of capital. This rule you will find, at every age of a railway, affords a test of whether the question of depreciation has been fairly dealt with or not. To take a case—a railway, for the first few years of its existence, in the ordinary course of things, charges every new article of stock to capital. Say it has gone on doing this for five years, and then it "takes stock"; it will find that the market value of its stock, even although it may have been kept in decent repair, will be less than its cost price has been; the reason for this being, partly in general deterioration from age, and partly from the greater cheapness with which, generally speaking, any machine can be constructed than it could be at a previous period. If this company, then has made no allowance for depreciation before declaring its dividends, it has been, to the extent of this deficiency of market value below cost price, declaring dividends out of capital.—that is, if the cost price of the stock purchased during the five years has been 100,000*l.*, and when stock is taken, this stock at its market value is only 80,000*l.*, 20,000*l.*, which ought to have been laid aside to meet this depreciation out of revenue, (that is, in accountant's language, written off against revenue) to the credit of stock, so that the stock in the capital account would only have "stood at" 80,000*l.* instead of 100,000*l.*, as it does,) has been divided as profit, which ought not to have been so divided. And if this company wants to set its accounts right, it must now debit revenue with 20,000*l.* before it makes a dividend, and so reduce the stock in capital account, as that it will stand any test, and be worth at its market value, the amount at which it stands, viz., 80,000*l.*

You can easily imagine how railway companies will persuade themselves that this is not necessary, by saying that stock is better than ever it was, and so on; but unless it can stand the test, and be worth as much at its market value as it stands at in the capital account, this is a delusion. For example, suppose a railway had provided itself on opening with 100 small engines, at 1,000*l.* each, at the end of five years, even if these engines had been liberally kept up, their market value, from the change of fashions in engines, would probably not be more than 80,000*l.* To keep up the value, then, of the stock, revenue should now find ten additional new engines, costing say as much as 2,000*l.* a piece, and unless the railway paid for these entirely out of revenue, and not out of capital (as in whole or part it would be likely to do), it would be *pro tanto* eating its capital, or paying dividends out of it.

On the Bristol and Gloucester line a contractor furnished the stock, and at the end of

ten years the company were bound to take that stock at its then market value; the contractor, therefore, had to charge at such a rate for the use of this stock as would secure him from any loss at the end of ten years, in respect of the market value of his stock turning out to be less than the cost price had been to him. Call this contractor "capital," and you have a case in point; "revenue" must pay "capital," as much as it was obliged to pay this contractor.

In regard to the London and North Western,

Its stock, excluding permanent way, has cost.....	£1,893,965
There has been written off, or paid for by revenue, at different times.....	431,072

The stock consequently stands in the capital account at.....£1,462,901

Now, Capt. Huish says it is worth at present market value 1,235,640*l.* Consequently, that too much has, by this company, in its anxiety to avoid paying any portion of dividend out of capital, been written off against revenue, viz., 72,739*l.* He then argues, that if the market value is thus in excess, the effective value, or real working value, must be 200,000*l.* in excess; and this 200,000*l.* is available for division or transfer to a reserve fund. From this conclusion we entirely dissent, and should object to the introduction of a term which appears to us so ambiguous as "real working value"; cost price and market value we may deal with, but not this third value. To the extent, however, of the 72,739*l.*, we regard Captain Huish's argument good—assuming his estimate to be correct; but it must be observed that in 1846 the valuers made the market value of the London and North-Western stock 13,529*l.* less than the amount at which stock then stood in the capital account, whereas Captain Huish now makes the market value more by 72,739*l.*; the safety of the conclusion, therefore, entirely rests upon the sufficiency of the valuation.

When you come to apply the results, you should see if you have laid aside enough to meet depreciation of rails, timber, and so on, before you talk of transferring from capital to revenue;—at least so it seems to us. On this part of the subject Capt. Huish does not enter.

Mining.

The following from the *English Mining Journal*, of January 6, may serve to relieve the anxieties of some who are fearing that the great acquisition of gold from California, will disturb the metallic currency of the world.

"The production of gold has, at all times, been a matter of great commercial moment, but at no period has the attention of the world been so generally directed to the subject as at present, in consequence of the wonderful discoveries in California. By many it is feared that the quantity already found, and said to exist, will disturb the currency, and thoroughly derange all mercantile arrangements and transactions; but, for our own part, we do not apprehend anything of the sort. It is a fallacy to do so. We believe in the reports from California, and believe, likewise, that there are great quantities of the valuable metal still to be brought to light; but, after all, gold is merely worth its value. The enormous cost of all necessities of life and mining labour in California will not admit of the extraction of the gold at a rate to diminish its present standard, added to

which an enormous population will be rapidly established in the country, which, of itself, will be sufficient to absorb the gold for the necessary requirements of trade and commerce. Although there is no doubt that vast quantities of gold have been, and continue to be, drawn, we must not suppose that the whole surface of immense tracts of territory contains the precious metal. The gold is obtained from the bottoms and sides of rivers, and the beds of ravines and brooks, which are filled up in the wet season, and which for centuries have been the repositories of the debris of gold formations washed down from the hills. It seems quite similar to the tin streams of Cornwall, where this useful metal is found in great abundance in the stratum of sand, under the bog, or turf, in the low grounds between the hills. So is it found in California and in the same strata—viz.: friable or decomposed granite.

When we read of the existence of a trench 100 ft. long, 3 ft. wide, and 2 ft. deep, yielding \$17,000 of gold, we can believe the fact; but as the locality is not described, we presume that the trench was made in the winter torrent, and that the soil, a few yards from it, would not show gold. About 120 years since, certain adventurers from the province of St. Paulo, in Brazil, discovered the mines in Minas Geraes. They washed up the bottoms of brooks, until the cessation of gold in the gravel, or sand, proved the more productive gold-bearing veins, or fissures, to be near, and thus, among many others, the riches of Gongo Soco first came to light. From the vast extent of territory in California said to produce gold, it is probable that some years will elapse before the surface deposits are exhausted; but when the first fever shall have passed away, with the surface riches which caused it, attention will be drawn to the fountain of this scattered wealth. The mountains will be explored, and lodes, no doubt, will be confidently sought for, whose riches, washed away and concentrated by the elements during centuries, have been spread over the adjacent plains.

"All this, however, takes time. With it population increases, new settlements spring up in all parts of the world, trade and commerce expands, an extended currency is required; and, therefore, we again repeat our conviction that the currency will not be disturbed by the present discoveries. Besides, we feel assured that no lodes will be found, the strata is again it. The gold is purely washings from the granite mountains, which contain gold throughout, but which will necessarily take centuries to accumulate in any quantity. After all, what is the amount of gold found, as compared with the currency of the world? It is as nothing. It is no equal to the falling off in the productions, generally, of South America. It is not equal to the existing and increasing demand for gold, for works of art and luxury. So far from being alarmed by the California riches, with respect to the standard of gold, we are inclined to consider them merely as keeping pace with the requirements of the times, and will, no doubt, lead, and justly, to the more energetic workings of existing gold companies, and probably to the formation of new undertakings for the purpose.

"As there is considerable similarity between the gold deposits in California and those which enriched the Paulistas in Brazil, an analysis of the most successful of the English mining companies established in that empire will be interesting to our readers; we allude, of course, to the St. John del Rey Mining Association. This company work three mines contiguous to each other, and drained by the same water wheel; the lode in two of the mines varies in width from 8 to 32 feet, averaging 14½ feet; and the third, the Gamba, 4 feet 7 in. The lodes dip bodily at an angle of 46 deg. at which incline the pumps are carried, and on the same plane the kibbles from the slopes under the inclined shaft, are hauled to surface. There are two water wheels for drawing stuff—one for the saw mill, and one at the reduction house for working the amalgamation barrels, working 96 heads. The whole body of the deposit, between the walls, gives gold, yielding in different sections 2 to 5½ oitavas to the ton—104 oitavas being equal to 1 lb. troy. In the Gamba mine, lines of quarts, running into the country, broken for the convenience in working, give 1 to 1½ oitavas: each section in the mine is very regular in its contents. The average produce for 1847 was 4.21 oitavas per ton, which was worth in London (net) 7s. 7d. per

oitava, or £39 16 per pound troy. A cubic fathom of the deposit contains something more than 20 tons—and each fathom sunk in the three mines admits of about 9000 tons being broken, and the slopes kept in order. Westward, a continuation of the deposit near the surface has lately been ascertained, and is already opened upon, to the extent of 19 fathoms, 8 to 10 feet wide, which adds further to the resources of this magnificent mine. This new ground is close to the stamps; and there is no doubt we are assured, of its continuance westward, as there are considerable excavations of the "old" people in that direction. This mine is now giving a clear profit of above 3,000. per month; and humanly speaking, a great increase is certain, as a powerful set of new stamps has just been completed. This is undoubtedly a most satisfactory state of things for the shareholders, and will enable them to receive frequent and good dividends; but what is it in comparison with the metallic circulation? And should the production continue to increase to the fullest expectation, or were there many other mines equally remunerative and yielding, we should not for a moment apprehend any alteration in the metallic currency of the world."

United States Coinage for 1848.—The President having sent into the House of Representatives the annual report of the Directors of the Mint, the following has been abridged therefrom for the Tribune:—

The deposits for coinage at the Mint and Branches during the year 1848 were as follows:

	Gold.	Silver.
At Charlotte, N. C.,	\$370,799	
At Dahlonega, Ga.,	274,473	
At New Orleans,	183,360	2,459,774
At Philadelphia, Pa.,	2,594,460	466,732
Total	\$3,413,092	\$2,126,506

The coinage during the year was as follows:

	Gold.	Silver.
At Charlotte, N. C.,	\$364,330 00	
At Dahlonega, Ga.,	271,272 50	
At New Orleans,	358,500 00	1,620,000 00
At Philadelphia,	2,780,930 00	1,620,000 00
Total	\$3,775,512 50	\$2,040,000 00

The total number of pieces coined during the year was 12,549,790, the total value was \$5,879,728 49.

The deposits of gold at the mints for coinage, which was the produce of mines in the U. S., have been as follows:

Mines.	In 1848	Total Deposits.
Of Virginia,	\$57,886 since 1829	\$1,008,180
Of North Carolina,	106,034 since 1824	3,995,470
Of South Carolina,	19,228 since 1828	409,094
Of Georgia,	3,370 since 1839	2,336,616
Of Tennessee,	8,497 since 1831	32,399
Of Alabama,	3,670 since 1829	49,163
Of New Mexico,	682	682
Of California,	44,177	44,177
Of various sources		34,237
Totals,	\$241,544	\$7,991,685

The quantity of gold the produce of the mines of the United States coined at the branch mints has been as follows:

	In 1848.	Total since 1838.
At Charlotte, N. C.,	\$370,789	\$2,033,563
At Dahlonega, Ga.,	274,473	3,486,433
At New Orleans, La.,	12,589	129,376
Totals,	\$657,861	\$5,649,372

And the total coinage of the United States' mint, since 1793, has been
 Gold... \$77,341,440 00 | Copper... 1,209,759 20
 Silver... 73,466,514 90
 Total... \$151,017,714 10
 Consisting of 343,281,750 pieces of coin.

Shipbuilding in 1846, 1847, 1848.

We have placed in comparison below, the Annual Return made to the Secretary of the Treasury of the number of vessels, and the amount of tonnage, built in each State during the financial years 1846, 1847 and 1848. A more flattering picture, showing our progress as a nation, could hardly be desired.

The following table shows the amount of tonnage and the number of vessels built in each state during the year ending June 30, 1846.

States.	Ships.	Brgs.	Schs.	Sigs.	St-bts.	Total	Total Tonn'ge.
Maine	47	97	140	2	3	289	49,447,60
N. H.	3	2	3			8	2,171,08
Mass.	26	26	108	4	4	160	24,321,43
R. I.	4		4	2		10	2,394,56
Conn.	1	3	26	5		35	3,712,32
N. Y.	11	8	46	170	25	260	33,253,37
N. J.	1	1	25	26	7	60	5,856,19
Penn.	2	2	15	87	55	161	15,787,59
Del.	1		12	6	3	22	2,264,13
Md.	4	18	109	3	3	137	13,817,34
Dist. of C'mba.			23			23	951,30
Virginia	2	26	6	11		45	3,465,22
N. C.		26	4	1		31	1,884,83
S. C.		4				4	342,00
Georgia			1			1	21,45
Ohio	1	13	4	34		52	9,615,50
Tenn.				4		4	574,59
Ky.				46		46	8,661,47
Mo.				11		11	2,338,02
Ala.			1	3		4	557,92
La.			2	4	2	8	451,35
Mich.	3	3	14	7	8	33	5,174,01
Florida			3	5		8	840,35
Total	100	164	576	355	225	1,420	188,203,93

Number and tonnage of vessels built in the year ending June 30, 1847.

States.	Ships.	Brgs.	Schs.	Canal boats.	Steam-boats.	Total ves.	Total tonnage.
Maine	73	120	150	1	1	346	63,548,74
N. H.	7	1	2			10	5,268,48
Vt.			1	2		3	135,30
Mass.	33	13	84	5	3	138	27,769,55
R. I.	3	2	3	1	1	10	2,110,57
Conn.	3		30	8	1	42	6,027,94
N. Y.	17	5	88	138	23	371	50,994,93
N. J.			70	26	5	101	9,830,19
Penn.	8	2	31	121	66	228	24,126,37
Del.			17	6	2	25	2,279,32
Md.	5	17	108	1		131	12,691,58
Dis. of Col.		1	2	19		22	801,58
Virginia			25	2		27	1,524,92
N. C.	1		27	6		34	2,384,64
S. C.			3			3	161,72
Georgia				1		1	25,33
Ohio	1	6	29	10	37	83	18,191,53
Missouri			1	43	16	60	6,073,47
Tennessee				1	1	2	167,05
Kentucky			1	30	31	62	5,424,20
Louisiana			9	1	2	12	493,66
Florida				2	2	4	387,93
Michigan	1	7	4	5	17	3,293,07	
Alabama							
Total	151	168	689	392	198	1598	243,732,67

Statement showing the number and class of vessels built in each State and Territory of the United States, in the year ending 30th June, 1848, with their tonnage:

States.	Ships.	Brigs.	Schrs.	Can'l boats.	Steam-boats.	Ves.	Total tonnage.
Maine	130	118	114	3	1	366	89,974,16
N. H.	7		2			9	5,326,33
Vermont			7		2	9	1,189,18
Mass.	53	17	107	2	2	175	39,366,39
R. Island	5		4	4		13	4,058,44
Conn.	2	4	36	8	5	55	7,387,19
New Y.	27	5	100	229	21	382	68,434,88
N. Jersey			51	24	2	77	8,177,63
Penn.	7	5	26	210	48	296	29,633,12
Del.			21	9	1	31	3,205,59
Md.	15	13	117	1		146	17,480,93
Virginia	4	1	24	5		34	2,980,28
N. C.			40	3		43	2,946,85
S. C.	1	1	2			4	449,65
Georgia				1		1	212,09
Ohio	1	8	26	11	17	63	13,656,20
Missouri				18	20	38	6,256,24
Illinois							
Tennessee				1	1	2	54,90
Kentucky				36	39	75	9,274,60
Louisiana	1		11	4	2	18	1,620,39
Florida			3	1	4	8	317,57
Michigan	1	2	8	9	20	30	5,301,99
Alabam			2		2	4	265,01
Texas							
Dis. of Col.				17		17	500,46
Totals	254	174	701	547	175	1851	318,075,54

COMMERCIAL.

Welland Canal Trade,

Statement of articles of property, passed through the Welland Canal, during the season of 1848, compared with 1847—showing the increase and decrease.

The increase is indicated, in the last column, by a †, and the decrease by a ‡.

Articles.	1848.	1847.	difference
Beef and Pork, bbls.	45491‡	22543‡	†22948
Flour,	214851	329330	†114469
Ashes,	2631	2069	†573
Beer and cider	89	228	†139
Salt,	343615	282992	†60623
Whiskey,	5527	3030	†2497
W. lime & plas.	11157	14040	†2883
Fruit and Nuts,	1820‡	1613	†107‡
Butter and lard,	15542‡	1393‡	†14149
Seed,	1411	1800‡	†398‡
Oil and tallow,	323	1190	†867
Pitch and tar,	21	100	†79
Fish,	2430‡	1201‡	†1229
Oatmeal,	12	46	†34
Liquor,	217	114	†103
Vinegar,	52	6	†46
Saleratus,	5	0	†5
Beans,	0	5	†5
Biscuit,	12	0	†12
Porter,	0	24	†24
Peas,	95	0	†95
Rosin,	0	20	†20
Cracklin,	100	0	†100
Saw logs, No. of	3642	7594	†3952
Empty barls.	1426	9069	†7643
Boards, feet,	12397916	14880823	†2482907
Sq. limber, c. feet,	643801	1392639	†748838
Half flatted,	176315	30164	†146151
Round,	43357	27533	†15824
Stave, pipe, No. of	292035	200819	†91216
Do. W. I.	894932	490300	†404632
Do. dble flour b.	1144819	728783	†406136
Wheat bush.	3748168	3710807	†37361
Corn,	578864	939456	†360592
Oats,	0	700	†700
Potatoes,	834	2300	†1466
Onions,	50	0	†50
Butter & lard, kegs,	10839	6469	†4370
Merchandise, tons,	10020‡	8999	†1021‡
Fur & baggage,	201‡	242	†140‡
Iron,	9196	7033	†2163
Coal,	3723‡	5510‡	†1787‡
Castings,	1226‡	776‡	†450‡
W. lime & plas.	2018‡	1423‡	†595‡
Tobacco,	131‡	169‡	†38‡
Grind Stones	485‡	551‡	†66‡
Hides,	22	0	†22
Bacon & hams,	1067‡	155‡	†912‡
Shorts and bran,	473	612‡	†239‡
Hemp,	294	176	†118
Rags,	8‡	3	†5‡
Copper ore,	446	0	†446
Marble,	12‡	9‡	†3‡
Cheese,	1‡	2‡	†1‡
Sugar,	738	10	†728
Lead,	0	30	†30
Bark,	80	0	†80
Wool	0	12‡	†12‡
Oil cake,	45‡	120	†75‡
Leather,	2‡	16	†14‡
Tallow,	223‡	0	†223‡
Bricks,	20‡	9	†11‡
Stone, cords,	3532	2815‡	†717‡
Firewood,	1051	1304	†253
Stave bolts,	32	55	†23
Bark,	131	44	†87
Posts,	168	117	†51
Shingle bolts,	94‡	0	†94‡
Sand, cubic yards,	2226	1542	†684
Hops, bales,	18	0	†18
Cotton,	20	0	†20
Wool,	4	0	†4
Sheep skins,	0	86	†86
Trees, bundles	49	209	†160
Baggage, bbl. bulk,	2075	2586	†511
Passengers, No. of	2625‡	1736	†889‡
Shingles,	2198500	624500	†1574000
Smut machines,	4	43	†39
Thrashing do.	15	100	†85

Boat knees, "	160	525	:365
Revolving rakes, "	0	63	:63
Hoops, raked, "	161000	99850	£61150
Salt, bags, "	0	5909	:5909
Bricks, "	15000	0	£15000
Horses, "	1	0	£1
Hogs, "	220	0	£220
Wagons, "	48	0	£48
Floats, "	100	0	£100
Small Packages, "	317	0	£317
Pails, doz,	240	592	:352
Corn Brooms, "	0	161	:161
Wine, hhds,	6	0	£6
Schooners trips,	2024	2438	:1414
St' boats & pro, "	329	550	:129
Scows, "	1127	1326	:190
Rafts, "	55	77	:122
Tonnage,	372854	453584	:80730
Tolls,	£28076 6 2	£30135 6 2	£2059

This does not include the Chippawa returns.

Portland and Montreal Railway.

Since our last issue we have been favored with a copy of the Fourth Annual Report of the Directors of the St. Lawrence and Atlantic Railroad Company referred to in our last paper. In connection with the movements for the Reciprocity Bill in Congress, the doings of this railway company assume a new importance. The Direction of the St. Lawrence & Atlantic Railroad Company embraces gentlemen of the highest political and commercial position in Canada.

We give extracts from their report.

"The board reports the following as the statement of the disbursements and receipts of the company to the 30th November, the end of the fiscal year of 1848, as taken from the balances of the books of the treasurer, to which they have appended a statement of the liabilities and ways and means of the company to the 31st Dec. last:—

The St. Lawrence and Atlantic Railroad Company's Balance Sheet. 30th November, 1848.

Dr.		Cr.	
	£	s.	d.
To Expenses of engineer's department including instruments.....	10400	13	6
To land & stations, including fencing	11724	3	1
To Iron, including freight, agency, insurance, &c.....	44068	16	0
To grading, including bridge over the river Richelieu and wharf at Longueuil.....	77759	13	10
To freight, platform, and passenger cars.....	3063	15	11
To superstructure.....	12100	5	9
To machine and workshops.....	1290	18	6
To freight and passenger buildings...	2681	10	0
To turning tables.....	1085	12	0
To locomotives.....	3281	0	7
To water station.....	242	2	8
To track account.....	3409	1	6
Total permanent disbursements for construction.....	171097	11	0
Preliminary expenses, including law charges, agencies, and mission to England.....	2948	9	0
Office expenses, and salaries, &c....	2546	7	8
Advertising and printing.....	500	1	4
Insurance.....	129	14	0
Interest paid to stockholders.....	1712	0	6
Interest paid exchange and discount,	1324	6	0
Amounts due by—			
City bank.....	£311	6	5
Bank of British North America.....	1440	14	11
B. Pomeroy, collector, 888	15	1	
Due in England.....	2106	13	9
Bills receivable on hand.....	7648	0	8
	12395	9	10
	£192653	19	4

Cr.		Dr.	
	£	s.	d.
By instalments on stock paid up...	96909	10	10
By instalments on stock in bills receivable now current.....	22229	14	8
By instalments on English stock...	5656	13	0
By contractors' stock.....	10650	0	0
	135445	18	0
By bills payable under discount at bank Br. N. America £32356 8 0			
Less—			
Stockholders' notes for collection.....	16195	3	11
	16161	4	1
By amount advanced by bank of Montreal.....	5904	13	11
By English bankers' loan.....	1200	0	0
By amount due for land and stations, secured by deeds to proprietors...	3363	1	8
By duty on iron.....	880	3	5
By amount due contractors, payable in cash.....	3643	15	6
By amount due contractors, payable in stock.....	6735	10	0
By amount due for iron and locomotives not yet matured.....	19419	12	3
	£192653	19	4

THOMAS STEERS,
Sec. & Treas.

Statement of Liabilities and Ways & Means. St. Lawrence and Atlantic Railroad Company, 31st December, 1848.

LIABILITIES.		£		s.		d.	
To bank of British N. America—							
Bills under discount.....	£28512	3	2				
Less—							
Shareholders' notes in their hands for collection.....	19805	2	10				
To Bank of Montreal.....	5707	0	4				
To English bankers' loan.....	5236	3	11				
To amounts due for lands & stations, secured by deeds to proprietors...	1200	0	0				
To amounts due contractors.....	3363	1	8				
To amounts due contractors payable in stock.....	1611	15	6				
To Amounts due for iron and locomotives, not matured.....	6735	10	0				
Balance.....	18161	12	3				
	92158	13	0				
	£137172	16	8				
WAYS AND MEANS.							
By balances due by bankers, and bills receivable on hand.....	4997	12	11				
By instalments on stock actually due in this province, and in course of collection.....	43155	1	11				
By instalments on English stock, four-fifths of which is due.....	46465	12	0				
By instalments on stock, payable 1st July and 1st April.....	35818	19	10				
By stock, the capital of the company, held as security for the due performance of contracts.....	6735	10	0				
	£137172	16	8				
By balance.....	£92158	13	0				

THOMAS STEERS, Sec. & Treas.

The above accounts show that the Montreal division of 30 miles has cost to the end of the last fiscal year, £171,097 11s. Od., less the proportional expenses chargeable to other particular divisions, and such as are common to the entire road.

The board deem it necessary to state, that the road having been constructed through its principal extent within a recent period, and the banks being composed, for the most part, of clay, the road-bed will require extensive earth-filling, as well as drainage, and ballasting in the spring of the year.

The board, in reporting the purchase of a second-hand locomotive during the past season, and of an engine of first-class power from the Portland Company, at a cost of £3281 Os. 8d., have to state that they have ordered a locomotive from Messrs. Kinmonds & Co., of Dundee, to reach this country in early navigation, and with that addition to their motive power, they are still within the necessities of the road, should the traffic reach what may fairly be expected. It will also be necessary to add, at least, another second-class car to the cars already in use. They have been manufactured by Messrs. McLean and Wright, of this city, and have, to this period, given satisfaction.

The above recited expenditure may be fairly estimated, from calculations made with much care, at £26,902 9s. Od., making the cost of the Montreal division, when in perfect running order, and completely furnished with motive power, allowance being made for a third first-class engine, per mile, £6,600, or a total cost of £198,000.

It may not be irrelevant to remark here, that in regarding the cost of the Montreal division of the road at £198,000, it must be considered that certain items of expenditure, to wit: prolonged surveys, the cost of the lands for the terminus, and the pier with the building at Lengueuil, may, with propriety, be put down as expenditure common to, and rateable per mile on, the whole distance, say £16,000, which, at £126 per mile, for 127 miles, would reduce the cost of the first division to £185,760, or £6,192 per mile.

It must be evident to every thinking man that this enterprise has claims upon public aid which cannot be advanced by any similar undertaking in the Colony. It is the link necessary to complete the continuous chain of communication by our magnificent line of public canals, and on its completion materially depends that the outlay of upwards of two millions and a half of public money be made a profitable investment to the Colony, or otherwise. A route destined to be the highway for the produce of the country drained by the great lakes, and commanding a precedence over any railway route touching the St. Lawrence, being located at a point from whence it will be the shortest route to the ocean at the cities of Portland and Boston, and being of a favorable gradient, it must consequently be the cheapest.

It may further be remarked, in connection with the canals, that, whenever its continuation through the eastern townships will permit the inexhaustible water-powers of that section of the country to come into play, and invite the capitalist to the erection of milling power, it is no visionary expectation to look forward to St. Hyacinthe, Drummondville, to Sherbrooke, and to other localities in the valley of the St. Francis, becoming places of manufacturing notoriety, and their population consumers of western produce. The line of communication which gives the superior facility for the import of raw material, will afford in an equal ratio the readiness of access necessary for the export and distribution of the manufactured article to the population

of the countries from whence that material is derived. The picture, as it is drawn, may, by the unenterprising, be looked upon as visionary, but to those whose minds are conversant with the consequences of active and well-directed exertion, it will be hailed as what may be realised. What, then, will be the state of the Colony? She will be rich in revenue, teeming with population, a source of envy to her neighbors, and a gem in the view of the statesmen of the Empire to which she is an appendage, at this moment of doubtful advantage.

From the superior facilities afforded by our Inland Navigation, and the low rate of freights from the western country, which will admit of a barrel of flour being conveyed from Cleveland to Montreal at 30 cents and from thence to Portland at 30 cents additional, making the whole cost to the seaboard 60 cents, or 3s. per barrel; this railroad, irrespective of other sources of profit, will command a trade of supply to the eastern states and the lower provinces, through the railway communication now in course of construction in Maine, towards Bangor, and elsewhere, sufficient within itself to insure a remunerative income upon the anticipated cost of construction; and who that is acquainted with the eastern townships and their resources in active operation, as well as latent, who is not satisfied, that from that source alone a large additional revenue may be expected, and an increasing one, as they are developed by the facilities of communication, which this railroad will afford.

It is impossible to consider the subject without expressing a confident expectation, that the government will give ample assistance to complete an undertaking, which, if other inducements were wanting, will form 70 miles of the directest route of a railroad from Quebec through Montreal to the eastward, giving the former city from Melbourne a route to the ocean equi distant with the route from Montreal, and which will, no doubt, form a portion of the Halifax road, if it should be decided by the home government to connect it with the upper province through this city.

The board have further to report, that a verdict was given by the high court in England in favor of the company against the account brought by Mr. Fenn for the repayment of the deposit on his stock subscribed in England, which was final as regarded its being the property of the company, since which they have made the balance of deposit available. They have also to state, that their last advices mention a much better feeling in England as regards the undertaking, and they desire publicly to record their high sense of the advocacy of the interests of the company, evinced in the personal exertions of Robert Gillespie, Esq., since his return from this country.

The board are informed that the Atlantic and St. Lawrence Railroad Company have 36 miles of their road in operation, and 8 additional miles graded, which are expected to be completed and in operation almost immediately. This news is cheering, as every mile made by either company lessens the en-

tire distance, and brings the period nearer when the two companies will meet at the Boundary Line.

The Board of Directors have much pleasure in acknowledging the liberal banking facilities afforded to them towards the prosecution of their works for the past and previous year, by the bank of British North America, in this city; and they have at the same time to acknowledge pecuniary aid from the bank of Montreal for like purposes.

Before closing this report, the board desire to congratulate the company that no disturbance has disgraced the prosecution of the works, although, at one period, upwards of 1,500 men were employed, and this pleasing result they mainly attribute to the admirable regularity and system, in the management of men, used by the contractors for grading, Messrs. Black, Wood & Co. They would further bear testimony to the regularity and good management of the contractors generally.

The directors record their increased confidence in the eventual success of the undertaking, and that it will amply remunerate the stockholders as an investment.

The whole, nevertheless, humbly submitted.

A. N. MORIN, *President*.
THOMAS STEERS, *Secretary*.

EXTRACTS FROM A LECTURE

Before the Mechanics Institute at Hamilton, C. W.
By H. B. WILSON, Esq., BARRISTER.

The name of Mr. Wilson is known to the public for his efforts to promote the cause of railways in Canada, especially the Great Western. A very interesting Lecture of his, delivered before the Mercantile Library Association, of Hamilton, in the winter of 1848, on the subject of Railways, was extensively published in the papers of Canada, soon after its delivery. The Lecture now before us was delivered the present winter, and at our request, Mr. Wilson has permitted us to make use of parts of it for the Journal. Our only regret is, that we cannot give it to our readers entire for want of room. Everything relating to Canada is a matter of deep interest to the people of the United States in the present position of Canadian affairs.

After speaking of the importance of facilities of communication, and the want of them in Canada, Mr. Wilson says:

"Let us direct our attention to the consideration of the greatest of all improvements in the means of transit, that of steam power upon Railways made of iron. No invention of human genius has exercised a greater influence on the economy of human life than that of the steam engine. Certainly none has added more to our happiness and comfort.—By its magic aid not only are oceans, lakes, and rivers traversed with ease and speed, but its giant power has been made subservient to our wants in developing the hidden treasures

of the earth. Most of all, however, has its effects been felt in the lightning speed with which, by its application to railways, we are enabled to traverse the surface of the earth.—In speaking of railways, therefore, I wish it always to be understood, that I speak of them in connection with that power by which their efficacy is the more fully realized. Railways were in use at many of the mines in England long before the invention of the steam engine, but the expense of their construction was so great as to destroy the reasonable hope of their general extension, unless a greater rate of speed could be obtained upon them than that of horse power. As early, therefore, as the year 1804, the attention of scientific men and capitalists was directed to the modification of the rude description of steam engine then in use to the purposes of drawing loaded wagons on rails of iron and wood. A general belief, however, prevailed that the adhesion between the wheels of the carriage and surface of the rail would not be sufficient to prevent the former from slipping, and turning round without causing the engine to advance. Many ingenious contrivances were invented to overcome this imaginary difficulty, and, strange to say, ten years elapsed, and hundreds of thousands of pounds were expended, before any body thought of trying the experiment of a smooth wheel upon a smooth level rail, when it was found to be completely successful. There is, perhaps, no example on record, which shows more conclusively the importance of trying the feasibility of things, before we condemn them, and establishes the old maxim that an ounce of experience is better than a pound of theory.

"Although it was ascertained so long ago as the year 1814, that steam locomotives would advance upon a smooth rail, without the aid of cogs, or teeth, yet owing to the very imperfect state in which the steam engine still continued, it remained doubtful up to the year 1829 whether it could be rendered available for the purpose of locomotion on railways. In that year the Liverpool and Manchester railway was in progress, and the directors of this great work were still uncertain whether to use the rude description of locomotive steam engine then in use, or stationary engines at various points along the line of road to draw the trains by means of ropes, or to use horse power. A premium of £500, however, was offered for the best locomotive steam engine, for which three competitors entered the lists, and the prize was awarded to one which had a speed of about 13 miles an hour. From that time to the present, continual improvements have been making in locomotive engines, until the

astonishing speed of even 100 miles an hour has been attained. It is, nevertheless, asserted by scientific men, that it is as yet only in its infancy, and that still more astonishing results may be looked for, when time and lengthened experience shall have brought the steam engine to perfection.

The result of these improvements has been already to cause the general extension of railways throughout England and the United States, as well as many other countries. Such being the case, let us examine a little more particularly into the effects which they have produced upon those countries. The cost to the consumer of almost every article of produce and manufacture is enhanced just in proportion to the expense or difficulty of getting it to the market. Every saving, therefore that can be made in the cost of transportation will benefit both the producer and consumer, by enhancing the value of the commodity to the former, and reducing it to the latter. The advantage to the agriculturalist will, if any be the greater, because the cost of transporting the raw material is always greater than that of the manufactured article. But it is unnecessary at present to discuss this point. Speed and cheapness of transport also, have the effect of bringing into cultivation soils, which otherwise would not bear the expense of working; besides, they enable the producer to grow and send to market numerous articles of a perishable nature, which would not bear the cost of lengthy water, or ordinary land, carriage—such, for instance, as many kinds of vegetables, and fresh animal food. The effect of railways in this respect is to place the most distant parts in the immediate vicinity of large towns. From the equalization of the value of the products of the soil, and of manufactures, would result a like equalization in the value of lands. The towns in their turn receive a fresh stimulus by being brought, as it were, into immediate contact with the most distant parts of the country, and their markets all abundantly supplied with better and more wholesome provisions. In transporting animal food from the producer to the consumer, alive, the distance of the market is necessarily limited by the power of the animal to travel. The quality, flavor, and wholesomeness of the meat also depend upon the distance to be travelled. But the speed and capabilities of railways for transporting large loads, affords the means of carry live stock to the market, from great distances, and without any damage to their flesh. A consideration of these facts must afford, to every unprejudiced mind, convincing proofs of the advantages of railways in equalizing the value

of produce, merchandize, and lands, throughout the whole country, and in creating new and stimulating old branches of industry and enterprise. Their general extension most effectually breaks down those undue monopolies of trade, which in distant parts of new and poor countries are often most oppressively felt, where a wealthy capitalist, or a company, manage to reduce a whole neighborhood to a state of dependance amounting almost to a moral and physical subserviency. There is, in fact, no engine in the compass of human power capable of exerting so mighty an influence on society, and the destinies of mankind, as railways with aid of steam. It is less than twenty years since that power has been successfully applied upon them, and the locomotive engine is still said to be in its infancy; yet their effects upon those countries where their use has become extensive, have been prodigious. 'The moral and political consequences,' says Lardner, 'of so great a change in the power of transition of persons and intelligence, from place to place, are not easily calculated. The concentration of mind and exertion, which a great metropolis always exhibits, will be extended in a considerable degree to the whole realm. The same effect will be produced as it all distances were lessened in the proportion in which the speed and cheapness of transit are increased. Towns at present removed some stages from the metropolis, will become its suburbs; others at a day's journey, will be removed to its immediate vicinity. Business will be carried on with as much ease between and the metropolis, as it is now between distant parts of the metropolis itself.' This is no exaggeration of their effects already in England; and yet England had, before the introduction of railways, more than 25,000 miles of stone and macadamized roads, besides at least 100,000 miles of common roads, and numerous canals. Stage coaches, it is true, have been driven away from the leading thorough-fares; but they have found employment on other routes, which act as feeders to these incomparable means of transport, and their numbers have not materially decreased, if at all. In the United States no less astonishing results have been achieved by the same cause. The light, knowledge, and refinement of their great cities, divested of these accompaniments of vice and immorality so common in large communities, are daily disseminated thousands of miles in the interior. Objects are accomplished now in a few years, which before required half a century to attain; and yet it is but the beginning of a great change in the social, moral, and political condition of the human race. One of the first and most

striking advantages of railway transport is, the velocity with which persons and merchandize are carried from one point to another. The popular appreciation of this increase is amply illustrated by the vast increase both of travel and traffic, which the opening of a new line of railway always produce between different localities. The increase has been such, in many instances, as to baffle all calculations—generally exceeding four or five, and sometimes ten times the amount of business before existing.

"This power, as it were, to create business, must arise in part from the saving of time, and in part from the reduction on the cost of transport, and ought to be sufficient to convince every one not blinded by prejudice of the greatly superior value of this method of transit over all others, for nearly all the purposes of life." In other countries where the great number of railways has necessarily brought them into extensive competition with canals and macadamized roads, it has been found that the amount of business done upon the old routes has not been materially lessened. The inference to be drawn from this circumstance is, that many descriptions of merchandize can be carried cheaper by railway, whilst others can be carried more economically by water, or, from the shortness of the distance, by common land carriage." * * *

"Having dwelt at sufficient length upon the vast superiority of railways, as a means of internal transit over other modes of conveyance, and pointed out some of the most striking effects, which they have produced upon the condition of other countries, let us turn our attention to a short inquiry into the causes which have delayed their construction in this province. Those who have not carefully considered the subject are apt to attribute this to our poverty, or to the absence in the county of available capital, over and beyond that employed in agricultural and commercial pursuits. When we draw a comparison, however, with many of the western States, possessing much smaller resources and population, where many hundreds of miles of railway are already in successful operation, the want of capital cannot justly be assigned as the principal cause.

"In my humble opinion, the whole difficulty rests with ourselves. The necessary confidence has never been established in the country, to carry out any great undertaking requiring the concentration of capital or enterprise. The people have always been in the habit of looking to the government, or to the public funds, for means to carry out every improvement they desired. If a road

is to be opened, a bridge built, or a mud hole filled up, straightway a petition is got up to the Legislature or the District Council, and entrusted to the member representing the locality. The greater the number of such petitions with which each member is entrusted, the more important he feels himself, when he meets the Grand Council of the District or Province. When this meeting takes place, each representative has his bundle of applications for public aid, and they put their heads together, and vote away large sums of money out of the public treasury for mere local purposes. Every person familiar with the system of legislation which formerly prevailed in this Province, and which has not yet been fully corrected, must admit the truth of my statement. At the close of nearly every session of Parliament, what was termed a road bill was passed appropriating out of the public treasury a large sum of money which was always made larger the last session of each parliament, when the people's representatives were about returning to their constituents. The member or members for each constituency had the distribution of the share of the spoils appropriated for the locality they represented—and the appointment of the parties who were to expend the money. These were called commissioners, and were always composed of the friends and partizans of those by whom they were chosen. Thus the public money, which ought to have been applied for improvements of a national character, was squandered upon works of inconsiderable importance, and used for electioneering purposes. At present the district councils exercise, in a great measure the functions formerly belonging solely to the provincial legislature—and I have reason to believe that much of the same system still prevails. The principle of levying local assessments for local improvements is as yet but imperfectly understood, and but little practised—either in our towns or the country.

“The effect of the system which causes everybody to look to the public treasury for means to make roads past each man's door, or which are mere local in their character, besides absorbing the general resources of the country, and crippling our ability to construct national works, or finish those already begun, destroys enterprise and energy in the whole community. Had our public men and legislators manifested a proper degree of public spirit at an earlier period, when railways first began to be extensively built in England and the neighboring States, there is no doubt by this time we should have had a great provincial line either finished or in a forward state of completion. We should have done

as many companies in those countries did.—We should have built such portions of roads as might have yielded an immediate return to the shareholders. This would have afforded security for the raising of funds to continue them from town to town, or from one important point to another. Each portion completed would have furnished additional security and confidence both to shareholders and the public, and we might thus have raised within the country itself ample capital for the completion of the whole. Take the Great Western line as an instance. Had the company ten years ago commenced and finished the section from this to Paris, or from this to the Niagara frontier, which might have been done with the means at their disposal, there would, in my opinion, have been little difficulty in finding means to have completed the whole line. This once in successful operation, its gradual extension to Montreal would have been a matter of almost certainty within a very short period.

“Every effort hitherto made to obtain capital in other countries for building our railways, has failed; and the failure of these attempts has in all probability resulted entirely from the causes I have pointed out, viz: the want of energy, enterprise, and confidence, among ourselves. Foreign capitalists very naturally prefer investing their money where they see those who seek its investment ready and willing to jeopardise their own means, and where there is a certainty of the works undertaken being prosecuted to completion. Heretofore we offered no such guaranties.—The people of Montreal have at length taken up the subject with proper spirit. Having failed in raising capital in England, and spurred on by the energetic conduct of the people of Portland and other parts of Maine, they set earnestly to work and raised means enough among themselves to ensure the ultimate completion of the Montreal and Portland railway. A great public meeting was called in the city of Montreal, and the most powerful arguments were urged in favor of the work: committees were appointed to canvass every ward of the city, and the people on the line of the road were individually asked to subscribe for stock in the company; and almost every man did subscribe more or less according to his means. The result has been that an important section of the road has already been opened. Such efforts deserve, and I have not the slightest doubt, will meet with success. There is one very important consideration connected with the building of railways, but little understood in Canada—and that is, that the very expenditure of the money in making a railway, furnishes the

means to the stockholders, living on or near the line of road, to pay up their calls on the stock, as the money necessarily, through the various channels of business, finds its way back to their pockets or tills. In this way the city of Hamilton might contribute a million of dollars in the course of three or four years without drawing anything of consequence, except temporarily, out of the business capital of the place.”

“It is only by a united effort of the whole country that we can expect to create confidence, and obtain the means to carry into effect so great an undertaking as a national or provincial line of railway.

“Fortunately for us, the peculiar geographical position of Canada leaves no difficulty in making choice of the proper route. The settled portion of the province is comprized within a comparatively narrow belt or strip of land, extending along the St. Lawrence and Lakes Ontario and Erie. By commencing at Windsor, opposite Detroit, and following the most direct route to the head of Lake Ontario, at Hamilton, you pass through the very heart of the finest and most populous part of the whole province. You connect all the villages and towns of importance, for they all lie immediately on the line, or within a very short distance from it. At Detroit you connect with the Michigan Central Railway, and others extending into the heart of that rapidly growing State, and which will shortly penetrate the immense fertile regions of the Valley of the Mississippi. You also command the outlets of Lakes Honore, Michigan, and Superior, about the shores of which exists such inexhaustible stores of mineral wealth, already in the course of rapid development—lakes which must, in a few years, possess a trade greater than the whole of British America at present. At Hamilton the traveller and the merchant has offered to him, during the season of navigation, the choice between steamboat and railway. By the latter you may proceed to the Niagara Frontier, at all seasons, where you meet the railways of the State of New York extending to the great maritime cities of the Union. The Maine branch, however, will follow the course so clearly pointed out for its extension, along the North shore of Lake Ontario to Montreal, and from thence to Quebec; thus connecting those ancient cities of Canada, by an uninterrupted line of railway, with the great valley of the Mississippi, and with all the intermediate towns and cities, and all these with each other. At Kingston and Prescott you connect with American roads in the course of being built, and at Montreal with the St. Lawrence and Atlantic Railway,

before referred to."

"As compared with the rapid progress in wealth, population, and resources, with some of the adjoining States, we absolutely appear to be standing still. The superior inducements offered for the investment of capital, and the exercise of labor, talent and skill, by our neighbors, are every year causing tens of thousands of Englishmen, composed of all classes, to forego their allegiance to their Queen and government, and to lay aside their predilections in favor of British laws and institutions, in order to participate in the advantages of Yankee enterprise, and to secure to themselves and their children the means of a comfortable subsistence. You may concoct schemes of emigration till dooms-day, and you will not draw to this province an emigration such as that which is annually attracted to United States, by the reasons I have assigned. Great indeed must be national resources of a country, in the present day, which does not actually retrograde if it possess no railways; and I shall not be surprised to see a large emigration from this country to United States in a few years, unless our government take up the subject in a manner becoming its importance, and remove the reproach under which we labor, of being wanting in enterprise."

AMERICAN RAILROAD JOURNAL.

Saturday, February 10, 1849.

Railroads in Cuba.

The rapidly increasing commerce of Cuba, its growing trade with this country, together with the large share of public attention which it has engaged in consequence of the agitation of the question of its purchase by our government, has induced us to make some inquiry into the condition of railroad enterprise there. In the prosecution of our researches we were struck with the almost entire absence of books and documents on the subject, and the general want of information, available to the community, relative to this beautiful island. We must confess we were not prepared to find that an island, 700 miles long, with millions of acres of fertile lands teeming with all the wealth of the tropics, bearing a population of a million and a quarter of people, exporting products of its own soil to the astonishing amount of nearly thirty millions of dollars annually, possessing numerous harbors, unequalled in magnitude and safety, and not more than three days' sail from our own shores, should only be known, comparatively speaking, to the few merchants and traders in immediate commerce with it. We trust the time is not far remote when the public shall be possessed of more accurate information, and our libraries enriched with some good work upon its present condition and future prospects.—But we are wandering from our purpose, which is to make a few remarks upon its system of railroads. There is, perhaps, no country in the world more adapted to this class of road, than the island of Cuba. Mountainous in its general aspect, but abounding in rich valleys without navigable streams, great dif-

ficulty was experienced in opening roads by which to convey the products of its soil to market. The deep alluvial lands of the plains made the cost of common roads very expensive, and these when built were incapable of resisting the torrents that fall within the tropics during the rainy season. The rail was found to be the most economical road that could be constructed, and the fact that short routes from the different bays into the interior could be made immediately productive, and at the same time bring new and hitherto unapproachable lands into the market, stimulated the government to take the initiative, and afterwards to favor every private enterprise of the kind. Rails, locomotives, cars, and every article for the construction and equipment of railroads are admitted free of duty. The result has been that more than 250 miles of road has been completed and are now in successful operation, and about 200 miles more are either in progress of construction or projected. The advances already made in the laying of road have been of very great advantage to the island, as where these have been constructed the expense of bringing the products of the different estates to a shipping point has been diminished fully 75 per cent. That all the roads of Cuba will ultimately be connected with each other, seems now very probable, and this will certainly redound much to the benefit of the general interests of the country, whatever effect it may have upon particular roads.

Under the administration of the celebrated Tacon, the first step was taken, and the road to Guines planned and commenced by the government. It was completed in 1838. Length 45 miles. This line now forms the main trunk of an extended system. In 1843 it was transferred by the government to a corporate company of private individuals, who proceeded to construct a branch towards the west. This branch is completed to San Antonio, about 19 miles from the point where it leaves the main road, and is being continued to Guanajay, 15 miles further, to which terminus it will be opened during the coming summer. The road with this branch forms an arc, and at Guanajay it approaches within six miles of Mariel, a large bay about 30 miles west of Havana. They have since run another branch about 7 miles long, from the main trunk to Batabano. This completes the communication between the north and south sides of the island, and steamers are now running from Batabano to St. Jago, touching at Cienfuegos, Trinidad, Santa Cruz, and Manzanillo, and also to Coloma and Pinar del Rio. From Guines the main road has been continued to Reyes, about 37 miles, where it connects with the Matanzas and Sabanilla road, forming thus a complete line from Havana to Matanzas. The company have 108 miles of road in running order, and 15 more in construction. From Matanzas two roads have been constructed. The Sabanilla, road opened in 1847, takes, very nearly, a south direction to Reyes, where it connects with the Havana road. From Reyes it diverges eastwardly to Bolondran, and will no doubt soon be completed to a connection with the Cardenas road. About 28 miles are now open. The Coliseo road, opened in 1848, has an east course thro' the plains between Matanzas and Cardenas near the North Coast. It is in operation about 20 miles, and will also, no doubt, be continued to a junction with the Cardenas road.

The Cardenas road, having its terminus on the bay of Cardenas, was opened in 1846. It has, very nearly a South course, and is completed to Montalvo, about 25 miles, and is one of the most profitable roads in Cuba.

The Jucaro road, running from a point on the bay of Cardenas, opposite to the town, is in operation to Pijuan, 21½ miles, with two branches—one of 4½ miles, to Sabanilla de la Palma, and the other to Banaguises, 9 miles in length. The general direction of the road is S. E. It will, no doubt, be continued to Cienfuegos, and eventually be brought into the town of Cardenas, when it will be one of the most important roads in Cuba.

At San Juan de los Remedios a road is being constructed to its port, Caibarien, distant about 5 miles. In a few years it will no doubt be continued into the interior, and add much to the wealth of the town.

Puerto Principe has not allowed herself to be outstripped in the march of improvement. A fine road has been laid out to Nuevitas, a port on the North coast, distant about 31 miles. About one-half of this road remains to be completed; but as it is in active construction, we hope it will be finished before the expiration of another year.

The country around St. Jago is not favorable to this class of enterprise, as the mountains at that part of the Island approach very closely to the sea. A small road to Cobre has been constructed for the purpose of bringing to the port the copper ore so extensively mined there—length, about 7 miles. Trinidad also lies disadvantageously for the construction of railroads, being entirely surrounded by mountains. Rails have been laid to Casilda, its port distant about 6 miles, on which horse power is used.

Cienfuegos possesses, as yet, no road; a project is on foot to construct one to Villa Clara, about 50 miles distant, which we hope will be accomplished. There has been some talk also of one from Sagua to Villa Clara.

With the exception of a short piece of road laid from Havana to Guanabacoa, about 2 miles, now almost useless, and the projected road from Havana to Matanzas, along the North shore of the Island, which will probably never be built, we believe we have mentioned all the roads constructed or projected, thus far, in Cuba. We trust, however, the day is not far distant when it will be found desirable and feasible to open other lines, bringing new lands into cultivation, and pouring yet greater wealth into the lap of commerce. Much of the foregoing has been compiled from memory, and perhaps incorrect data, and we may have committed some errors. Will some of those gentlemen, Messrs. Wright, Dod, Clark, Don Jose Manuel Carrera, and others, so long and intimately connected with railroads in Cuba, favor us with copies of reports, documents, and statistics attainable by them?

Railway Progress.

The year 1848 has witnessed greater progress in the extension of railways than any previous one, notwithstanding the continued stringency in money matters during its whole period. Both in the United Kingdom and the United States the number of miles put in operation has been very nearly twice as great as in any previous year. At the commencement of a new year, which, from present indications, seems likely to surpass any previous one in the accomplishment of works of a similar character, we have attempted, as preliminary to a careful examination of the railways of the country, to give in a condensed form a view of the several roads in each State of the Union.

This is a work not so easily accomplished as desired; to prove which, we need only refer to a matter within the knowledge of every one in New York, who is at all conversant with railway operations.—In The Merchants Magazine, of December last,

a tabular statement was published, purporting to give, among other items, the number of railroad companies, and the number of miles of railway in actual operation in each State of the Union, compiled from DOGGETT'S RAILWAY GUIDE. In this table, the number of companies and the miles of road in operation were given as follows:

Companies.	Miles in operation.
Maine.....	3
New Hampshire.....	226½
Vermont.....	99
Massachusetts.....	33
Rhode Island.....	1
Connecticut.....	36
New York.....	1920
New Jersey.....	2
Pennsylvania.....	91
Maryland.....	4
Virginia.....	253
North Carolina.....	798
South Carolina.....	155
Georgia.....	4
Kentucky.....	355
Mississippi.....	661
Alabama.....	261
Ohio.....	6
Indiana.....	248
Michigan.....	204
	5
	602
	28
	70
	67
	307
	86
	241
	117
	6720

Any one acquainted with railways in New England, would, as a matter of course, perceive that the number of miles in operation was largely overstated.

The high authority of the Merchants' Magazine on all questions of statistics, and kindred subjects, has caused an extensive circulation of the table before referred to, giving us credit for more miles of railway than we at present enjoy.

We presume the errors occurred by counting portions of trunk lines more than once, as in Doggett's valuable Guide the distances, fare and running time of the trunk lines are repeated in giving a view of the various branches. For example the Boston and Maine railroad is given as a trunk line to Portland, though it connects with the Portland, Saco and Portsmouth railroad, 38 miles from Portland. It has a branch to Great Falls of 2½ miles only, but in giving a statement of the running of the Great Falls trains, the whole distance from Boston is put down including 69 miles on the Boston and Maine road.

In this way, Massachusetts has credit for the whole distance, and counted more than once beside. Instead of 1920 miles of railway in Massachusetts, as stated in the table before referred to, the actual number of miles January 1, 1848, was 701½, and including new openings during 1848, amounts to 872½ only. This is an extraordinary number for a State of no greater extent of territory than Massachusetts, and we intend to speak of this more fully hereafter. We allude to this matter to show that under the peculiar organization of our government, having no central power to control the movements of railways or the different systems of legislation of the several States, no one can readily acquire full and accurate information of our extended railway lines.

Without asserting that we have reached perfect accuracy in our statements, we have great confidence that our tables below will be found more nearly correct than anything before published on the subject. We have spoken of this matter in the hope that parties interested in the different lines in the country, will give us at an early day more full accounts in relation to their several roads. We are preparing a full Share List of all the railways in this country, in Canada and Cuba, so that our friends across the water may take more accurate note of American Railways, and our own projects be better understood at home. In the United Kingdom, as

well as in other countries of Europe, the whole railway system of each county is under one general law. Not so in the United States. The legislation of each State is independent of ever other, and the law governing railways is far from being harmonious in the several States. Take for instance the Boston and Maine railway. It was originally a corporation of Massachusetts only. It is now created a corporation in New Hampshire and Maine also. It is managed by one Board of Directors, and has a common stock, though subject to the legislation of three States.

So with the Portland and Montreal Railroad. It has an original charter from Maine, and the same company is constituted a corporation in New Hampshire and Vermont. The New York and Erie, and many other roads, have been compelled to resort to different jurisdictions to secure the most desirable lines.

In some of the States provision is made, by law, for full returns from the different railway companies, showing the cost, character, and working power of each road, while in others, nothing of this kind is required.

In showing the progress of railways, we propose to give, in the first place, a list of those in operation January 1, 1848, in each State; then, the opening of new roads during the year, bringing the account down to Jan. 1, 1849, naming also those in progress.

MAINE.

Roads in Operation Jan. 1, 1848.

Calais and Baring.....	3 miles.
Machiasport.....	8
Bangor and Piscataquis, (to Oldtown).....	11½
Portland, Portsmouth and Saco.....	51
Boston and Maine.....	3
	76½ miles.

Opened during 1848.

Atlantic & St. Lawrence (now opened 36 miles).....	28
Androscoggin and Kennebec.....	6½
	34½

Total.....111½ miles

Roads in Progress.

Atlantic and St. Lawrence.
Androscoggin and Kennebec.
Kennebec and Portland.
Bath Branch.
York and Cumberland.
Buckfield Branch.

NEW HAMPSHIRE.

In Operation Jan. 1, 1848.

Eastern.....	16 miles.
Nashua and Lowell (9½ in Mass.).....	5½
Concord.....	34
Boston and Maine.....	35½
Great Falls Branch.....	2½
Northern.....	65
Cheshire (54 in all).....	9½
	167½ miles

Opened during 1848.

Northern.....	4
Boston, Concord, and Montreal.....	36
Bristol.....	12
Nashua and Worcester.....	7
Cheshire.....	34½
	96½ miles

Total.....260½ miles

Roads in Progress.

Sullivan (since opened 28 miles.)
Boston, Concord and Montreal.
Concord and Claremont.
N. H. Central.
Portsmouth and Concord.

VERMONT.

Roads in Operation Jan. 1, 1848.

None.

Opened during 1848.

Vermont Central (since opened 69).....	52 miles.
Connecticut and Passumpsic.....	39½
	91½ miles

Roads in Progress.

Central.
Burlington and Rutland.
Connecticut River.

MASSACHUSETTS.

Roads in Operation Jan. 1, 1848.

Berkshire.....	21 miles.
Boston and Lowell.....	25
Woburn Branch.....	5
Boston and Maine.....	36½
Boston and Providence (43 in all).....	40
Stoughton Branch.....	4
Dedham Branch.....	2
Boston and Worcester.....	44
Milbury Branch.....	3
Saxonville Branch.....	4
Milford Branch.....	11
Cheshire.....	8
Connecticut River.....	36
Chicopee Branch.....	2½
Dorchester and Milton Branch.....	3
Eastern.....	38
Marblehead Branch.....	3
Gloucester.....	13
Salisbury.....	3
Essex.....	1½
Fall River.....	42
Fitchburg.....	50
Hartford and New Haven.....	6
Lexington and West Cambridge.....	6
Nashua and Lowell.....	9½
New Bedford and Taunton.....	20
Norwich and Worcester (66 in all).....	17
Old Colony.....	37
Pittsfield and North Adams.....	18½
Providence and Worcester.....	27
Taunton.....	11
Vermont & Massachusetts (69 in all).....	14
Western.....	117
West Stockbridge.....	23
	701½ miles

Opened during 1848.

Cape Cod Branch.....	28
Peterboro and Shirley.....	12
Essex.....	18
Stony Brook.....	13
Vermont and Massachusetts.....	35
South Shore.....	11½
Nashua and Worcester.....	37
Lowell and Andover.....	12
Milford Branch.....	4
	170½

Total.....872½ miles

In Progress.

Norfolk County.
Fitchburg and Worcester.

Connecticut River. Grand Junction. Vermont and Massachusetts.	
RHODE ISLAND.	
In Operation January 1, 1848.	
Providence and Stonington, (50 miles)....	45 miles.
Providence and Worcester.....	16½
Boston and Providence.....	3
	64½
Opened during 1848.....	none.
Roads in Progress.	
Providence and Hartford.	
CONNECTICUT.	
In Operation January 1, 1848.	
Norwich and Worcester, (66 miles).....	49 miles.
Providence and Stonington.....	5
Hartford and New Haven (62 in all).....	56
Housatonic.....	74
	194
Opened during 1848.	
New York and New Haven (76 in all)....	48½
New Haven canal.....	28
	76½
Total.....	275 miles.
In Progress.	
New Haven Canal. Naugatuck. Hartford and Willimantic.	
NEW YORK.	
In operation January 1, 1848.	
Albany and Schenectady.....	17 miles.
Utica and Schenectady.....	77½
Utica and Syracuse.....	53
Long Island.....	95
New York and Erie.....	62
New York and Harlem.....	53
Hudson and Berkshire.....	30
Troy and Greenbush.....	6
Rensselaer and Saratoga.....	31½
Saratoga and Schenectady.....	22
Troy and Schenectady.....	20½
Auburn and Syracuse.....	26
Anburn and Rochester.....	77
Tonawanda (Rochester to Attica).....	44
Attica and Buffalo.....	31½
Buffalo and Niagara.....	22
Lockport and Niagara.....	24
Lewiston.....	9
Cayuga and Susquehannah.....	28½
Corning and Blossburg.....	40
	770
Opened during 1848.	
New York and New Haven.....	14
New York and Erie.....	138
New York, Harlem and Albany.....	30
Washington and Saratoga.....	40
Oswego and Syracuse.....	41
Northern (Ogdensburg).....	12
	275 miles.
Total.....	1045 miles.
Roads in Progress.	
New York and Erie. Hudson River. New York, Harlem and Albany. Northern (Ogdensburg.)	
Concluded in next No.	

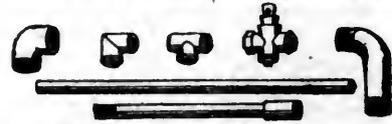
RAILROAD IRON AND LOCOMOTIVE
Tyres imported to order and constantly on hand
by **A. & G. RALSTON**
Mar. 20th 4 South Front St., Philadelphia.

DIRECT ACTION ENGINES
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,
AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Mauldslay, Sons & Field, of London,
may be built in the United States, under license,
which can be obtained of their agent,
THOMAS PROSSER, C. E.,
28 Platt street, New York.
May 6, 1848.

PATENT HAMMERED RAILROAD, SHIP
and Boat Spikes. The Albany Iron and Nail
Works have always on hand, of their own manufac-
ture, a large assortment of Railroad, Ship and Boat
Spikes, from 2 to 12 inches in length, and of any form
of head. From the excellence of the material al-
ways used in their manufacture, and their very gen-
eral use for railroads and other purposes in this coun-
try, the manufacturers have no hesitation in warrant-
ing them fully equal to the best spikes in market,
both as to quality and appearance. All orders ad-
dressed to the subscriber at the works, will be prompt-
ly executed. **JOHN F. WINSLOW, Agent.**
Albany Iron and Nail Works, Troy, N. Y.
The above spikes may be had at factory prices, of
Erastus Corning & Co., Albany; Hart & Merritt,
New York; J. H. Whitney, do.; E. J. Etting, Phil-
adelphia; Wm. E. Coffin & Co., Boston. ja45

**TO RAILROAD COMPANIES AND BUILD-
ERS OF MARINE AND LOCOMOTIVE
ENGINES AND BOILERS.**

PASCAL IRON WORKS.
WELDED WROUGHT IRON TUBES
From 4 inches to 4 in calibre and 2 to 12 feet long,
capable of sustaining pressure from 400 to 2500 lbs.
per square inch, with Stop Cocks, T, L, and
other fixtures to suit, fitting together, with screw
joints, suitable for STEAM, WATER, GAS, and for
LOCOMOTIVE and other STEAM BOILER Pumps.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

FAIRBANKS' RAILROAD SCALES.
THE Subscribers are prepared to construct at short
notice, *Railroad and Depot Scales*, of any desired
length and capacity. Their long experience as ma-
nufacturers—their improvements in the construction
of the various modifications, having reference to
strength, durability, retention of adjustment, accu-
racy of weight and despatch in weighing—and the
long and severe tests to which their scales have been
subjected—combine to ensure for these scales the uni-
versal confidence of the public.

No other scales are so extensively used upon Rail-
roads, either in the United States or Great Britain;
and the manufacturers refer with confidence to the
following in the United States.
Eastern Railroad, Boston and Maine R. R.,
Providence Railroad, Providence & Wor. R.R.,
Western Railroad, Concord R. R.,
Old Colony Railroad, Fitchburg R. R.,
Schenectady Railroad, Syracuse and Utica R. R.,
Baltimore & Ohio Road, Baltimore & Susq. R. R.,
Phila. & Reading Road, Schuylkill Valley R. R.,
Central (Ga.) Railroad, Macon and Western R.R.,
New York and Erie Railroad;
and other principal Railroads in the Western, Mid-
dle and Southern States.

E. & F. FAIRBANKS & CO.
St. Johnsbury, Vt.
Agents } FAIRBANKS & Co., 81 Water st. N. York.
A. B. NORRIS, 196 Market st., Philad.
April 22, 1848. 1y*17

RAILROAD IRON—2500 TONS HEAVY
RH Rail, now landing, and expected shortly to
arrive, for sale on most favorable terms by
DAVIS BROOKS & CO.
July 19th, 1848 68 Broad street, New York.

NEW PATENT CAR WHEELS.
THE SUBSCRIBERS ARE NOW MANU-
facturing Metallic Plate Wheels of their in-
vention, which are pronounced by those that have
used them, a superior article, and the demand for
them has met the most sanguine expectations of the
inventors. Being made of a superior quality of
Charcoal Iron, they are warranted equal to any
manufacture.
We would refer Railroad Companies and others
to the following roads that have them in use. Hart-
ford and New Haven, Connecticut River Railroad,
Housatonic, Harlem, Farmington, and Stonington.
SIZER & CO.
Springfield, Mass.
January 29, 1848. 1f

WILLIAM JESSOP & SONS,
CELEBRATED CAST-STEEL.
The subscribers have on hand, and are constantly
receiving, from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—Square, flat & octagon.
Best warranted Cast Steel—Square, flat & octagon.
Best Double and Single Shear Steel—Warranted.
Machinery Steel—Round.
Best and 2d gy. Sheet Steel—for Saws and other
purposes.
German Steel—flat and sqr., "W. I. & S." "Eagle"
and "Goat" Stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc.
All of which are offered for sale on the most fa-
vorable terms, by **WM. JESSOP & SONS,**
91 John Street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce St., Philadelphia.
Alex'r Fullerton, & Co., 119 Milk St., Boston.
Stickney & Beatty, South Charles St., Baltimore.
May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES.
Tenders and Cars. The Subscriber is engaged
in manufacturing Spring Steel from 1½ to 6 inches
in width, and of any thickness required: large quan-
tities are yearly furnished for railroad purposes, and
wherever used, its quality has been approved of.
The establishment being large, can execute orders
with great promptitude, at reasonable prices, and the
quality warranted. Address
JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,
1y

RAILROAD IRON.
THE Undersigned are prepared to Contract for
the delivery of ENGLISH RAILROAD
IRON, of favorite brands, during the Spring. They
also receive orders for the importation of Pig, Bar,
Sheet, etc., Iron.
THOMAS B. SANDS & Co.
22 South William-Street.
New York.
Feb. 3rd.

RAILROAD IRON.
1000 tons T Rails, weighing about 60lbs. to the
yard, of the latest and most approved pattern,
for sale by **BOORMAN, JOHNSTON, & CO.,**
119 Greenwich st., New York.
Jan. 20, 1849. 6w

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,
SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and
SHAFTING FOR FACTORIES.
The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } **SPRINGFIELD, MASS.**
ISAAC MILLS, } 1y48

JAMES LAURIE, Civil Engineer.
 No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
 Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures
 October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to

JAMES HERRON,
 Civil Engineer, Navy Yard.

Jan. 1.

10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents,
 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition. 92v11y

NORWICH CAR FACTORY,
 NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
 PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
 ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

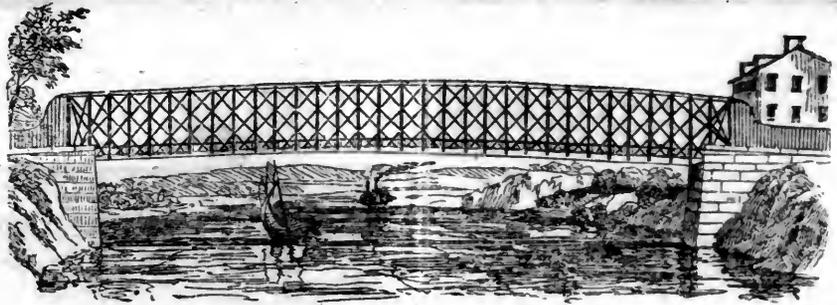
Furnished and fitted at short notice.
 Orders executed with promptness and despatch.

Any communication addressed to
JAMES D. MOWRY,

General Agent,
 Norwich, Conn.,

Will meet with immediate attention.

1y8



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch*, *Suspension* and *Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74 BROADWAY, up stairs,** or of **W. RIDER & BROTHERS, 58 Liberty Street,** where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
 Agent for the Company.

LAP—WELDED
WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

ENGINEERS' AND SURVEYERS' NEW
INSTRUMENTS MADE BY
EDMUND DRAPER,
 Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut,
 1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTEN- tion of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

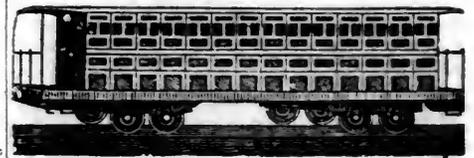
ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.

Office, No. 3 North 5th street,
 Philadelphia, Pa.

1y25

CAR MANUFACTORY,
 CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RE- spectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally. Cincinnati, Ohio, October 2, 1848. 41t

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
 Mount Savage Iron Co., Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
 245 President of the Newcastle Manuf. Co.

DAVENPORT & BRIDGES' CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes.

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO., Philadelphia.
ROBERT NICHOLS, Agent, No. 79 Water St., New York.

RAILROAD IRON, PIG IRON, ETC.

- 600 Tons of T Rail 60 lbs. per yard.
 - 25 Tons of 2½ by ½ Flat Bars.
 - 25 Tons of 2½ by 9-16 Flat Bars.
 - 100 Tons No. 1 Gartschoric.
 - 100 Tons Welsh Forge Pigs.
- For Sale by A. & G. RALSTON & CO. No. 4 So. Front St., Philadelphia

26tf

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark-Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits

- R. L. Stevens, President Camden and Amboy Railroad Company;
- Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.;
- G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.;
- W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia;
- E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.;
- Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.;
- W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.;
- R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad;
- W. R. M^r Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.;
- T. L. Smith, Sup't New Jersey Railroad Trans. Co.;
- J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.;
- J. O. Sterns, Sup't Elizabethtown and Somerville Railroad;
- R. R. Cuyler, President Central Railroad Company, Savannah, Ga.;
- J. D. Gray, Sup't Macon Railroad, Macon, Ga.;
- J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.;
- M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.;
- G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

The letters in the figures refer to the article given in the Journal of June, 1844.

Philadelphia, Pa., April 6, 1844. ja45

HUDSON RIVER RAILROAD NOTICE.—PROPOSALS FOR SPIKES.—

Proposals will be received at the office of the Company, No. 54 Wall street, until the 15th day of February next, for a quantity of Wrought Iron Railroad Spikes, from fifty to two hundred tons, (of 2000 lbs.) to be delivered at such wharf or wharves on the line of said Railroad as may be designated by the Chief Engineer in the employment of said Company. The Spikes to be nine-sixteenths of an inch square, headed and sharpened, suitable for the purpose, and to be of such lengths, not less than six nor more than seven inches, as may be required by said Engineer. The Spikes to be made of the best quality of iron, and put into suitable kegs, with weight and size of Spike marked on the head.

The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the Company to require.

JOHN B. JERVIS, Chief Engineer.
Office Hudson River Railroad Co., }
New York, 10th Jan., 1849. } 312

FULLER'S PATENT INDIA RUBBER SPRINGS.—The Commissioner of Patents has dissolved the interference which had been declared against this Patent. The Patentee is ready to supply the springs upon the shortest notice, in any quantity, and at a moderate cost. They have now been in use for nearly 4 years, with complete success. They are made of the best materials, are economical, both as to cost and wear; are light and very easy in their motion.

The patent was granted to W. C. Fuller, in October 1845. G. M. KNEVITT, Agent.
Office, 78 Broad street New York, and at Messrs. James Lee & Co., 18 India Wharf, Boston.
Jan. 13, 1849.

NICOLL'S PATENT SAFETY SWITCH

for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails: the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee G. A. NICOLLS, Reading, Pa. ja45

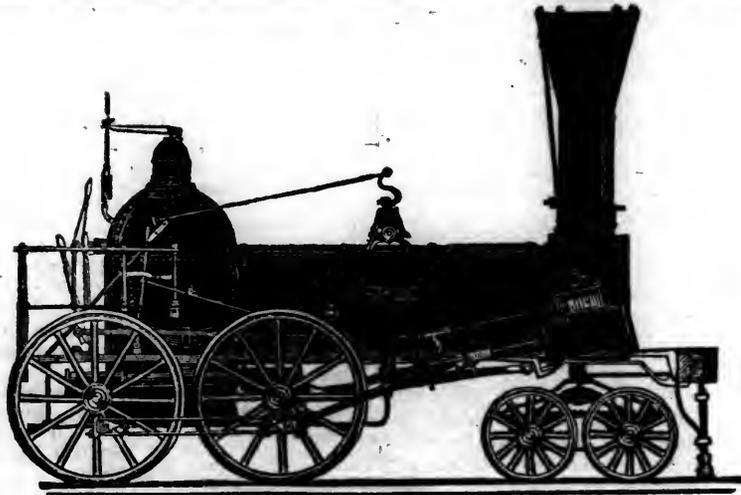
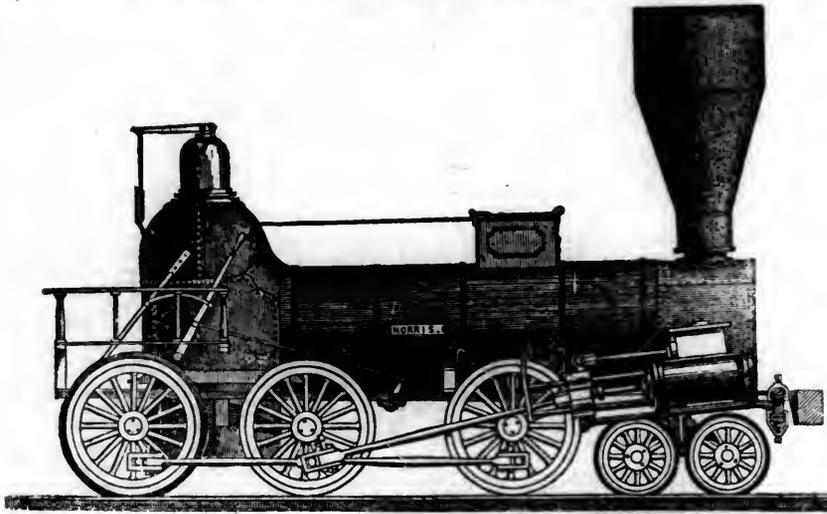
IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- Charles Cook, } Canal Commissioners
 - Nelson J. Beach, } of the
 - Jacob Hinds, } State of New York.
 - Willard Smith Esq., } Engineer of the Bridges for
 - Messrs. Stone & Harris } the Albany Basin.
 - Mr. Wm. Howe, } Railroad Bridge Builders,
 - Mr. S. Whipple, } Springfield, Mass.
 - Engineer & Bridge Builder, }
Utica, N. Y.
- January 1, 1849. 1y*

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Bunning parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO., 68 Broad street.

New York, Sept. 16, 1848, 39tf
 Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St. below 13th,
 Philadelphia, Penna.

Nov. 10, 1847. [tf.]

PATENT RAILROAD, SHIP AND/BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York will be punctually attended to.

HENRY BURDEN, Agent

Spikes are kept for sale, at Factory Prices, by & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Jarviers, Baltimore; Degrand & Smith, Boston.

* * Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.

ja45

TO LOCOMOTIVE AND MARINE EN- gine Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia. 1t

TO RAILROAD COMPANIES AND MAN- ufacturers of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE, a45 N. E. cor. 12th and Market sts., Philad., Pa.

LAWRENCE'S ROSENDALE HYDRA- ulic Cement. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE, 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 38 1y

MATTEWAN MACHINE WORKS.

THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also, Tenders, Wheels, Axles, and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting, and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine Street, New York. WM. B. LEONARD, Agent.

RAILROAD IRON.

THE NEW JERSEY IRON CO.'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to DUDLEY B. FULLER, Agt 139 Greenwich Street.

New York, October 25, 1848.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848. Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11 1/2, a.m. 12, 2 1/2, 3 1/2, 4 1/2, 6, a.m. Salem, 7, 9, 11 1/2, a.m. 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Manchester, 9, a.m. 3 1/2, p.m. Gloucester, 9, a.m. 3 1/2, p.m. Newburyport, 7, 11 1/2, a.m. 2 1/2, 4 1/2, p.m. Portsmouth, 7 a.m., 2 1/2 4 1/2 p.m. Portland, Me. 7, a.m., 2 1/2, p.m.

And for Boston,

From Portland, 7 1/2, a.m., 3, p.m. Portsmouth, 7, 9 1/2, a.m. 5 1/2, p.m. Newburyport, 7 1/2, 10 1/2, a.m., 2, 6, p.m. Gloucester, 7 1/2, a.m., 3 1/2, p.m. Manchester, 8, a.m., 3 1/2, p.m. Salem, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-40*, a.m., 2 1/2, 3*, 4 1/2*, 7*, p.m. Lynn, 7 1/2, 8 1/2*, 9 1/2*, 10 1/2, 11-55*, a.m., 2 1/2, 3 1/2*, 4 1/2*, 7 1/2*, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, p.m.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, a.m. 2, 4 1/2, 6 1/2, p.m. Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, a.m., 12 1/2, 3 1/2, 5 1/2, 6 1/2, p.m.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9 1/2, a.m., 4 1/2, p.m. Salem for Gloucester at 9 1/2, a.m., 4 1/2, p.m. Trains leave Gloucester for Salem at 7 1/2, a.m., 3 1/2, p.m. Manchester for Salem at 8, a.m. 3 1/2, p.m. Freight Trin each way daily, Office 1 Merchants' Row, Boston. Feb. 3 JOHN KINSMAN, Superintendent.

ESSEX RAILROAD.—SALEM TO LAW-

RENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover. On and after Monday, October 2, 1848, trains leave daily (Sunday excepted,) Eastern Railroad Depot, Washington-st. Salem for South Danvers at 7.45, 9, a.m., 12.45, 3.15, 6.45, pm.

Salem for North Danvers at 7.45, 9, a.m., 12.45, 3.15, pm. Salem for Lawrence, 9*, a.m., 3.15*, pm. Danvers " 9.10, a.m., 3.25, pm. North Danvers " 9.20, a.m., 3.35, pm. Middleton " 9.30, a.m., 3.45, pm. North Andover " 10 am., 4.20, pm. South Danvers for Salem at 7.15, 8.45, 11.30, am. 2, 5.45, pm. North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm. Middleton " 11, am., 5.30, pm. North Andover " 10.35, am., 5.05, pm. Lawrence " 10.30*, am., 5*, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAIL-

road. On and after Monday, October 20, the Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington. Accommodation Trains—Leave Boston at 8 a.m. and 3 1/2 p.m. Leave Providence at 8 1/2 a.m. and 3 1/2 p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10 1/2 p.m.—Leave Dedham at 7 1/2 10 1/2 a.m., 1 1/2, 4 1/2, and 9 p.m.

Stoughton Trains—Leave Boston at 11 1/2 a.m. and 4 1/2 p.m. Leave Stoughton at 8 1/2 a.m. and 2 1/2 p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2 and 10 1/2 p.m. Leave Dedham at 8 10 1/2, a.m., 1 1/2, 4 1/2 and 9 p.m.

WM. RAYMOND LEE, Supt.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848. WINTER ARRANGEMENT.

December 4th.—Fare \$4. Leave Philadelphia 8 a.m. and 4 p.m. Leave Baltimore 9 a.m. and 8 p.m. Sunday—Philadelphia only at 4 p.m. Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C.

Through tickets Philadelphia to Charleston, \$20. Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 11 1/2 p.m. daily

PITTSBURG AND WHEELING.

Through ticket, Philadelphia to Pittsburg, \$12. " " " " Wheeling, 13.

All through tickets only sold at office, Philad. WILMINGTON ACCOMMODATION.

Leaves Philadelphia at 1 1/2 and 4 p.m. Leaves Wilmington at 8 a.m. and 4 p.m.

N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

SOUTH CAROLINA RAILROAD.—A

Passenger Train runs daily from Charleston, on the arrival of the boats from

Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr, Agent.

GEORGIA RAILROAD. FROM AU-

GUSTA to ATLANTA—171 MILES. AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT. Table with columns for Between Augusta and Dalton (271 miles) and Between Charleston and Dalton (408 miles). Rows include 1st class Boxes of Hats, Bonnets, and Furniture; 2d class Boxes and Bales of Dry Goods; 3d class Sugar, Coffee, Liquor; 4th class Flour, Rice, Bacon, Pork.

Table with columns for 1st class, 2d class, 3d class, 4th class. Rows include Boxes of Hats, Bonnets, and Furniture; Boxes and Bales of Dry Goods; Sugar, Coffee, Liquor; Flour, Rice, Bacon, Pork; Molasses, per hogshead; Salt per bushel; German or other emigrants.

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, Supt. of Transportation. Augusta, Ga., July 15, 1847.

THE WESTERN AND ATLANTIC

Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warren, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer. Atlanta, Georgia, April 16th, 1846.

CENTRAL RAILROAD—FROM SAVAN-

nah to Macon. Distance 190 miles. This Road is open for the transportation of Passengers and Freight.

Rates of Passage, \$8 00. Freight—On weight goods generally... 50 cts. per hundred. On measurement goods... 13 cts. per cubic ft. On brls. wet (except molasses and oil)... \$1 50 per barrel. On brls. dry (except lime)... 80 cts. per barrel. On iron in pigs or bars, castings for mills, and unboxed machinery... 40 cts. per hundred. On hhd. and pipes of liquor, not over 120 gallons... \$5 00 per hhd. On molasses and oil... \$6 00 per hhd. Goods addressed to F. Winter, Agent, forwarded free of commission. THOMAS PURSE, Gen'l. Supt. Transportation.

BALTIMORE AND OHIO RAILROAD.

MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7 and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburg and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry — with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y)

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and

Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:
Leaves Baltimore at.....9 a.m. and 3½ p.m.
Arrives at.....9 a.m. and 6¼ p.m.
Leaves York at.....5 a.m. and 3 p.m.
Arrives at.....12¼ p.m. and 8 p.m.
Leaves York for Columbia at...1¼ p.m. and 8 a.m.
Leaves Columbia for York at...8 a.m. and 2 p.m.

FARE.

Fare to York.....\$1 50
" Wrightsville.....2 00
" Columbia.....2 12½
Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....\$9
Or via Lancaster by railroad.....10
Through tickets to Harrisburg or Gettysburg...3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at.....5½ p.m.
Returning, leaves Owning's Mills at.....7 a.m.
D. C. H. BORDLEY, Sup't.
31 ly Ticket Office, 63 North st.

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.

The Train from Philadelphia arrives at Reading at 12 18 M.

The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3-50	\$3-00
" " Reading,	58	2-25	1-90
" " Pottsville	34	1-40	1-20

Five minutes allowed at Reading; and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 84

JAMES HERRON, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.

PATENTEE OF THE
HERRON RAILWAY TRACK.

MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after

Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—
Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m.

Freight train at 1 p.m.
Returning to New York, will leave—
Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 25 and 8 p.m.

Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m.

Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.

Tuckahoe, 7 35 and 8 25 a.m., 12 55 and 5 52 p.m.

White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.

Pleasantville, 8 15 a.m. and 5 15 p.m.

Newcastle, 8 a.m. and 5 p.m.

Mechanicsville, 7 48 a.m. and 4. 48 p.m.

Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m.

Returning, leave Croton Falls 10 a.m. and 9½ p.m.

ON SUNDAYS, the trains will run as follows:

Leave City Hall for Croton Falls, 7 a.m., 4 p.m.

Croton Falls for City Hall, 7 30 a.m., 4 30 p.m.

Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m.

White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st.

A car will precede each train 10 minutes to take up passengers in the city.

Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87½c., to Newcastle 75c., to Pleasantville 62½c. to White Plains 50c. 25

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.

Accommodation Trains daily, (Sundays excepted.)

Leave Norwich, at 6 a. m., 12 m. and 2½ p. m.

Leave Worcester, at 6½ and 10 a. m., and 4½ p. m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a. m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars. 32 ly

S. H. P. LEE, Jr., Sup't.

BOSTON AND MAINE RAILROAD.

Winter Arrangement.

Commencing Nov. 13, 1848.

Trains leave Boston as follows, viz: For

Portland at 7 A. M. and 2½ P. M.

Great Falls at 7 a.m., 2½ and 3½ p.m.

Haverhill at 7 and 11½ a.m., 2½, 3½ and 5 p.m.

Lawrence, at 7, 9, 11½ a.m., 2½, 3½, 5, 6 p.m.

Reading 7, 9 & 11½ a.m., 2½, 3½, 5, 6, 7½ & 10 p.m.

Trains leave for Boston as follows, viz: From

Portland at 7½ a.m., and 3 p.m.

Great Falls at 6½ and 9½ a.m., and 4½ p.m.

Haverhill at 7, 8½ and 11 a.m., 3 and 6½ p.m.

Lawrence at 6½, 7½, 8½, 11½ a.m., 12½, 3½, 6½ p.m.

Reading at 6½, 7, 7½, 9½, 11½ a.m., 1½, 3½, 7½, 9 p.m.

MEDFORD BRANCH TRAINS.
From Medford at 6½, 8, 10½ a.m., 2, 4, 6, 9 p.m.
From Boston at 7½, 9½ a.m., 12½, 2½, 5½, 6½, 10 p.m.
The Depot in Boston is on Haymarket Square.
CHAS. MINOT, Super't.
Boston, Nov. 7, 1848.

NEW YORK ANDERIE RAILROAD LINE.

SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M. Fare between New York and Otisville, \$1 50; way-fare in proportion.

For MILK—Leave Otisville at 5½ o'clock, morning and evening.

For FREIGHT—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)

No freight will be received in New York after 5 o'clock, P. M.

Freight for New York will be taken by the trains leaving Otisville at 10½ o'clock, A. M.; Middletown at 11½, A. M.; Goshen at 12½, P. M.; Chester at 1 o'clock, P. M., etc., etc.

For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.

24th H. C. SEYMOUR, Sup't.

LITTLE MIAMI RAILROAD COMPANY

Fall and Winter Arrangement, 1847. On and after Monday, September 20th,

until further notice, a Passenger train will run as follows:

Leave Cincinnati daily at 9 A. M., for Milford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4½ a.m. Upward train arrive at Springfield at 2½ p.m. Downward train arrive at Cincinnati at 10½ a.m.

Freight trains will run each way daily.

Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:

A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.

Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.

A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.

Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.

From Springfield to Bellefontaine by stage, over a good Summer road.....32 "

From Bellefontaine to Sandusky city by railroad.....102 "

FARE—From Cincinnati to Lebanon....\$1 00

" " " Xenia.....1 50

" " " Springfield... 2 00

" " " Columbus... 4 00

" " " Sandusky city 7 00

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.

Tickets can be procured at the Broadway Hotel., Dennison House, or at the Depot of the Company on East Front street.

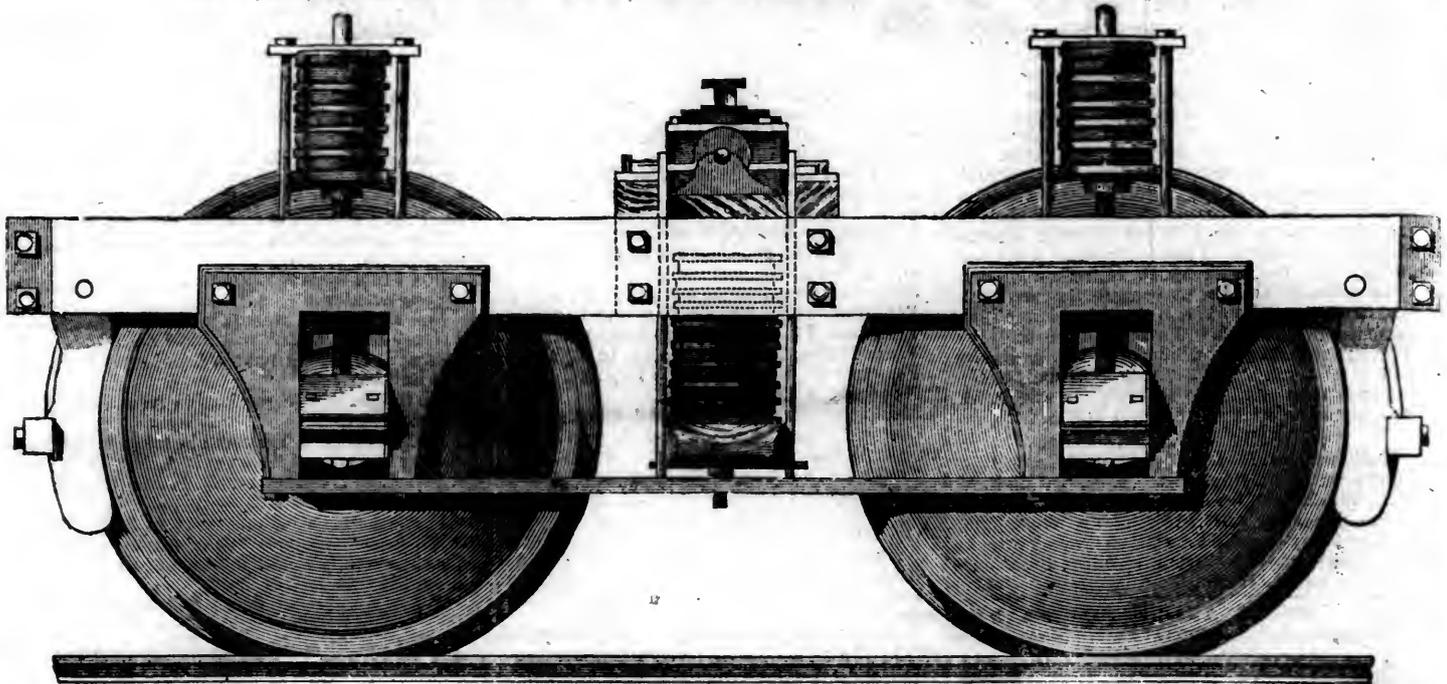
Further information and through tickets for the Stage lines, may be procured at P. Campbell, Age t on Front street, near Broadway.

The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount.

47th W H. CLEMENT, Sup't

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article, from the pen of Mr. HALE, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New York special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement, or interruption of the motion of the car. For to these purposes it appears to be admirably adapted and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from a very harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair during the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the road with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office No. 96 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 2811

CORROSIVE SUBLIMATE. THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING:

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 7.] SATURDAY, FEBRUARY 17, 1849. [WHOLE No. 670, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, February 17, 1849.

India Rubber Springs.

Numerous as are the applications of India Rubber, that to Railroad Springs seems to be one of the most valuable. We have had occasion to refer to this subject in former numbers. Another patent has, we see, been granted, entitled "for an Improvement in the Manufacture of India Rubber," to Messrs. Tyer & Helm; it is dated 30th January, 1849. We have seen specimens of the articles made under this patent, and they appear to be very excellent. One of the peculiarities of this species of Rubber is, that no degree of heat—to which it is subjected where used as springs—will injure it, and we are informed that it will bear a heat of 350 degrees without affecting its texture.

India Rubber Springs, as sometime since was predicted, seem gradually to be taking the place of those made of steel. Mr. Knevit, of New York, the agent, to whose advertisement in another column, we would call our readers attention, has applied them, as we learn, in all kinds of ways, to Railroad Cars, Presses, Carriages, to Punching Machines, and is about applying them to a Trip-Hammer in an ingenious manner, so as not only to take off the jar and save the wear and tear of the machine, but also to increase the blow. We understand some experiments upon them were made last week at the Navy Yard in Boston; 4 rings of 5½ inches diameter were put under a pressure of 25 tons by a Hydraulic Press; they were reduced to half the usual size, and returned again to their original shape. The were

also placed over ice in the coldest weather which we have had this winter, but the elasticity of the Spring was not affected.

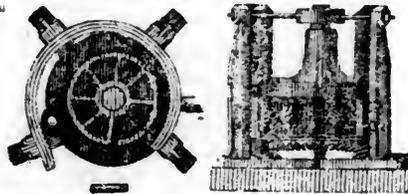
PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron. Four sizes being made, it will be well for those ordering, to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.



P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

HENRY BURDEN'S PATENT REVOLVING SHINGLING MACHINE.



THE Subscriber, having recently purchased the Right of this Machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous—considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder and are much better finished. The subscriber feels confident that persons who will examine for themselves the machine in operation, will find it possesses more advantages than have been enumerated.

For further particulars address the subscriber at
Troy, N. Y. P. A. BURDEN.

RAILROAD SPIKES & WROUGHT IRON FASTENINGS.

THE Troy Iron and Nail Factory, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand. All orders addressed to the Agent at the Factory, will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Opening of the Cheshire, Sullivan & Central Railroads.

On the 31st ult. the line of railway extending from Boston, by the way of Fitchburgh, Keene, and Windsor, to Northfield, Vermont, was connected by uniting the two ends at Windsor. This gives an unbroken line of 209 miles from Boston

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We are unable to give, to-day, full accounts of this interesting event.

Our friend, S. F. BELKNAP, Esq., of Windsor, was "at home" on the occasion.

Pennsylvania Central Railroad.

This extensive work, which has progressed with considerable spirit, has furnished employment to a very large number of laborers for some months past. In addition to these, several of our most enterprising and successful contractors, gentlemen who have been largely engaged on public works for years past, have contracts on the Central railroad, among whom we notice Messrs. John Gaynor, of Minersville, J. Gaynor, of Orwigsburg, and Edward Kearns, of Manheim. These gentlemen have the means to carry on the work to good advantage—and experience and judgement to enable them to execute it satisfactorily.

New York and New Haven.

The compromise between the New York and N. Haven and the Hartford and New Haven companies, amounts to this—that passengers from or to New York may take the boat or the railroad between New York and New Haven, and be sure of a con-

nection. The fare is the same either way. Between New York and Boston \$5, and the passenger is to elect, at the time of purchasing the ticket, which route he will take. The mails will be carried, as heretofore, by the boats.

Nashville and Chattanooga Railroad

Our number of the 6th ult, contained a short notice of the Report of the Stockholders of this road. We have since received the Report of the Directors, Treasurer, and Chief Engineer, and are happy to lay before our readers the flattering prospect they present of its early completion. We know of no other road of equal magnitude in this country, that had secured the whole amount necessary for its construction before the commencement of the work. It appears from the report of the Directors that the whole estimated cost of the road, including the road furniture, is \$3,130,000, and the amount of means provided for its construction are \$3,038,000, leaving only \$92,000 to be provided for. The Directors have also taken the wise precaution of securing ample depot grounds at Nashville and Chattanooga, the two most important points on the road, the increased value of which will add no small item to the value of the stock, in addition to the facilities they give to the transaction of business.

The report of the Chief Engineer presents a very minute and satisfactory description of the proposed routes, which is uncommonly favorable for railway construction, requiring a grade of not more than fifty feet in the mile, except at one point, in crossing the Cumberland mountains. As the report of the Engineer presents, in a very condensed form, the facts we wish to present to our readers, we give the greater part of it in his own words:

"As soon as practicable after my acceptance of the office of Chief Engineer, so kindly tendered by you, a corps was organized and a preliminary survey commenced at Nashville. Since that time the surveys have been pushed with diligence over the whole area of country extending from Nashville to the Tennessee River, including a thorough examination of several miles of that stream.

"It soon became evident that there were two points in the road which must control the entire location—the passage of the main chain of the Cumberland Mountain, and the ascent of the first bench of the mountain from the water of Duck River.

"A very laborious examination was made of the main mountain ridge from the head waters of Hickory Creek about Northcut's Cove to Montgomery's Gap—a distance of about 25 miles. In this distance, and indeed for a distance of about 300 miles, extending from the Cumberland Gap to where the mountain abuts on the Tennessee River, the main crest of the mountain is unbroken, except at Montgomery's Gap. The mountain maintains an elevation of 2000 feet above the sea, except at the point above mentioned where a depression of 700 feet occurs. And at this point the ridge is narrow enough to admit of a tunnel about 2200 feet long, at an elevation of a little more than 1100 ft. above the sea.

"At no other point in the mountain was there a ridge sufficiently narrow to admit of a tunnel, nor was there any depression in the ridge, so that the total rise and fall must be distributed on each side of the mountain, disjoined by its wide summit.

"The passage of the mountain at Montgomery's Gap being established, the next object was to find a suitable point for the ascent of the first bench from the Duck river waters. For this purpose there were three points surveyed in the neighbourhood of Beech Grove and Fairfield. These points will be designated as Mat's Hollow, Pan Handle and Straight Creek. Neither of these routes could have been adopted without resorting to grades of 100 feet per mile, and even then at great cost. A survey of Thompson's Creek, the most western point examined, proved still more unfavorable. Norman's Creek afforded the only ascent from Duck river to the Barrens, possessing the requisites of easy grades, freedom from curvature and economy in construction. This became the 2nd fixed point on the line.

While the surveys just enumerated were going forward, another party made a survey from Nashville, through Williamson county to Shelbyville. This line went over a country highly favorable for the construction of a railroad, but the necessity of bending eastward to reach the mouth of Norman's Creek would have increased the distance so much as to render it much less desirable than the line through Rutherford county.

"This fact, together with other important considerations, induced the board to fix upon Murfreesboro as a point, subject to certain condition, which will probably be complied with. Murfreesboro' therefore became a third fixed point in the line.

"In locating the road between these three fixed points, the route from Montgomery's gap to Norman's creek admitted of no doubt. It was deemed very desirable to go through Winchester, but a survey with that view developed such obstacles in the increase of distance and of cost as appeared insurmountable. The line adopted presents every feature desirable in a railroad, economy of construction, favorable grades, gentle curves and long straight lines.

"Indeed this remark may be made more general, and applied to the whole distance now located; and it may not be amiss here to make a few remarks going to show the value of these elements. Some of the most experienced engineers in the country, in locating roads where a very large business is expected, have acted on the supposition that one degree of curvature in a line is a damage of \$50. This sum must vary greatly with circumstances; but the fact of such an estimate being made, under any circumstances, will convey some idea of the importance attached to the subject by practical men.—Straight lines on a railroad have a value, apart from that which they derive from the principles of dynamics, in the great security they afford against accidents.

"A survey was made for a branch to Shelbyville, and it was ascertained that such a branch could be made in a distance of eight miles, at a cost of \$65,000.

"It is proposed that a light iron of fifty tons per mile should be used on this branch. There is every reason to believe that this branch would be a valuable feeder to the

main line, leading, as it does, to a flourishing town in the midst of a rich country, and extending the area of territory tributary to the road.

"To continue a description of the location, the mountain is passed by a tunnel 2200 feet long, with a grade of 105 6-10 feet on each side. On the North Western side, this grade extended 1½ miles, and 4½ miles on the South Eastern side. It is believed that the circumstance of this high grade being concentrated within a space of six miles, is peculiarly fortunate—and that the use of an assistant locomotive, at this point, will, at a trifling cost, render the passage of the mountain easy.

"The line descends Crow Creek valley, very favorable to a point where it leaves that valley, passes near Bolivar, and reaches the Tennessee river. There has not yet been time to examine the end of the line next to Chattanooga.

"It may be said, in relation to the whole route surveyed, that there is no parallel in the world, of a line, located in a region of country varying from 600 to 2000 feet above the sea, combining so many favorable features.

"The graduation is cheap, the gradients are easy, the line is direct and free from curvature, to an extent rarely equalled. This line will complete a union of the South Atlantic coast with the valley of the Mississippi, with grades never exceeding 50 feet per mile, except at the Cumberland Mountain, where the short distance of higher grade will be easily overcome, at a small additional cost for locomotive power. The greatest elevation above the sea, on any part of this line, which is near Marietta, in Georgia, is 1200 feet.—The freedom of this route from ice and snow, must give it a decided advantage over any of the more Northern lines. And all these advantages combined, place it beyond the reach of competition. Your railroad, regarded as one link in this long line, possesses some peculiar advantages. It is protected from competition by a range of mountains 300 miles in length, which can never be crossed by a railroad at any other point than the gap which your road has occupied. It will be one of the cheapest roads to construct in the Union, and the work will be executed with the benefit of all the experience afforded by other similar enterprises. Thousands of costly experiments have been made by other companies, the benefits of which may be enjoyed by you without cost. All the improvements, of which the last twenty years have been so prolific, may now be pressed into your service, as some compensation to Tennessee for the time she has lost.

"Again: your road, through almost its whole extent, traverses a country of unrivalled fertility. No where in the Union can be found a country of similar extent, capable of sustaining so large a population. It would be difficult to predict what this country may become, when a railroad shall have brought a market to the door of this hitherto isolated region. Furnish, by this means, an adequate reward to industry, and arouse the dormant energies of this favored land, and you will soon develop resources, agricultural,

mineral, and manufacturing, of which few men now dream.

"It is a mistake to suppose that a city on the sea board will receive all the benefits of such a state of things. For even if Charleston and Savannah could reach the size of New York and Boston, that very circumstance would build up large towns and cities in the interior, or there is no dependence to be placed on the experience of the past. To judge of this, you have but to let your eye follow the lines of railroad and canal from New York and Boston to Buffalo, and see what the result has been there. No human being can give a reason why like causes should not produce like effects here. Nashville, especially, which is the grand depot of the Cumberland valley, must receive a powerful impulse from the general prosperity of the surrounding country.

"When, in addition to these sources of prosperity, we recollect the fact, now universally admitted, that this is to be the great avenue of trade between the Mississippi valley and the South Atlantic coast, no rational man can doubt that your stock will rank with the most valuable in the Union. Thus, it appears, that your shareholders, while they are reaping an ample reward in the improved value of their real estate, are making the best possible investment of their money.

"In accordance with the instructions of the Board, a letting was advertised for the 1st of August, at which the tunnel was let to Messrs Stewart, Ross and Culbertson, who came highly recommended; and they are progressing with the work steadily, though with a force not very large as yet. The six miles constituting the passage of the mountain, has been placed under contract, in such a way as to give every reasonable assurance of their punctual completion, on or before the 1st day of January, 1851. It is believed that the entire line from Nashville to the Tennessee river, can be completed simultaneously with the Tunnel."

We congratulate the people of Tennessee upon the prospect of the early completion of the road.—As yet they can form but a slight idea of the advantages of a direct, cheap, and uninterrupted intercourse with the Atlantic coast. The great disadvantage under which they labored, has been the cost of transportation, which, in agricultural products, frequently exceed the cost of production, and in the uncertainty of being able to forward them to a market where the article commands the highest price. A railroad penetrating her interior, and uniting her with the Atlantic cities, is equivalent to a constant and steady market for all her productions; and we think her capacity in this respect is not exceeded by any State in the Union. The main trunk, which she is now constituting, penetrates the State in a manner best adapted to connect with other parts of it by means of branches, and forms a part of the great line of road from the Atlantic to the Mississippi river, to which we expect soon to see efforts made to extend it. Tennessee, from her position, is to be one of the great thorough-fares between the West and the East. A new era has commenced in her history, and we expect to see her move forward in a career of success not exceeded by her most enterprising sister States.

ITEMS.

The Steam Engine.—At least 12,000 machines are now in use in Great Britain, by which the labor of 250,000 horses is saved. Supposing each horse to consume annually the produce of two acres, 500,000 acres are thus set free for other purposes. Dr. Lardner shows that the steam from one pound of coal has a power of raising 667 tons weight of any material to the height of one foot—and that, therefore, an ounce of coal would raise 42 tons one foot high, or 18 pounds a mile in height. Since a force of 18 pounds is capable of drawing two tons upon a railway, it follows that an ounce of coal can draw two tons a mile, or one ton two miles, upon a level railway. The circumference of the earth measures 25,000 miles; if it were begirt by an iron railway, a load of one ton would be drawn round it in six weeks by the mechanical power that dwells in the third part of a ton of coals.—*Railway Record.*

A Novel Steam Engine.—It will be remembered by our readers, that at the meeting of the British Association at Cambridge, considerable sensation was produced by M. Boutigny, who brought before the meeting a series of experiments on what he calls the "spheroidal" state of water, and the remarkable phenomenon of freezing water in red hot crucibles under the influence of this peculiar condition. At a recent meeting of the Academy of Sciences, at Paris, M. Boutigny announced, that by the persevering efforts of a young engineer, M. Testud de Beauregard, a steam engine had been constructed which was moved by the vapor of water in its spheroidal state. This is a machine of one horse power, the boiler of which is so small that it can easily be carried in the pocket. It was also stated that two other machines were in progress: and that a third, of 400 horse power, was about to be made in England.—From a communication to *La Presse*, we learn that the boiler is placed in a bath of melted lead, and water projected in small quantities at a time upon its heated surface.—The spheroidal state is produced; and although the temperature of the water never rises above 190 degrees, the elastic force of the vapor given off is found to be very far superior to that of steam in its ordinary conditions; and, if we understand the somewhat obscure descriptions given, a portion of water is decomposed, as in Prof. Grove's beautiful experiments, and the additional force of the gases is rendered available. We may briefly state, for the benefit of those who may not be familiar with Boutigny's experiments, that if water is projected upon a metal plate heated in dull redness, it is not vaporised at once, but it forms itself into a sphere, and rolling with great rapidity over the heated surface evaporates with comparative slowness. This is the spheroidal state—a remarkable physical condition is produced, in which even the ordinary powers of chemical affinity are suspended, but the vapor of which appears to obey other laws than those of steam. We may therefore hope that we are on the eve of a great improvement in the employment of heat as a motive power.—*Literary Gazette.*

A New Railway Wheel.—To obviate the frequent accidents from breaking of wheel tires, a new wheel without tires, made of cast iron, has been invented and patented, according to the *Manchester Examiner*, by Mr. R. Heath, of that city. It is cast, of course in one piece, and "the difficulty to overcome," says our authority, "to make a wheel of cast iron sufficiently strong has been that of a nice calculation, so as to make it equal in all its parts, and to secure a mode of casting which ensures the contraction of the metal being equal in all its parts. The test applied to try its strength was to hoist the wheel to a height of 14 feet, and then let it fall upon a bed of solid iron. The only effect upon it of this test was, an indentation similar to that which wrought iron might be expected to discover. Another test was to let fall upon the boss, or centre portion of the wheel, a tup, or large ball of iron, of 9 cwt., from the same height; and this heavy mass bounded off without producing the least impression upon it. The patent wheel will be the same weight as those now in use, but may be made at a reduction of 40 per cent. in price.—*Record.*

Atmospheric Pile-driving Machine.—In the exhibition of the Society of Arts, now open, is a model of an "Atmospheric Pile-driving Machine," patented and exhibited by Messrs. Clarke and Varley, whose efforts in the cause of atmospheric propulsion we have frequently noticed. It is thus described in the Society's catalogue:

"This machine consists of a vacuum cylinder of wrought iron, closed at the bottom, and open at the top, having an air tight piston, and self acting slide gear. This is fixed to any convenient part of the frame of a common pile engine. The piston rod is connected to a chain which passes over a fixed pulley on the top of the engine; to the end of this chain is suspended a pulley, over which passes a second chain; one end of the chain is attached to the ram, and the other, passing down under the bottom of the frame is brought up and affixed to the head of the pile. The power is derived from a small steam engine fixed at any convenient spot, which works an air pump for producing the exhaustion. Communication is made between the air pump and the pile-driving machine by small wrought iron tubes, connected together by flexible joints of vulcanised India rubber.—*Railway Record.*

"Ancient" and Modern Engines.—A local paper gives an account of the sale of some engines, by auction, recently employed by the Renfrew and Paisley railway company, the names of which towns they respectively bore. We are sorry to say that both were bought to be broken up. The difference of gauge, we believe, was the cause of the sale. One of them, the auctioneer stated, was the second locomotive used on the rail for the transmission of passengers in Scotland, having been built about 18 years ago, at Newcastle, by the late celebrated George Stephenson, for the Garnkirk company, and thence transferred to the Paisley and Renfrew company. The wheels were of wood, and altogether the contrast it exhibited to the beauti-

tiful and powerful locomotive of the present day was very striking. It realised £13; the original cost was somewhere about £750.—The other two were built in Glasgow not many years ago, cost £1,150 each, and had not been long in use.—*Railway Record.*

Road to the Pacific.

The bill introduced into the Senate by Mr. Benton, to provide for the construction of a railroad from the Mississippi to the Pacific, contemplates a magnificent enterprise. It is supposed to commence at the Bay of San Francisco and to terminate at St. Louis.

A breadth of one mile from the frontier of Missouri to the Pacific is to be reserved for the purpose of laying down, at once, one track of railroad—room being left for other tracks hereafter, and for other sorts of roads. A per centum of the proceeds of the public land sales is to be applied to the construction of the work. It is to be an undertaking by the government, without the cooperation of individual stockholders. The government is to build the road, and to own it when built. A branch road is to run to Oregon and to connect with the Columbia river.

Mr. Benton, in submitting this bill, accompanied it by a characteristic speech, able, eloquent and earnest. He will doubtless continue to press it on every suitable occasion; for it is evidently a favorite project with him—his heart is in it. We subjoin the concluding portion of his speech, which was delivered in the Senate on Wednesday:

"The road I propose is necessary to us, and now. We want it now. The state of our possessions on the Pacific demands it.—The time to begin has arrived. All the necessary information is on hand. The means are ready. The title to Oregon is settled, and a government established there, and population is growing up. California is acquired, people are there, and a government must follow. We have a fleet on that coast: troops there, and going. Streams of population are concentrating there. Since the discovery of the new world by Columbus there has not been such an unsettling of the foundations of society. Not merely individuals and companies, but communities and nations are in commotion, all bound to the setting sun—to the gilded horizon of western America. For want of an American road, they seek foreign routes, far round, by sea and land, to reach, by an immense circuit, what is a part of their own land. Until we can get a road of our own, we must use and support a foreign route, but that is a temporary resource, demanded by the exigency of the times, and until we can get our own ready. Never did so great an object present itself to the acceptance of a nation. We own the country from sea to sea, from the Atlantic to the Pacific, and upon a breadth equal to the length of the Mississippi, and embracing the whole temperate zone. Three thousand miles across, and half that breadth is the magnificent parallelogram of our domain. We can run a national central road, through and through; the whole distance, under our flag and under our laws. Military reasons require us to make it: for troops and munitions must go there.

Political reasons require us to make it; it will be a chain of union between the Atlantic and Mississippi States. Commercial reasons demand it from us; and here I touch a boundless field, dazzling and bewildering the imagination from its vastness and importance. The trade of the Pacific, of the western coast of North America, and of eastern Asia, will all take its track; and not only for us but our posterity. That trade of India which has been shifting its channels from the time of the Phoenicians to the present, is destined to shift once more, and to realise the grand idea of Columbus. The American road to India will also become the European track to that region.

"The European merchant, as well as the American, will fly across our continent on a straight line to China. The rich commerce of Asia will flow through our centre. And where has that commerce ever flowed without carrying wealth and dominion with it? Look at its ancient channels, and the cities which it raised into kingdoms, and the populations which upon its treasures became resplendent in science, learning and the arts. Tyre, Sidon, Balbec, Palmyra, Alexandria, among its ancient emporiums, attest the power of this commerce to enrich, to aggrandize, and to enlighten nations. Constantinople, in the middle ages, and in the time of the crusades, was the wonder of western Europe; and all because she was then a thoroughfare of Asiatic commerce. Genoa and Venice, mere cities, in later time, became the match of kingdoms, and the envy of the kings, from the mere divided streams of this trade of which they became the thoroughfare. Lisbon had her great day, and Portugal her preeminence during the little while that the discovery of the Cape of Good Hope put her in communication with the east. Amsterdam the city of a little territory rescued from the sea, and the Seven United Provinces, not equal in extent to one of our lesser States, became great in arms, in letters, in wealth, and in power, and all upon the East India trade. And London, what makes her the commercial mistress of the world—what makes an island, no larger than one of our first class States, the mistress of possessions in the four quarters of the globe, a match for half of Europe, and dominant in Asia? What makes all this, or contributes most to make it, but this same Asiatic trade? In no instance has it failed to carry the nation or the people which possessed it, to the highest pinnacle of wealth and power, and with it the highest attainments of letters, arts and sciences. And so will it continue to be. An American road to India, through the heart of our country, will revive upon its line all the wonders of which we have read—and eclipse them. The western wilderness, from the Pacific to the Mississippi, will start into life under its touch. A long line of cities will grow up. Existing cities will take a new start. The state of the world calls for a new road to India, and it is our destiny to give it, the last and greatest. Let us act up to the greatness of the occasion, and show ourselves worthy of the extraordinary circumstances in which we

are placed, by securing while we can an American road to India—central and national—for ourselves and our posterity, now and hereafter, for thousands of years to come."

The State of Illinois, and the St. Louis R.R.

The people of Illinois are petitioning congress for a very large grant of lands, for the construction of a railroad from Cairo, at the confluence of the Ohio and Mississippi rivers, to Galena and thence to Chicago—a railroad of some seven hundred miles long, extending through the entire length of that immense State. The quantity of land asked, would probably be enough to construct the entire road; that is, if expended with ordinary prudence and integrity, and not after the fashion of the former disbursements upon the same work.

The same people of Illinois, by their Legislature, some twenty-five years ago, remonstrated against the construction of the national turnpike, through that State to St. Louis, whence it was to have been continued to its contemplated terminus, Jefferson city, and continued to remonstrate, and to oppose the construction of the road through Illinois, unless it should cross the Mississippi at Alton, leaving St. Louis 24 miles to the south of its course. In consequence of that opposition, the appropriations which had previously been made annually, were diminished, then withheld, and finally refused.

It is not denied that the Cumberland road met annually an obstinate opposition in Congress, from those who arrayed themselves systematically against all appropriations for internal improvements; but it was ineffectual, so long as the western members were united in its support. It was considered that the national faith was pledged to the west, to carry out this great measure, and so long as the west stood together in regard to it, there was force enough in the middle and eastern Atlantic States to carry it. But when Illinois, at the prompting of a few lot holders in Alton, threw the firebrand of dissension into the ranks—when the west ceased to ask harmoniously and unitedly for the annual appropriations, those who without any special interest in the matter, had been accustomed to vote with them for this measure, from a sense of obligation, became lookwarm; the enemies of the measure pushed their advantage, and this great enterprise was knocked in the head.

During these twenty-five years that have passed since the perpetration of that unwise act, the most direct route from the east to St. Louis, has been by the meanders of the Ohio and Mississippi rivers, or by the still more circuitous route of the lakes; while the interior of Indiana and Illinois, lying along the proposed route of that road have continued to be inaccessible by any rapid and agreeable mode of transit. The travelling public, have lost the advantage of a fine turnpike, passing on a direct route from Wheeling to St. Louis, over which stages would have been daily and hourly rolling with immense numbers of passengers. The public we say, have lost the vast benefits that might have been enjoyed, through the completion of that important

thoroughfare; but the States of Indiana, Illinois and Missouri, have been the greatest losers. Illinois, by an act of unpardonable selfishness, has greatly injured herself and her neighbors.

The lessons of the past should be instructive. We refer to the above facts, not for the purpose of reviving unpleasant recollections, but for the profitable admonitions they afford. The State of Illinois, which refused to the Nation the right of way through her territory for a road of great public and national benefit now asks the Nation to give her a vast amt of public land to make a very long road, lying entirely within the bounds of that State, and useful only or chiefly to her citizens!

But that is not all. We again attempt to construct a great national avenue for freight and travel, from St. Louis to the Atlantic, by means of a railroad, and ask of Illinois to grant to a company, for that beneficent purpose, corporate powers, and the right of way, and she is disposed to refuse. And why?—Illinois wishes to force the travel to Alton: the travelling public want to go to St. Louis. We ask the ordinary facilities for passing through Illinois, which every state is bound, not merely in courtesy, but in justice, to grant to the citizens of every other state—and we are told that we can have it, by going twenty four miles out of our way, taking a meal at Alton, and paying a tax in the shape of portage to her citizens. This is a small business—a very small business for a sovereign state, and we hope Illinois will rise above it.—*Cincinnati Gazette.*

Ancient Modes of Travelling.

Equestrian Travelling.—Those who are not tolerably familiar with the memoir literature of the sixteenth and seventeenth centuries will have difficulty to comprehend how our ancestors moved about from place to place, and carried on the business of communication from distant inland parts. The mode of conveyance was so universal and so established, that it rarely offers itself to any especial notice. Till the beginning of the eighteenth century we were almost wholly an EQUESTRIAN people. Harrison describes "the excellent paces" of our saddle-horses as peculiar to those of our soil; and says, that "our countrymen, seeking their ease in every corner that it is to be had, delight very much in this quality." From the days of the Wife of Bath, "girt with a pair of spurs sharp," to the days of Queen Elizabeth, we have scarcely a trace of ladies accomplishing their peregrinations in any other manner than that which Chancer has recorded:—

"Upon an ambler easily she sat."

Luxury had its appliances ready for this almost exclusive mode of travel. "A lover of his country," who in 1678 saw that coaches would be the ruin of the kingdom, says, "before these coaches were set up travellers rode on horseback; and men had boots, spurs, saddles, bridles, saddle-cloths and good riding suits." * * * Most gentlemen, before they travelled in their coaches, used to ride with swords, belts, pistols, holsters, portmanteaus and hat-cases; for when they rode on horse-

back, they rode in one suit, and carried another to wear at their journey's end, or lay by the way. * * * And if they were women

that travelled, they needed to have safeguards and hoods, side-saddles and pillions, with strappings, saddle or pillion cloths, which for the most part were either laced or embroidered."

The saving of much of this expenditure by travelling in coaches, the writer holds, is the ruin of trade. "For, formerly, every man that had occasion to travel many journeys yearly, or to ride up and down, kept horses for himself and his servants, and seldom rid without one or two men." In 1526, the Earl of Cumberland rode from Skipton to London with thirty-three servants. (*Whitaker's Craven.*) In 1572, the Earl of Shrewsbury writes to a dependent: "I think my company will be twenty gentlemen and twenty yeomen, besides their men and my horse-keepers. I think to set forward about the 11th of September, from Wingfield to Leicester, with my bed, and to make but 4 days journey to London. (*Lodge's Illustrations.*)

In 1640, the wife of the last Earl of Cumberland rode from London to Londesborough, having thirty-two horses in her train; and the journey occupied eleven days. These slow progresses were the relics of the old times of sumpter-horses, when princes and nobles travelled with vast cavalcades, like an oriental caravan. We must not imagine that all equestrian travelling was at this slow rate.—James I. of England was indeed near five weeks on his paddle saddle, in his royal progress from Edinburgh to London; but Sir Robert Carey, determining to be the first to tell James that he was King of England, stole out of Richmond Palace at 3 o'clock of the morning of the 24th of March, and reached Edinburgh on the night of the 26th, the king having gone to bed at the time he had knocked at the gate. This ride of 400 miles in seventy hours, gives one an elevated notion of the travelling accommodations of two centuries and a half ago. But it must be born in mind that such instances were the exceptions to the rule of slow travelling.—Although the Post was not established by law, there were post-masters at the end of the sixteenth century on all the great lines of roads; and, for a sufficient consideration, they would furnish such a traveller as Sir Robert Carey with abundant horses, that he might ride till they dropped, as indeed he records one of his horses to have done. Then, again, although the roads were bad, the equestrian had many a mile of the smooth turf of an unenclosed country to gallop over. Let it not be forgotten, that if Sir R. Carey rode from London to Edinburgh at the rate of six miles an hour, keeping on night and day, with relays of horses, the general communication of the country was so slow, that although Elizabeth died at two o'clock of the morning of Thursday the 24th of March, and James was proclaimed king, at London, on the same morning, "yet the news of it reached not the city of York until Sunday, March the 27th." (*Continuation of Stow's Annals.*) The days before the Post were

days when those who left their houses for

distant parts of England were more separated from their friends than the North American emigrants of our own times. The transmission of intelligence across the Atlantic is now an easier thing than the old conveyance of a letter 200 miles upon a cross road.

The historian of Craven, speaking of 1609; says, "at this time the communication between the North of England and the universities was kept up by carriers, who pursued their tedious but uniform route with whole trains of pack-horses. To their care were consigned not only the packages but, frequently the persons of young scholars: It was through their medium also that epistolary correspondence was managed; and as they always visited London, a letter could scarcely be delivered in Yorkshire and Oxford in less time than a month." Charles I. seems, in 1635, to have resolved to remedy this evil by the establishment of the home post-office. In his proclamation of that year he says that there had been no certain intercourse between England and Scotland; and he therefore commanded a running post to be established between London and Edinburgh, to go thither and come back again in six days; and for the other roads there are promised the same advantages. In 1660 the General Post-office was established by Act of Parliament: and all letters were to be sent through this office, "except such letters as shall be sent by coaches, common known carriers of goods by carts, waggons and pack-horses, and shall be carried along with their carts, wagons and pack-horses respectively." The Post-master General and his deputies, under this statute, and no other person or persons, "shall provide and prepare horses and furniture to let to hire unto all thorough Posts and persons riding in Post, by commission or without, to and from all and every the places of England, Scotland and Ireland, where any Post-roads are." We find, by various clauses of this Act, that the Post-master was also to furnish a guide with a horn to such as ride Post—that he was to furnish horses within half an hour after demand—and that if he could not accomplish this, persons might hire a horse where they could, and sue the Post-master for a penalty. The country Post-master was an ancient functionary, who had long been in the habit of attending to the wants of those who bore letters, inscribed "haste, haste, Post-haste." He was generally an inn-keeper.

Taylor, the water poet, in his "Pennyless Pilgrimage" from London to Scotland, in 1618, has described one that might rival any Boniface on record: "From Stamford, the next day, we rode to Huntingdon, where we lodged at the Post-master's house, at the sign of the Crown; his name is Riggs. He was informed who I was, and wherefore I undertook this my pennyless progress: wherefore he came up to our chamber and supped with us, and very bountifully called for 3 quarts of wine and sugar, and four jugs of beer. He did drink and begin healths like a horse-leech, and swallowed down his cups without feeling as if he had the dropsy, or nine pound of sponge in his maw. In a word, as he is

post, he drank post, striving and calling by

all means to make the reckoning great, or to make us men of great reckoning. But in his payment he was tired like a jade, leaving the gentleman that was with me to discharge the terrible shot, or else one of my horses must have lain in pawn for his superfluous calling and unmannerly intrusion.

Canada.

Reciprocity Bill.

The House, Feb. 3, was resolved into a committee of the whole to consider the following resolution, introduced by Mr. Merritt, That it is expedient to provide for the free admission of grain and bread-stuffs of all kinds, vegetables, fruit, seeds, animals, hides, wool, butter, cheese, tallow, horns, salted and fresh meats, ores of all kinds of metals, ashes, timber, staves, and lumber of all kinds, the growth or production of the United States of America, into Canada, whensoever similar articles, the production of Canada, shall be admitted without duty into the said United States.

Mr. Smith (Frontenac) moved in amendment, that no action should be taken on this resolution, till it was reported to the Provincial Government that the American Congress had passed the Reciprocity Bill. After a long debate, the amendment was put and lost by a large majority.

Dr. Davignon then moved to strike out several words of the motion, which was lost also.

Mr. Laurin made a similar motion, also lost, and the main motion carried.

The committee then rose and reported progress. The principal speakers were, for the motion, Messrs Merritt, Papineau, Holmes, Egan, Cameron (Kent), Notman, Hincks, Wilson, Flint, Robinson, Weenall, and Nelson; against it, Messrs. Stevenson, La-terriere, and Smith of Frontenac.

Navigation Laws.

Resolution proposed by the Hon. F. Hincks, on which to found an Address to Her Majesty, for the Repeal of the Navigation Laws.

Resolved—As the opinion of this Committee, that an humble address be presented to Her most Gracious Majesty, to assure Her Majesty of the devoted loyalty of the people of this Province, and of their sincere attachment to Her Majesty's person and Government—To represent to Her Majesty that this House feels it to be a duty incumbent upon it to take the earliest opportunity to assure Her Majesty that the sentiments of the people of this Province, on the subject of the Repeal of the British Navigation Laws, which were expressed to Her Majesty in a joint address from the two Houses of the Provincial Parliament in the month of July, 1847, remain unchanged; that delay in removing the present restrictions on the employment of Foreign Shipping, would, in the opinion of this house, be highly injurious to the Carrying Trade of the St. Lawrence; that, in order to secure the trade, the Province, relying on the continuance of the protection which was then enjoyed by colonial products in the markets of Great Britain, incurring a large debt for the construction of a line of Ship Canals, by means of which the cost of Inland Transport has been very materially reduced; that, owing to the difficulties attending the Navigation of the St. Lawrence, the greater length of the voyage, and the higher rates of insurance, freights are likely at all times to range higher at Quebec than at New York, but that the practical effects of the Navigation Laws is not only to prevent the possibility of a fair competition between the two routes, but ac-

tually to give direct encouragement to American shipping, not only through the Canals of the State of New York, but at the Seaports of the United States; that, at the Seaports of the United States, shipping can generally be procured to carry any quantity of produce that may be offered, without a material increase of freight, but that even in case of scarcity, as the navigation is open throughout the year, Foreign Shipping can readily be procured in Europe at fair remunerative rates of freight, and without serious inconvenience or loss of time; that at Quebec, on the other hand, the exporter is compelled to rely on the regular traders to the port, so that when an unusual accumulation of produce takes place, vessels cannot be procured, and freights immediately rise to most exorbitant rates; that no means exist of engaging British Shipping to meet the sudden demands which the nature of trade causes, as such shipping is seldom to be met with at American ports unless under specific orders, or the engagements of a Charter; that the early closing of the navigation of the St. Lawrence renders it difficult, if not impossible, to obtain shipping from England to supply the sudden demands which, from the nature of the trade, are constantly arising, and which could readily be supplied at the American seaports, whence vessels would at any time come round to the St. Lawrence, if assured of remunerative freights; that the uncertainty which at all times prevails as to the route by which the product of the west will be transported to the sea board, must operate to prevent British vessels coming to the St. Lawrence in sufficient numbers to ensure moderate freights during the shipping season, while the scarcity of shipping and the immediate rise of freight to England, whence a large supply of products is sent by the St. Lawrence, has the effect of diverting those products through the Erie Canal to New York. That the navigation laws have likewise had a most injurious influence on the import trade of the Province; that it has not unfrequently happened that Canadian importers of sugar being unable to procure British vessels on any terms at Havana and other foreign ports, have been compelled to import their cargoes in American bottoms, to New York, and thence through the American Canals to Canada, when, but for the restrictions imposed by the Navigation Laws, they would have imported them by the St. Lawrence in foreign bottoms, which could have been readily procured. That this House has observed with much satisfaction, that a Bill was introduced into the House of Commons during the last Session of the Imperial Parliament for the Repeal of the Navigation Laws, and this House being of opinion that the provisions of that Bill are calculated to remove those restrictions from which the trade of this Province is now suffering, most humbly pray that Your Majesty will be graciously pleased to recommend the subject of the repeal of the Navigation Laws to the favorable consideration of the Imperial Parliament. And this House would further humbly pray, that Your Majesty will be gra-

ciously pleased to authorize the Governor of this Province to permit Foreign Vessel to navigate the St. Lawrence above Quebec, under such restrictions as His Excellency may in his wisdom see fit to impose.

MINING.

We have heard various estimates made of the value of gold now in existence in the world, but these can but be approximate amounts, and we think that whatever is raised will be absorbed without much effect on the currency. Look at the annual loss in wear and tear, gilding, &c. Many of our readers may be surprised to learn that since 1816 our own Mint has coined the enormous amount of *ninety-five millions of sovereigns*—of course the same gold may have passed several times through the hands of the coiners. In France, where the legal tender is silver, the amount of francs in circulation is estimated at sixty-five millions sterling. Science has made great advances in our day, but probably in none more than in chemistry, and its practical illustration was prettily brought out in the separation of the gold contained in the Sycee silver, which the Chinese paid us on account of the war expenses, and from which £10,000 worth was extracted. This silver, as the name imports, is pure, the Chinese having attained the art of freeing it from all extraneous matter except gold—and probably of this they might not be aware, certainly the silver was no worse for it. It is taken in payment of duties by the Government, and has on each lump a distinguished mark, giving the weight, with some other particulars, and thus passes currently. In this state it is handed over to our government, at so much per ounce, and the ransom duly paid. Upon arrival in England the admixture of gold was discovered, and its separation determined upon. Under the old system this would have been a difficult and expensive process, but by the new mode it was easily effected, and, as will be seen by the following description, nothing is lost. An ingenious inventor discovered that platina retorts were not affected by acids;—this led to all the subsequent steps. The cost of one of these vessels, we may mention, is about £500. The silver, in the first instance, is granulated by being thrown into water whilst in a liquid state. This exposes a larger surface to the action of the sulphuric acid in which it is placed in the platina retort. The acid having a greater affinity to the silver than the gold, the latter is precipitated in a brownish powder, and the acid and silver in solution is syphoned off into another retort—the powder is smelted, and becomes an ingot of pure gold. Copper, however, has a greater affinity to the acid than silver, and by the introduction of chippings of this metal, the acid deserts the silver and joins the copper—leaving the former as it had done the gold;—this residuum is smelted like the other, and comes out pure silver.—If the copper was wanted, nothing remains to be done but to throw in scraps of iron, and the faithless acid again changes its affections and leaves the copper. But this is not required; the liquid is crystallized, and we have, after making these various uses of it, *sulphate of copper*, which is extensively used by our manufacturers as a blue dye.—*Railway Chronicle.*

COMMERCIAL.

Trade and Commerce of the Canals.

We arranged and published a short time since, a tabular statement showing the total quantity of produce and merchandize, left at tide water during the season of canal navigation in 1846, 1847 and 1848. The yearly returns from the Collector at Buffalo was received at the Department on Thursday, by which we are enabled to furnish to-day additional tables giving the movement of produce in that section.

It will be seen by the following comparative table that the movement of all articles designated under the head of The Forest, including the products of animals, the past year, when compared with 1847, show a slight increase, while those under the head of Vegetable Food have fallen off, particularly flour, wheat and corn.

Statement showing the total quantity of each article first cleared on the canal at Buffalo and Black

Rock, from the opening to the close of canal navigation, during the years 1846, 1847 and 1848:

THE FOREST.	1846.	1847.	1848.
Fur and peltry, lbs	590,070	401,988	458,371
Product of Wood.			
Boards and scantling.....ft.	23,440,447	35,377,192	36,481,794
Shingles.....M.	418	510	3,829
Timber.....cubic ft.	213,788	314,429	521,783
Staves.....lbs.	73,201,932	70,273,772	87,754,638
Wood.....cords	18,039	21,943	27,408
Ashes.....bbls.	24,643	15,237	14,288

AGRICULTURE.

Product of Animals.

Pork.....bbls.	61,514	56,373	67,412
Beef....."	28,503	38,230	45,005
Bacon.....lbs.	2,220,773	3,705,841	7,287,418
Cheese....."	4,973,885	6,918,046	9,829,210
Butter....."	4,662,192	6,842,511	7,416,223
Lard....."	5,951,237	3,577,835	6,071,370
Wool....."	4,117,866	5,926,116	5,999,830
Hides....."	788,956	452,467	432,203
Vegetable Food.			
Flour.....bbls.	1,437,994	2,068,686	1,395,664
Wheat.....bush.	3,637,366	5,836,730	4,065,641
Rye....."	1,895	77,198	2,857
Corn....."	1,121,089	2,996,842	2,218,219
Barley....."	16,325	16,325	24,664
Other grain....."	186,625	412,369	288,479
Bran and ship stuffs....."	60,834	155,636	41,391
Peas & beans....."	6,265	8,341	4,846
Potatoes....."	774	208	7,608
Dried fruit.....lbs.	290,492	1,104,318	217,800

All other Agricultural Products.

Cotton.....lbs.	252,982	360,759	.....
Tobacco....."	2,511,380	1,080,843	264,458
Clover and Grass Seed....."	1,113,867	2,241,272	1,625,591
Flax seed....."	971,796	2,541,200	2,760,793
Hops....."	2,118	8,246	.....
MANUFACTURES.			
Domestic spts, gals.	324,533	910,191	1,162,769
Leather.....lbs.	1,142,256	829,922	493,705
Furniture....."	1,256,630	1,289,826	1,315,908
Bar & pig lead....."	517,299	352,622	96,211
Bloom and bar iron....."	13,516	36,305	81,228
Pig iron....."	22,078	72,407	122,500
Iron ware....."	88,852	85,563	352,500
Domestic wool-lens....."	7,545	23,570	27,613
Domestic cottons....."	11,198	12,897	32,886
Other Articles.			
Stone, lime, and clay.....lbs.	6,531,876	10,416,439	7,848,648
Gypsum....."	6,410	.....	5,000
Mineral coal....."	3,286,162	1,566,133	6,899,000
Sundries....."	11,195,191	14,517,094	22,500,367

Total tons.... 478,917 710,943 602,250

The subjoined comparative table gives the quantity of each important article, first cleared, at the three important termini of our State canals. We deem it unnecessary to go into any details in regard to the increase or the diminution of the shipments at these points, compared with previous years. The falling off in the shipments of vegetable products at these points can be seen at a glance, and the causes for the same are well known to all connected with the commerce of the our canals or rivers.—There has been some increase in the products of the Forest and Animals, as will be seen in the subjoined.

Statement showing the aggregate quantity of each article first cleared on the canal at Buffalo, Black Rock and Oswego, from the opening to the close of canal navigation, during the years 1846, 1847, and 1848:—

THE FOREST.	1846.	1847.	1848.
Fur & Peltry, lbs.	601,493	406,106	513,853
Product of Wood.			
Boards and scantling.....ft.	49,858,613	69,673,236	67,671,096
Shingles.....M.	4,467,918	8,867,510	20,245
Timber.....cubic ft.	351,081	357,854	642,113
Staves.....lbs.	65,339,406	70,820,624	90,969,722
Wood.....cords.	18,197	22,104	27,750
Ashes.....bbls.	32,943	21,062	22,226

AGRICULTURE.

Product of Animals.

Pork.....bbls.	71,516	64,751	91,584
Beef....."	37,187	41,725	46,485
Bacon.....lbs.	2,769,129	3,826,299	9,702,081
Cheese....."	9,841,911	11,804,317	15,225,755
Butter....."	7,326,745	9,350,716	10,229,568
Lard....."	6,504,300	4,279,400	10,332,364
Wool....."	4,363,688	6,221,913	7,202,175
Hides....."	880,201	528,874	497,423
Vegetable Food.			
Flour.....bbls.	1,909,312	2,679,180	1,010,501
Wheat.....bush.	4,070,812	6,550,261	4,865,936
Rye....."	50,293	105,354	56,364
Corn....."	1,468,836	3,930,272	2,561,747
Barley....."	98,557	110,458	260,520
Other grain....."	250,010	450,003	348,981
Bran and ship stuffs....."	821,413	1,395,827	4,035,801
Peas & beans....."	13,972	16,278	33,410
Potatoes....."	9,607	3,805	7,661
Dried fruit....."	292,208	1,132,162	217,820
All other Agricultural Products.			
Cotton.....lbs.	252,983	360,759	.....
Tobacco....."	2,669,536	1,196,071	305,122
Clover and Grass Seeds....."	1,159,108	2,660,673	1,952,806
Flax seed....."	972,271	2,708,847	2,896,627
Hops....."	50,821	141,684	180,645
MANUFACTURES.			
Domestic spts, gals.	358,216	952,351	1,214,451
Leather.....lbs.	1,642,961	1,123,265	681,143
Furniture....."	1,623,395	1,480,656	1,533,803
Bar & pig lead....."	692,224	371,592	96,211
Bloom and bar iron....."	325,916	81,160	87,016
Pig iron....."	182,114	506,368	1,044,096
Iron ware....."	109,478	111,158	408,312
Domestic wool-lens....."	129,218	132,075	93,170
Do. cottons....."	136,594	130,818	206,120
Salt.....bush.	.....	334,836	575,078
Other Articles.			
Stone, lime, and clay.....lbs.	7,881,004	14,759,945	10,413,227
Gypsum....."	140,310	.....	5,000
Mineral coal....."	3,286,162	1,622,133	7,526,178
Sundries....."	13,693,893	19,190,233	26,289,062
Total tons....	627,502	914,888	815,621

—Albany Evening Journal.

New York Railroads.
In the present number we give a condensed summary of the Reports of several New York Railroads made to the Legislature. We intend to follow up the plan, and give a similar abstract of others, in future numbers of the Journal.

AUBURN AND ROCHESTER.
The length of this road is 78 miles, and its cost to the 31st of Dec., 1848,\$2,644,520 35
This sum has been expended as follows:
For purchase of land.....\$182,620 42
" buildings..... 96,811 74
" engines..... 105,565 00
" cars..... 70,105 00
" other items..... 2,259,411 80

Total.....2,714,513 96
Deduct amount rec'd for old iron..... 69,993 61
2,644,520 35

The present indebtedness is as follows:
Bonds issued by the company..... 153,000 00
State stocks..... 200,000 00
Bills payable..... 75,000 00
Balance due for iron, about 160,000 00

Total indebtedness.... 588,000 00
Receipts for the year ending Dec. 31:
From 100,782 through passengers..... 250,794 45
" 108,477½ way " 107,676 85
" freight..... 83,136 85
" transp'n of mails... 11,700 00
" other sources..... 1,413 72
Total receipts..... 454,721 87

The whole weight of freight moved in 1848 was 57,762,911 pounds; the amount expended for operating the road \$188,027 76. A dividend of four per cent was made on the 1st February, and a like one on the 1st of August. The company own the engine-house in Rochester, and half the one in Auburn; also 3 machine shops, 4 six wheeled locomotives, 14 eight wheel do., 1 ten wheel do., 19 passenger and 71 freight cars. Number of miles run by engines, 295,371; average number of men employed, 287. Besides these, 451 have been employed in relaying the track with heavy rails.

TONAWANDA.
The capital stock of the Tonawanda railroad company is \$940,000, and the amount paid in \$794,700. Amount paid for the construction of the road, including the purchase of land, buildings, materials and engines, after deducting for land and materials resold, up to 1st Jan. 1848\$974,865 66
Indebted on account of the sale of the credit of the State under act of May 1, 1840..... 100,000 00
For money borrowed in 1848 to reconstruct with heavy rail..... 65,000 00

Total indebtedness..... 165,000 00
There is due this road the amount deposited with the Comptroller under the provisions of the act of May, 1840, besides the interest accumulated on such deposit..... \$12,750 00
Other dues for property..... 31,160 65
Total amount due..... 43,910 65
Amount received from passengers..... 169,963 27
" " for freight... 46,308 20
" " mails.... 6,099 25
" " from other sources..... 53,817 38
Total receipts..... 276,188 10

Amount paid for repairs, engines, cars, &c..... 70,084 75
" " running the road.... 28,142 02
Total expenditures..... 98,226 77

Two dividends have been declared and paid, amounting to \$49,427,00. The company own five engine-house and machine shops, 6 locomotive engines, and 40 eight wheel cars.

ATTICA AND BUFFALO.
The capital stock of this company on the 1st of January last, was \$700,000, all of which is now paid in.
Cost of construction, including lands.. 526,782 58
" real estate and right of way... 177,732 69
" buildings..... 23,871 94
" cars and engines..... 92,926 46
Total cost of constructions..... 821,313 67

Paid in 1848 for iron in relaying read.. 279,592 35
" for lands and buildings..... 36,606 16
" for cars and engines..... 17,582 03
Total amount..... 333,770 54

Received from passengers..... 119,446 47
" " freight..... 25,965 57
" " mails..... 4,638 00
" " old iron..... 809 70
Total income..... 150,859 74

Number of through passengers, 127,004; way do., 19,231. Number of miles run by passenger cars, 59,536, and by freight cars, 18,758.

Indebtedness for money borrowed, and interest..... 37,766 43
" " real estate..... 7,843 75
" " spikes..... 2,238 87
Total indebtedness..... 47,899 05
Due company for old iron... 14,850 00
" " cars... 1,379 82
Total..... 16,229 82
The expenditures for 1848 were as follows

Paid for repairs, saloons, &c.....	34,752 02
" other expenses, not for construc-	
tions.....	31,347 29
" construction before stated.....	333,770 55
" dividend of five per cent. on	
\$350,000, Feb. 1.....	17,500 00
" " " " Aug. 1.....	17,500 00
Total.....	434,869 68
BUFFALO AND NIAGARA FALLS.	
Capital stock.....	\$200,000 00
Amount actually paid in.....	199,958 38
Paid for land for depots, &c.....	9,250 00
" construction of road.....	185,196 63
" buildings.....	6,550 00
" engines.....	26,000 00
" cars.....	23,400 00
Indebtedness for bonds issued.....	16,670 00
Rec'd from passengers, freight, &c.....	60,014 00
Paid for repairs and salaries.....	24,525 55
" dividends 1st July and Jan....	15,930 46
Number of engine houses, 2; shops, 1; engines, 4;	
passenger cars, 11; 4 eight wheel and 7 four wheel;	
4 baggage and lumber cars; men employed, 32;	
miles run by cars, 25,124.	

AMERICAN RAILROAD JOURNAL.

Saturday, February 17, 1849.

Railway Progress.

Continued from page 90.

NEW JERSEY.

Railroads in operation January 1, 1848.

Camden and Amboy.....	61 miles.
New Jersey—Jersey City to N. Brunswick.....	32
New Brunswick and Trenton.....	29
Bordentown and Trenton.....	6½
Morris and Essex—Newark to Morristown.....	23
Patterson and Hudson River.....	16½
Elizabethtown and Somerville.....	26
Camden and Woodbury.....	9
	202½

Opened during 1848.

Patterson and Ramapo.....	15 miles.
Morris and Essex—Morristown to Dover.....	12½
Somerville and Easton—Somerville to	
Whitehouse.....	9
	36½

Roads in Progress.

none.

Total.....239½miles

PENNSYLVANIA.

In Operation Jan. 1, 1848.

Philadelphia & Trenton.....	28 miles.
Philadelphia, Wilmington and Baltimore,	
(97 in all).....	19
Philadelphia and Columbia.....	82
Philadelphia City and Southwark.....	6
Philadelphia, Germantown & Norristown.....	17
Germantown Branch.....	4
Philadelphia, Reading and Pottsville.....	93
Branch from Columbia Railway to West	
Chester.....	10
Penntownship Railroad, from Columbia	
Bailroad to the Delaware River.....	2
Harrisburg and Lancaster.....	37
Cumberland Valley, from Harrisburg to	
Chambersburg.....	52
Franklin, Chambersburg to Hagerstown,	
(22 in all).....	16
Wrightsville, York, and Gettysburg.....	12
Baltimore & Susquehanna, (57 in all).....	21
Blossburg and Corning, (40 in all).....	26
Alleghany Portage.....	36
Whiteshaven and Wilkesbarre.....	20
Mauch Chunk and Room Run.....	36

Beaver Meadow.....	26
Hazleton and Lehigh.....	10
Buck Mountain.....	4
Summit.....	2
Little Schuylkill.....	23
Mine Hill and Schuylkill Haven.....	25
Mount Carbon.....	7
Mount Carbon and Port Carbon.....	2½
Schuylkill Valley.....	14
Mill Creek.....	6
Lykens Valley.....	16
Shamokin, part of Danville & Pottsville.....	22
Swatara.....	4
Williamsport and Elmira, finished only	
to Ralston.....	26
Carbondale and Honesdale.....	16

Total.....720½ miles.

Opened during 1848.

None.

Roads in Progress.

Central railroad—Eastern division—Harrisburg to	
Hollidaysburg.....	
" Western Division—Johnstown to	
Pittsburg.....	
Little Schuylkill and Susquehanna.	
Tamanend to Catawissa, graded.....	36 miles.
Branch to Beaver Meadow.....	12

DELAWARE.

Roads in Operation Jan. 1, 1848.

Philadelphia, Wilmington, & Baltimore.....	23 miles.
New Castle and Frenchtown.....	17

Total.....40 miles.

MARYLAND.

Roads in Operation Jan. 1, 1848.

Philadelphia, Wilmington & Baltimore.....	55 miles.
Baltimore and Ohio, (178 in all, 88 miles	
in Virginia).....	90
Frederick Branch.....	3
Baltimore and Washington Branch, (6	
miles in District of Columbia).....	31
Baltimore and Susquehanna.....	36
Washington Branch.....	10
Franklin (22 in all).....	6
Annapolis and Elkridge.....	21

252 miles.

Opened during 1848.

None.

In Progress.

Baltimore and Ohio.	
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VIRGINIA.

Roads in Operation Jan. 1, 1848.

Baltimore and Ohio (178 in all).....	88 miles.
Winchester and Potomac.....	76
Richmond, Frederickburg and Potomac.....	76
Richmond and Petersburg.....	22
Petersburgh (63 in all).....	52
Seaboard and Roanoke.....	49
Louisa Railroad (Dundrumville to Tay-	
lorville).....	50
Greensville and Roanoke.....	12
Chesterfield (Richmond to Coal Mines).....	13
City Point (Petersburgh to James River).....	12

406 miles.

NORTH CAROLINA.

In Operation Jan. 1, 1848.

Wilmington and Weldon.....	150 miles.
Hickford and Gaston, (21 in all).....	9
Gaston & Raleigh.....	96

255 miles.

SOUTH CAROLINA.

In Operation January 1, 1848.

South Carolina (Charleston to Hamburg).....	136 miles.
Columbia Branch.....	68
	204 miles.

GEORGIA.

In Operation January 1, 1848.

Georgia (Augusta to Atlanta).....	171 miles.
Athens Branch.....	39
Western & Atlantic (Atlanta to Dalton).....	100
Central (Savannah to Macon).....	191
Western to Macon (Atlanta to Macon).....	101

602 miles.

Opened during 1848.

None.

Total.....602 miles.

Roads in Progress.

South Western (Macon to Fort Gaines).....	
Western and Atlantic (Dalton to Chattanooga).....	

FLORIDA.

In operation January 1, 1848.

Tallahassee and Port Leon.....	26 miles.
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ALABAMA.

In Operation Jan. 1, 1848.

Montgomery and West Point.....	48 miles.
Tuscumbia and Decatur.....	44

92 miles.

Opened during 1848.

Montgomery and West Point.....	19
--------------------------------	----

Total.....111 miles.

MISSISSIPPI.

In Operation Jan. 1, 1848.

Vicksburg and Clinton.....	46 miles.
Mississippi (Natches to Malcom).....	30
Jackson to Brandon.....	13
West Feliciana (24 in all).....	6

Total.....95 miles.

LOUISIANA.

In Operation Jan. 1, 1848.

Ponchartrian.....	4½ miles
Port Hudson, Jackson & Clinton.....	28
West Feliciana (Bayou Sara to Wood-	
ville).....	18

Total.....50½miles

KENTUCKY.

In Operation Jan. 1, 1848.

Lexington and Ohio (Lexington to Frank-	
fort).....	28 miles.

Opened during 1848,

None.

Roads in Progress.

Louisville and Frankfort (65 miles).....	
Louisville and Portland (3½).....	

ILLINOIS.

In Operation Jan. 1, 1848.

Sangamon and Morgan (Springfield to	
Meredocia).....	53 miles.

Opened during 1848.

None.

Total.....53 miles.

Roads in Progress.

Chicago to Galena.	
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INDIANA.

In Operation Jan. 1, 1848.

Madison and Indianapolis.....	86 miles.
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Opened during 1848.

None.

Total.....86 miles

OHIO.

In Operation Jan. 1, 1848.

Little Miami (Cincinnati to Springfield).....	84 miles.
Mansfield to Sandusky.....	56
Mad River and Lake Erie.....	102
Erie and Kalamazoo (Toledo to Adrian, 33 in all).....	20

262 miles.

Opened during 1848.

Mad River and Lake Erie.....	32
------------------------------	----

Total.....294 miles.

In Progress.

MICHIGAN.

In Operation Jan. 1, 1848.

Michigan Central (Detroit to Kalamazoo).....	146 miles.
Erie & Kalamazoo (Toledo to Adrian).....	13
Detroit and Pontiac.....	25
Michigan Southern (Monroe to Hillsdale).....	70
Tecumseh Branch.....	10

264 miles.

Opened during 1848.

None.

Total.....264 miles.

Roads in Progress.

Central.

There should be added to the Massachusetts Roads the *Brookline Branch* of 1½ miles, belonging to Boston and Worcester Railroad, and the *Watertown Branch* of 3 miles, belonging to the Fitchburgh Railroad, making the total of Massachusetts Roads, Jan 1, 1848, 704½ miles.

The *Corning and Blossburg Railroad*, 40 miles in length, has 26 miles in Pennsylvania and 14 miles in New York, only making the aggregate of New York roads, Jan. 1, 1848, 744 miles.

The aggregate of all the railways in each of the United States is as follows, viz:—

	In operation Jan. 1, '48.	Opened du- ring 1848.	Total, Jan. 1, '48
	Miles.	Miles.	Miles.
Maine.....	76½	34½	111½
New Hampshire..	167½	96½	263½
Vermont.....	91	91	91
Massachusetts....	704½	172	876½
Rhode Island.....	64	64	64
Connecticut.....	194	76½	270½
In New England..	1207½	470½	1678
New York.....	744	275	1019
New Jersey.....	202½	35½	239
Pennsylvania.....	720½	720½	720½
Delaware.....	40	40	40
Maryland.....	253	253	253
Virginia.....	406	406	406
N. Carolina.....	255	255	255
S. Carolina.....	204	204	204
Georgia.....	602	602	602
Florida.....	26	26	26
Alabama.....	92	19	111
Mississippi.....	95	95	95
Louisiana.....	50½	50½	50½
Kentucky.....	28	28	28
Tennessee.....	53	53	53
Illinois.....	86	86	86
Indiana.....	262	32	294
Ohio.....	264	264	264
Michigan.....	264	264	264
Total.....	5589	832½	6421½

This table shows a most gratifying result. We have been at great labor in preparing it, knowing

the fact that there has been a strong desire, to ascertain with tolerable accuracy the number of miles of railway in operation within the limits of each state, with an aggregate for the whole Union. The foregoing schedule may be regarded as nearly correct. It is preparatory to a full Share List we have in progress. To the capitalist and the business man generally, the list of roads in operation is of more interest than a list of roads in progress of construction; while to the numerous body of engineer-contractors and builders of machinery, the latter class is of far more importance.

We purpose, therefore, to furnish full details as to roads in operation, and roads in progress. Our list of roads in progress may be quite incomplete. We have given the more prominent ones, at all events, and intend to record the doings of new companies as they transpire. We have, in the above table, spoken only of roads known to be in actual process of construction. Our estimate of new openings in 1849 we reserve for our next number.

Railway Progress in Great Britain and Ireland.

At the end of the year 1843, 1,530 miles of railway were in operation in the United Kingdom, principally in England alone. During the year 1843, 60 miles of new road were opened; in 1844, 190 miles; in 1845, 270 miles; in 1846, 600 miles; in 1847, 800 miles; and in 1848, 970 miles; making, at the end of the year 1848, 4,420 miles of railway in actual operation.

There had been expended, in the construction of these roads, to July, 1848, the sum of £131,000,000, or \$623,000,000, or at the rate of \$142,000 per mile. The English railways are thoroughly built, and generally with two or more sets of rails, or tracks. The traffic on these roads in 1848 amounted to £10,092,000, or more than \$47,000,000.

In 1842, Parliament sanctioned the building of 67 miles of new railway; 91 miles in 1843; 997 miles in 1844; 2883 miles in 1845; 4,790 miles in 1846; 1663 miles in 1847; and about 300 miles in 1848, which, including these previously chartered, authorised the construction of 13,600 miles within the limits of the United Kingdom. The area of Great Britain and Ireland, including the Orkneys and Shetland Isles, is 120,290 square miles, about equal to the territory of New England and New York, united, which embrace an area of 112,526 square miles.

An act passed by the British Parliament, in 1847, authorised the postponement of certain railway projects, till the pressure of the money market should be somewhat lessened. In March, 1848, 104 companies, embracing lines to the amount of 3,650 miles, had availed themselves of this act, generally for two years. The estimated cost of these suspended works is £59,000,000, or at the rate of £17,500, or \$84,000 per mile.

Railroads in Illinois.

We have on our table the able Report of the Senate Committee on Public Lands, recommending the grant of land to the State of Illinois to aid in the completion of her unfinished railways. These roads were commenced some ten years since, and upwards of eight millions of dollars expended thereon. They are now of no value to the State unless completed. They embrace the following routes, viz: the *Central Railroad* from Cairo to Galena, via Peru, the southern terminus of the Illinois and Michigan canal.—The *Northern Cross Railroad*, from Quincy, via Springfield, to the Indiana line on the Wabash river. A railroad from *Allon to Mount Carmel*, in the direction of Louisville, with several branch roads con-

necting therewith. The whole length of these roads, as surveyed by the State, is over 1300 miles. The great value and importance of these roads are: that they all unite with the *Central Railroad*, which has its southern terminus at *Cairo*. From this point we believe the navigation is always open to New Orleans, for boats of the largest class. The report before us proceeds to say:

"The State of Illinois, the committee are informed, by documentary and other evidence before them, commenced her system of internal improvements in 1836 '37, with a view not only of benefiting her own citizens, but to encourage emigration into the State, which, by the construction of railroads and canals, would cause their lands to be purchased of the United States and cultivated, for with the railroad improvements the products of the soil could then be sent to market at a remunerating price. The state, having incurred a debt of more than twelve millions of dollars on account of these improvements, was compelled, in 1841, to suspend all further advancements for them, not having the credit to raise the necessary means for works so extensive as those she had projected.

"The committee believe that the old States of the confederacy are quite as much interested in the construction of these roads as the state through which they are projected, for the immense productions of that state, now daily on the increase, will seek a market, at some seasons of the year, over their works of a similar kind, and articles of consumption, to supply them, be transported to the west by the same means; the price of which, to the consumer being reduced by the reduced rates of transportation, and the price of their productions enhanced by the same cause. Although the old states do not directly participate in the grant itself, yet they have a large proportion of the advantages to flow from it by the increased trade with the west, an object of so much importance to them as to have induced the expenditure already of millions of dollars to secure.

"To illustrate more clearly the importance of these western roads through the public lands to every section of our Union, the committee have prepared a skeleton map, appended to this report, showing the railroads completed and in progress, in the United States, and those proposed through the public lands, and their connection with the harbors on the lakes and seaboard; and as distance is no longer measured by miles, but by minutes, it will be seen, on reference to the map, that, by the shortest railroad routes, at the average speed of 25 miles per hour, assuming the mouth of the Ohio as the 'geographical centre of the United States,' that distance is almost annihilated. From Cairo to

Mobile.....	19 hours.
Pensacola.....	22
New Orleans.....	26
Nashville.....	6
Charleston.....	23
Louisville.....	12
Cincinnati.....	16
St. Louis.....	8
Alton.....	9
Springfield.....	10
Peru.....	12
Chicago.....	16
Galena.....	22
Detroit.....	24
Buffalo.....	33
Indianapolis.....	12
Columbus.....	19
Wheeling.....	24
Pittsburg.....	26
Baltimore.....	36
Philadelphia.....	38
New York.....	42
Boston.....	51
Portland.....	55
San Francisco, via St. Louis.....	70

And in the same proportion for intermediate points. Now, by the most speedy steamboat routes, the trip to New Orleans, from the mouth of the Ohio, requires 4½ days; to Pittsburg 6 days, and to Galena 3½ days. As 'time is money,' here is an immense gain, which should not escape attention, and should have its proper weight, not only in regard to the vast business operations of our people, but in re-

gard to the inducements presented by such works through the public lands, to their sale and settlement. Besides, the great facilities afforded by such works, for frequent and rapid intercourse between the most distant and divided parts of the union, will have a certain effect to destroy much of the prejudice which now exists among them, and tend very greatly in the opinion of the committee, to preserve the harmony and union of the States.

"To show the extent of the inland navigation in the valley of the Mississippi, the committee submit the following extract from 'Peck's Gazette of Illinois and Missouri,' a work of decided merit, and prepared by one of the most intelligent citizens of the west: 'The Mississippi and Ohio, with their tributary rivers, form an inland navigation exceeding 20,000 miles, for various class of boats, during two-thirds of the year to the point of junction at Cairo; from thence to New Orleans, a distance of 1,000 miles, the river is navigable the whole year for the largest class of boats.'

"With the rich back country bordering on these rivers, railroads and canals, how vast must be the exports and imports of these western states at some future day, and what immense revenue they must pour into the national treasury."

The Nashville and Charleston, and the Ohio and Mobile Railroad companies, foreseeing that the immense productions of the northwest must at some future time concentrate at some point near the mouth of the Ohio, are now surveying routes to form a continuous line of connection with the railroads of Illinois at Cairo, for the purpose of opening a direct railroad communication between the southern Atlantic cities and the Gulf of Mexico, and the southwestern States. Such a connection would be of vast importance to the whole country, and we hope to be able soon to report the favorable action of Congress upon the above bill.

RAILROAD IRON.

1000 tons T Rails, weighing about 60lbs. to the yard, of the latest and most approved pattern, for sale by **BOORMAN, JOHNSTON, & CO.,** 119 Greenwich st., New York. Jan. 20, 1849. 6w

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—**STARKS & PRUYN,** of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish on order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- Charles Cook, } Canal Commissioners
 - Nelson J. Beach, } of the
 - Jacob Hinds, } State of New York.
 - Willard Smith Esq., } Engineer of the Bridges for
 - Messrs. Stone & Harris } the Albany Basin.
 - Mr. Wm. Howe, } Railroad Bridge Builders,
 - Mr. S. Whipple, } Springfield, Mass.
 - Engineer & Bridge Builder,
 - Utica, N. Y.
- January 1, 1849. ly*

SPRING STEEL FOR LOCOMOTIVES, Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1 1/4 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

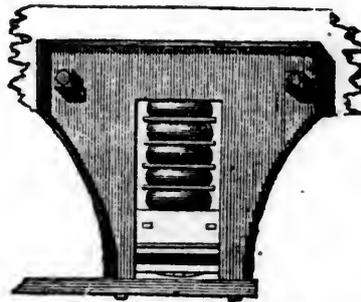
JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington. **SIZER & CO.** Springfield, Mass.

January 29, 1848. if
RAILROAD IRON AND LOCOMOTIVE
Tyres imported to order and constantly on hand by **A. & G. RALSTON** Mar. 20tf 4 South Front St., Philadelphia, Pa.



FULLER'S PATENT INDIA RUBBER SPRINGS.—There can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape.—This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest—the most simple, and most durable—there being less friction in this than in any other kind; it can be regulated to any extent desired. A less quantity of rubber is required in this form to make a good spring than in any other because each disc or ring of India rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

This spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders. Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibusses, etc.

G. M. KNEVITT, Agent,
Principal office, No. 78 Broad St., New York.
Branch office, Messrs. James Lee & Co's, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester railroad, wrote an article concerning Fuller's springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, an important part; it is therefore given in full now, and the portion omitted by the New England car company is printed in italics, that the public may judge of the manner in which this "company" pervert Mr Hale's meaning.

[From the Boston Advertiser of the 7th June.]

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New-ton special train of the Boston and Worcester railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers or rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

NICOLL'S PATENT SAFETY SWITCH

for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee **G. A. NICOLLS,** ja45 Reading, Pa.

WILLIAM JESSOP & SONS, CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufactory,

- PARK WORKS, SHEFFIELD,**
- Double Refined Cast Steel—Square, flat & octagon.
- Best warranted Cast Steel—Square, flat & octagon.
- Best Double and Single Shear Steel—Warranted.
- Machinery Steel—Round.
- Best and 2d gy. Sheet Steel—for Saws and other purposes.
- German Steel—flat and sqr., "W. I. & S." "Eagle" and "Goat" Stamps.
- Genuine "Sykes" L Blister Steel.
- Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms, by **WM. JESSOP & SONS,** 91 John Street, New York.

Also by their Agents—
Curtis & Hand, 47 Commerce St., Philadelphia.
Alex'r Fullerton, & Co., 119 Milk St., Boston.
Stickney & Beatty, South Charles St., Baltimore.
May 6, 1848.

JAMES LAURIE, Civil Engineer.
 No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
 Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures
 October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to
JAMES HERRON,
 Civil Engineer, Navy Yard.
 Jan. 1. 10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents,
 17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition. 92v1 ly

NORWICH CAR FACTORY,
 NORWICH, CONNECTICUT.

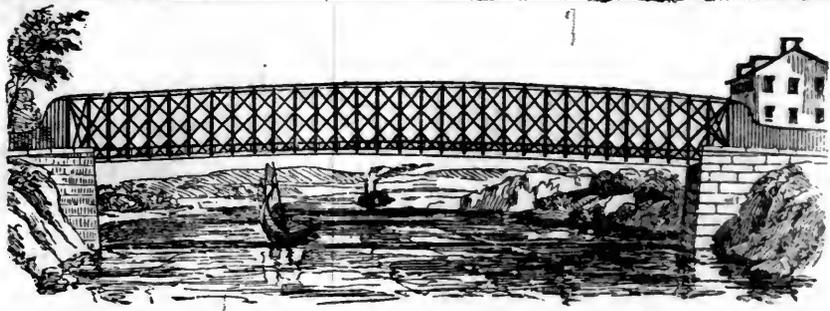
AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
 PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
 ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
 Orders executed with promptness and despatch.
 Any communication addressed to

JAMES D. MOWRY,
 General Agent,
 Norwich, Conn.,

Will meet with immediate attention. 1y8 1y25



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74 BROADWAY, up stairs,** or of **W. RIDER & BROTHERS, 58 Liberty Street,** where terms of contract will be made known, and where orders are solicited.
M. M. WHITE,
 Agent for the Company.

November 25, 1848.

LAP—WELDED
WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,

Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut,
 1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to **Ellicott's Scales**, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of **20** years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. **E. Ellicott** has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.
 Office, No. 3 North 5th street,
 Philadelphia, Pa.

CAR MANUFACTORY,
 CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
 Cincinnati, Ohio, October 2, 1848. 41t

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
 Mount Savage Iron Co., Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to **Mr. William H. Dobbs, Superintendent,** will meet with immediate attention.
ANDREW C. GRAY,
 a45 President of the Newcastle Manuf. Co.

**DIRECT ACTION ENGINES
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,
AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Mauldsly, Sons & Field, of London,
may be built in the United States, under license,
which can be obtained of their agent,
THOMAS PROSSER, C. E.,
28 Platt street, New York.

May 6, 1848.

**PATENT HAMMERED RAILROAD, SHIP
and Boat Spikes.** The Albany Iron and Nail
Works have always on hand, of their own manufac-
ture, a large assortment of Railroad, Ship and Boat
Spikes, from 2 to 12 inches in length, and of any form
of head. From the excellence of the material al-
ways used in their manufacture, and their very gen-
eral use for railroads and other purposes in this coun-
try, the manufacturers have no hesitation in warrant-
ing them fully equal to the best spikes in market,
both as to quality and appearance. All orders ad-
dressed to the subscriber at the works, will be prompt-
ly executed. **JOHN F. WINSLOW, Agent.**

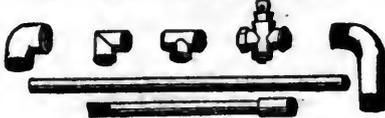
Albany Iron and Nail Works, Troy, N. Y.
The above spikes may be had at factory prices, of
Erastus Corning & Co., Albany; Hart & Merritt,
New York; J. H. Whitney, do.; E. J. Etting, Phil-
adelphia; Wm. E. Coffin & Co., Boston. ja45

**TO RAILROAD COMPANIES AND BUILD-
ERS OF MARINE AND LOCOMOTIVE
ENGINES AND BOILERS.**

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long,
capable of sustaining pressure from 400 to 2500 lbs.
per square inch, with Stop Cocks, T, L, and
other fixtures to suit, fitting together, with screw
joints, suitable for STEAM, WATER, GAS, and for
LOCOMOTIVE and other STEAM BOILER Flues.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

FAIRBANKS' RAILROAD SCALES.

THE Subscribers are prepared to construct at short
notice, *Railroad and Depot Scales*, of any desired
length and capacity. Their long experience as ma-
nufacturers—their improvements in the construction
of the various modifications, having reference to
strength, durability, retention of adjustment, accu-
racy of weight and despatch in weighing—and the
long and severe tests to which their scales have been
subjected—combine to ensure for these scales the uni-
versal confidence of the public.

No other scales are so extensively used upon Rail-
roads, either in the United States or Great Britain;
and the manufacturers refer with confidence to the
following in the United States.

- | | |
|-------------------------|-----------------------------|
| Eastern Railroad, | Boston and Maine R. R., |
| Providence Railroad, | Providence & Wor. R.R., |
| Western Railroad, | Concord R. R., |
| Old Colony Railroad, | Fitchburg R. R., |
| Schenectady Railroad, | Syracuse and Utica R. R., |
| Baltimore & Ohio Road, | Baltimore & Susq. R. R., |
| Phila. & Reading Road, | Schuylkill Valley R. R., |
| Central (Ga.) Railroad, | Macon and Western R.R., |
| | New York and Erie Railroad; |

and other principal Railroads in the Western, Mid-
dle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents { **FAIRBANKS & Co.,** 81 Water st. N. York.

{ **A. B. NORRIS,** 196 Market st., Philad.

April 22, 1848. ly*17

RAILROAD IRON—2500 TONS HEAVY

Rail, now landing, and expected shortly to
arrive, for sale on most favorable terms by

DAVIS BROOKS & CO.

July 19th, 1848. 68 Broad street, New York.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now, the most extensive in the
United States,) they are prepared to manufacture to order Locomotive Engines and Cars
of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of
Railroad Machinery. Also, Castings, and Forge Irons of all kinds—including Chilled
Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods,
Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines
or Cars, or any part or parts of the same. All orders will be furnished at short notice,
and on as good terms as any manufactory in the country. Coaches pass our works every
fifteen minutes during the day from Brattle street, Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

THE SUBSCRIBERS ARE PREPARED TO
execute orders at their Phoenix Works for Rail-
road Iron of any required pattern, equal in quality
and finish to the best imported.

REEVES, BUCK & CO.,
Philadelphia,

ROBERT NICHOLS, Agent,
No. 79 Water St., New York.

26tf

RAILROAD IRON, PIG IRON, ETC.

- 600 Tons of T Rail 60 lbs. per yard.
 - 25 Tons of 2½ by ½ Flat Bars.
 - 25 Tons of 2½ by 9-16 Flat Bars.
 - 100 Tons No. 1 Gartsborrie.
 - 100 Tons Welsh Forge Pigs.
- For Sale by **A. & G. RALSTON & CO.**
No. 4 So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN
Railroads, Railroad Directors
and Managers are respectfully invited
to examine an improved Spark-
Arrester recently patented by the un-
dersigned.

Our improved Spark Arresters
have been extensively used during the
last year on both passenger & freight
engines, and have been brought to
such a state of perfection that no an-
noyance from sparks or dust from the
chimney of engines on which they
are used is experienced.

These Arresters are constructed on
an entirely different principle from any heretofore offered to the public.
The form is such that a rotary motion is imparted to the heated air,
smoke and sparks passing through the chimney, and by the centrifugal
force thus acquired by the sparks and dust they are separated from
the smoke and steam, and thrown into an outer chamber of the chimney
through openings near its top, from whence they fall by their own
gravity to the bottom of this chamber; the smoke and steam passing
off at the top of the chimney, through a capacious and unobstructed
passage, thus arresting the sparks without impairing the power of
the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use
on the following roads, to the managers and other officers of which we are at liberty to refer those who
may desire to purchase or obtain further information in regard to their merits

- R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent
Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and
Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown
Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wil-
mington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.;
W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensse-
laer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio
Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Mo-
tive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Stierns, Sup't Elizabeth-
town and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah,
Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad,
Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, Presi-
dent Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whit-
more of this city, will be promptly executed.

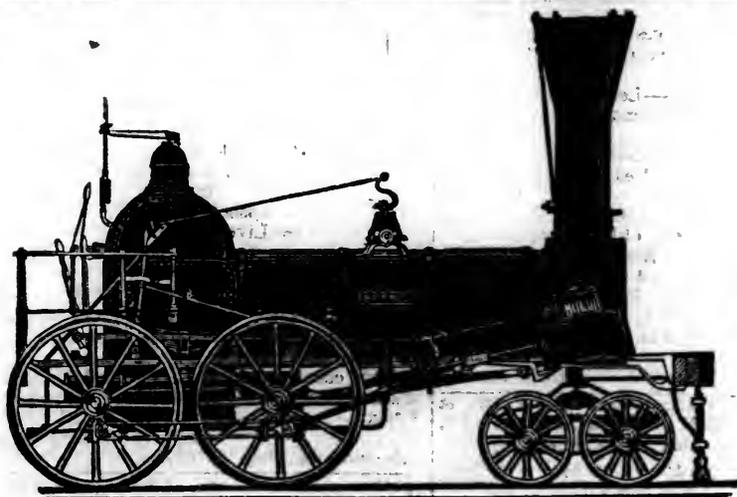
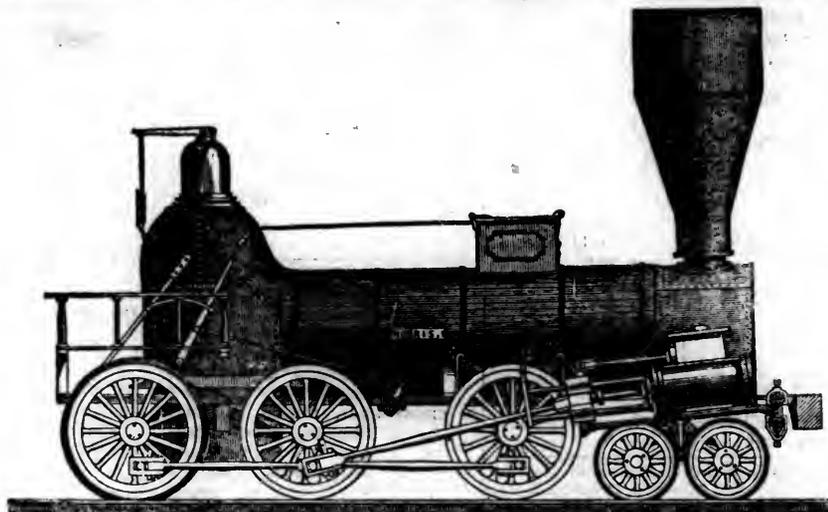
N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reason-
able terms.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the *Journal* of June, 1844. ja46



NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.
 Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N.B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec.25,1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO., 68 Broad street. New York, Sept. 16. 1848, 39tf
 Also on hand—1000 Tons best quality Rails.

CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St. below 13th,
 Nov. 10, 1847. [tf.] Philadelphia, Penna.

TO LOCOMOTIVE AND MARINE EN- gine Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,
 Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 1t

TO RAILROAD COMPANIES AND MAN- ufacturers of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
 245 N. E. cor. 12th and Market sts., Philad., Pa.

LAWRENCE'S ROSENDALE HYDRA- lic Cement. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y

RAILROAD IRON.

THE Undersigned are prepared to Contract for the delivery of ENGLISH RAILROAD IRON, of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc., Iron.

THOMAS B. SANDS & Co.
 22 South William-Street.
 Feb. 3tf. New York.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS PASSENGER, FREIGHT AND CRANK CARS, — ALSO — SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory, REUEL DEAN, ELIJAH PACKARD, ISAAC MILLS, } SPRINGFIELD, MASS. 1748

BALTIMORE AND OHIO RAILROAD.
MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7 and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry — with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

BALTIMORE AND SUSQUEHANNA
 Railroad.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:
 Leaves Baltimore at.....9 a.m. and 3 1/2 p.m.
 Arrives at.....9 a.m. and 6 1/2 p.m.
 Leaves York at.....5 a.m. and 3 p.m.
 Arrives at.....12 1/2 p.m. and 8 p.m.
 Leaves York for Columbia at...1 1/2 p.m. and 8 a.m.
 Leaves Columbia for York at...8 a.m. and 2 p.m.

FARE.
 Fare to York.....\$1 50
 " Wrightsville.....2 00
 " Columbia.....2 12 1/2
 Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.
 Through tickets to Pittsburg via stage to Harrisburg.....\$9
 Or via Lancaster by railroad.....10
 Through tickets to Harrisburg or Gettysburg...3
 In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at.....5 1/2 p.m.
 Returning, leaves Owing's Mills at.....7 a.m.
 D. C. H. BORDLEY, Supt.
 31 ly Ticket Office, 63 North st.

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.
 The Train from Philadelphia arrives at Reading at 12 18 M.
 The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3 50 and	\$3 00
" " Reading,	58	2 25 and	1 90
" " Pottsville	34	1 40 and	1 20

Five minutes allowed at Reading; and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. 81

JAMES HERRON, Civil Engineer,
 OF THE UNITED STATES NAVY YARD,
 PENSACOLA, FLORIDA.,
 PATENTER OF THE
HERRON RAILWAY TRACK.
 MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

NEW YORK & HARLEM RAILROAD
 CO.—Summer Arrangement.—On and after Tuesday, June 1st, 1847, the cars will run as follows, until further notice. Up trains will leave the City Hall for—
 Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.
 For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.
 For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m.
 Freight train at 1 p.m.
 Returning to New York, will leave—
 Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 28 and 8 p.m.
 Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m.
 Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.
 Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m.
 White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.
 Pleasantville, 8 15 a.m. and 5 15 p.m.
 Newcastle, 8 a.m. and 5 p.m.
 Mechanicsville, 7 48 a.m. and 4. 48 p.m.
 Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m. Returning, leave Croton Falls 10 a.m. and 9 1/2 p.m.
ON SUNDAYS, the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m., 4 p.m. Croton Falls for City Hall, 7 30 a.m., 4 30 p.m. Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m.
 White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.
 Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.
 The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st. A car will precede each train 10 minutes to take up passengers in the city.
 Fare from New York to Croton Falls and Souers \$1, to Mechanicsville 87c., to Newcastle, 75c., to Pleasantville 62c. to White Plains 50c. 25tf

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.
 Accommodation Trains daily, (Sundays excepted.)
 Leave Norwich, at 6 a. m., 12 m. and 2 1/2 p. m.
 Leave Worcester, at 6 1/2 and 10 a. m., and 4 1/2 p. m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.
 New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.
 Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 a. m., from Norwich at 7 a.m.
 Fares are Less when paid for Tickets than when paid in the Cars. 32 ly S. H. P. LEE, Jr., Supt.

BOSTON AND MAINE RAILROAD.
 Winter Arrangement.
 Commencing Nov. 13, 1848.
 Trains leave Boston as follows, viz: For
 Portland at 7 A.M. and 2 1/2 P.M.
 Great Falls at 7 a.m., 2 1/2 and 3 1/2 p.m.
 Haverhill at 7 and 11 1/2 a.m., 2 1/2, 3 1/2 and 5 p.m.
 Lawrence, at 7, 9, 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6 p.m.
 Reading 7, 9 & 11 1/2 a.m., 2 1/2, 3 1/2, 5, 6, 7 1/2 & 10 p.m.
 Trains leave for Boston as follows, viz: From
 Portland at 7 1/2 a.m., and 3 p.m.
 Great Falls at 6 1/2 and 9 1/2 a.m., and 4 1/2 p.m.
 Haverhill at 7, 8 1/2 and 11 a.m., 3 and 6 1/2 p.m.
 Lawrence at 6 1/2, 7 1/2, 8 1/2, 11 1/2 a.m., 12 1/2, 3 1/2, 6 1/2, p.m.
 Reading at 6 1/2, 7 1/2, 9 1/2, 11 1/2 a.m., 1 1/2, 3 1/2, 7 1/2, 9 p.m.
MEDFORD BRANCH TRAINS.
 From Medford at 6 1/2, 8, 10 1/2, a.m., 2, 4, 6, 9 p.m.
 From Boston at 7 1/2, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 10 p.m.
 The Depot in Boston is on Haymarket Square.
 CHAS. MINOT, Supt.
 Boston, Nov. 7, 1848.

NEW YORK ANDERIE RAILROAD LINE.
SUMMER ARRANGEMENT. For passengers, twice each way daily, (except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

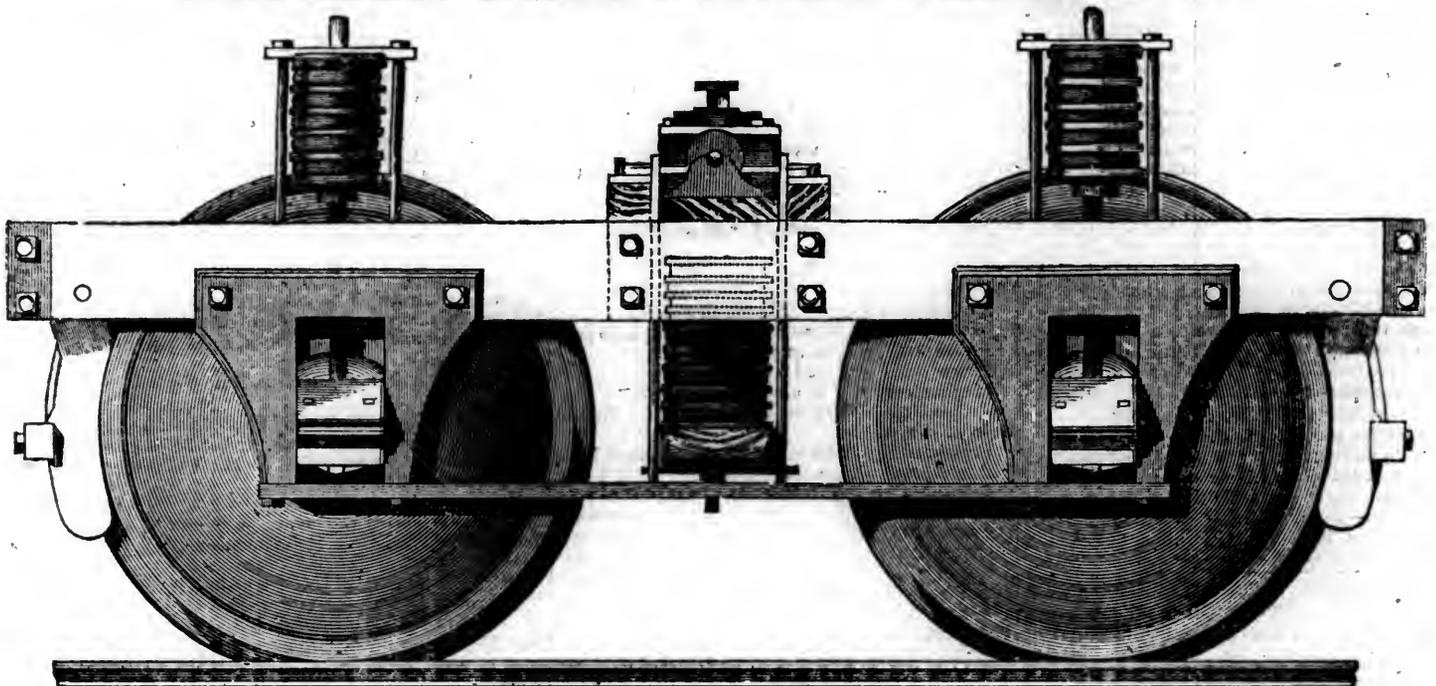
The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M.
 Fare between New York and Otisville, \$1 50; way-fare in proportion.
 For Milk—Leave Otisville at 5 1/2 o'clock, morning and evening.
 For Freight—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)
 No freight will be received in New York after 5 o'clock, P. M.
 Freight for New York will be taken by the trains leaving Otisville at 10 1/2 o'clock, A. M.; Middletown at 11 1/2, A. M.; Goshen at 12 1/2, P. M.; Chester at 1 o'clock, P. M., etc., etc.
 For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.
 24tf H. C. SEYMOUR, Supt.

LITTLE MIAMI RAILROAD COMPANY
 Fall and Winter Arrangement, 1847. On and after Monday, September 20th, until further notice, a Passenger train will run as follows:
 Leave Cincinnati daily at 9 A. M., for Milford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4 1/2 a.m. Upward train arrive at Springfield at 2 1/2 p.m. Downward train arrive at Cincinnati at 10 1/2 a.m.

Freight trains will run each way daily.
 Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:
 A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.
 Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.
 A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.
 Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.
 From Springfield to Bellefontaine by stage, over a good Summer road.....32 "
 From Bellefontaine to Sandusky city by railroad.....102 "
FARE—From Cincinnati to Lebanon.....\$1 00
 " " " Xenia.....1 50
 " " " Springfield...2 00
 " " " Columbus...4 00
 " " " Sandusky city 7 00
 The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.
 Tickets can be procured at the Broadway Hotel., Dennison House, or at the Depot of the Company on East Front street.
 Further information and through tickets for the Stage lines, may be procured at P. Campbell, Age t on Front street, near Broadway.
 The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over that amount.
 47tf W H. CLEMENT, Supt.

FWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with Wm. RIDER & BROTHERS, No. 59 Liberty street, New York, or with F. M. RAY, Agent, 100 Broadway, N. Y.

The following article, from the pen of Mr. HALE, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from very harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.
124f

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom. 281f

CORROSIVE SUBLIMATE. THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING:

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor, HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 8.] SATURDAY, FEBRUARY 24, 1849 [WHOLE No. 671, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, February 24, 1849.

LOCOMOTIVE FOR SALE. (NOW RUNNING.)

A Good Locomotive Engine and Tender in good running order, for sale low. Address
E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.

February 24, 1849. 4t.8

SCHENECTADY LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THE undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders, and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.
E. S. NORRIS,
February 24, 1849. 8t

PATENT OIL FOR MACHINERY.—THE Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; machinists, manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

ALSO,

OIL—Bleached and unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected raked Whale Oil, suitable for retailing.

For sale by ALLEN & NEEDLES,
No. 22 and 23 S. Wharves, near Chestnut street,
Philadelphia.

February 24, 1849.

Union Canal Company.

The annual report of the Union Canal Company furnishes a highly satisfactory exhibit of the business of the past year. The total tonnage is 153,222 tons, showing an increase of 13,965 tons over the year 1847. There were 20,102 bbls. of flour transported: 314,068 bush. of grain, 72,671 tons coal, 32,625 bush. salt, and 81,365 bush. lime. The trade of the Susquehanna is annually and rapidly increasing, but the largest portion of it is diverted from this Canal by a long and circuitous route thro' two neighboring States. It is to be hoped that exertions will be made to have the Canal enlarged at an early period, throughout its entire length, so as to admit the passage of the Susquehanna and Juniata boats. This would not only bring an increased business to this route, but would materially increase the amount of tolls received by the Schuylkill Canal.

PARTICULAR NOTICE.

Some years ago a young man named Rider, or Ryder, left England for America. He has not been heard of by his surviving relatives, in England, for many years. Said Rider, if living, or his legal representatives, if he is dead, can hear something to their advantage by calling on the Editor of the Railroad Journal, 54 Walls-street, New-York.

Feb. 24th, 1849.

Canadian Railways.

At a meeting of the friends of different railway projects in Canada, last week, it was unanimously agreed to support a general bill authorizing the loan of the credit of the colony to the amount of two dollars per one expended by individual subscription on the great trunk lines between Lake Huron and Quebec, and between Montreal and Portland.

☞ The commercial news by the Europa are favorable to trade with this country. Money is abundant. Consols have reached 92½. Breadstuffs and provisions advancing. Iron more in demand. American securities in greater request.

☞ Intelligence by the Europa indicates a determination on the part of the British Government to persevere in their free trade policy, and abolish or modify the navigation acts.

☞ The Steamer United States has been sold to the government of Prussia.

☞ The Europa's news was telegraphed from St. John city to New York on Thursday evening.

Portsmouth & Concord Railroad.

We learn that at a meeting held in Portsmouth a few days since, arrangements were made and an agent appointed to contract forthwith for seven hundred and fifty tons of rails, to complete the road to Epping the coming season.

CORRECTION.—In the table, in our last paper, showing the number and length of railway in operation, some typographical errors occurred for want of proper correction of the proof. In the final aggregate, however, the sums were correctly added.—One or two errors might not be readily discovered, which we will name. The *Winchester and Potomac Railroad, in Virginia*, is 32 miles in length, and is so added, though it is stated in the list of roads at 76 miles. The number of miles opened in New Jersey, in 1848, is 36½ miles, instead of 35½ miles as stated in one part of our article.

Railway Progress.

The tables published in our two last numbers exhibit the extraordinary fact, that 6,421 miles of railway were in actual operation at the commencement of the year 1849, within the limits of the United States. This amount far exceeds that of any other nation, though the cost of their construction is much less per mile.

The Railways of the United States, including the cost of road and equipment, will not exceed \$30,000 per mile. The Railway of Canada average very nearly with the cost of those of our own country.—Those of Cuba were built at less expense, on account of the fact, that all railroad material and machinery are admitted free of duty.

It may be interesting, in this connection, to place in contrast, in the form of a tabular statement, the number of miles and cost, showing thereby the present condition of railways throughout the world.—The information in regard to English railways is taken from a great variety of sources, mostly official. The estimates for those in Canada and Cuba, are made up by gentlemen fully conversant with the condition of each. Our data in regard to the extent of railway on the Continent of Europe are principally obtained from the *Chemin de Fer* of Paris, the leading Railway Journal of France. The estimates of their cost are compiled by a comparison of various official returns. Our readers may therefore rely on the following table as more fully accurate than any before published on the subject.

	Miles.	Cost per mile to Jan. 1, '49.	Total.
United States.....	6,421	\$30,000	\$192,630,000
Canada	54	30,000	1,620,000
Cuba.....	250	28,000	7,000,000
Total in America,	6,725		200,250,000
United Kingdom ..	4,420	145,000	\$640,900,000
France.....	1,250	110,000	137,500,000
Germany.....	3,370	50,000	168,500,000
Belgium.....	495½	80,000	39,640,000
Holland.....	162½	25,000	4,062,500
Denmark & Holstein	282	40,000	11,280,000
Switzerland.....	78	50,000	3,600,000
Italy.....	162½	90,000	14,625,000
Russia.....	113	60,000	6,780,000
Poland.....	187½	50,000	9,375,000
Hungary.....	157	50,000	7,850,000
Total in Europe..	10,678		\$1,044,402,500
Total	17,403		\$1,244,652,500

The above embraces all the railways in operation, except a short line of 15 miles recently opened in Spain, from Barcelona to Mataro, from which no returns are obtained.

These vast sums above stated have all been expended for railways within the last twenty years.—It may be safely asserted that the roads now in progress, including all those which will be completed within the next five years, will represent an additional amount of capital equal to the sums expended upon those already finished. The speculative feeling of 1845, in England, pushed forward many schemes that have since been discarded: and the stringent law which required a deposit of 20 per cent of the capital before the taking effect of the grant of authority, to build, had the effect to reduce the number of speculative schemes at once. In no other country in Europe has the railway spirit exceeded the limits of legitimate speculation.

At the close of the year 1847, the railways built and in progress in the United Kingdom of Great Britain and Ireland, may be stated as follows:

	Mls. of Sq. mls. Railway.	Capital.
England & Wales,	57,068 8,796	\$1,232,358,970
Scotland	31,000 1,872	198,281,851
Ireland	32,433 1,813	137,346,492
Total	120,501 12,481	\$1,567,987,013

The whole amount expended to the end of Sept., 1848, on all the railways of the United Kingdom, was £195,317,106—equal to \$837,522,108.

In France, at the close of the year 1846, the number of miles of railway regarded as in progress, including those already built, is stated at 3,841 English miles, requiring a capital of \$416,000,000 for their completion.

In Russia, 1,600 English miles of railway were in progress at the end of the year 1847, all of which are undertaken by the government, and are being urged rapidly toward completion. In the present condition of European affairs, it is not safe to hazard a conjecture as to the probable amount of railway expenditure during the present year; we therefore confine our estimates for the present to unfinished railways in progress in the

UNITED STATES.

Maine.—The *Atlantic and St. Lawrence* Railway is in progress to Paris, 47 miles from Portland; the iron is purchased, and it will be opened at an early day in the coming season to that point.

The *Androscoggin and Kennebec* R. R. is graded from Lewiston to Waterville, 48 mls., the iron pur-

chased, and the laying of the track going forward. It will be opened during the year 1849 the whole distance.

The *Kennebec and Portland* Railway is graded from North Yarmouth to Bath, 25 miles, the iron delivered, and the laying of the rails commenced at Bath, and it will be opened in 1849.

The *Buckfield Branch*, 13 miles, is partly graded, the iron contracted for, and the opening of the road in 1849 determined upon.

The *York and Cumberland* Railroad is under contract from Portland to South Berwick, 48 miles, where it is to connect with the Boston and Maine Railroad. The grading is in progress between Portland and Gorham, 10 miles, and a portion of the road is to be opened during the year 1849.

More than 100 mls. of new railway will, therefore, be opened in Maine the present year.

New Hampshire.—The *Boston, Concord and Montreal* Road Company has its charter extended, authorising it to continue its line to Lancaster, in Coos County, making it the grand central line of communication for the State. It is the intention of the Directors to open it to Rumney the coming season.

The *Portsmouth and Concord* Railroad is graded to Epping, and the rails laid to within 3¼ miles of the same place, and it is to be opened to this point in the spring. Distance from Portsmouth to Concord, 40 miles; to Epping about 20 miles.

The *Concord and Claremont* Railroad is in rapid progress. Two thousand tons of iron have been recently purchased for it, to be laid the present year.

The *Contocook Valley* Railroad is in progress also, and the iron purchased to lay the rails from Contocook to Hillsborough Bridge.

The *Manchester and Lawrence* Railroad is under contract the entire distance, 23¼ miles, and is to be opened the present year.

The *Portsmouth, Great Falls, and Conway* Railroad is just commenced upon, and is to be pushed to Rochester without delay.

Including the recent openings on the Sullivan and Cheshire Railroads, the amount of new road brought into use in New Hampshire in 1849, will exceed one hundred miles.

Vermont.—The *Central* Railroad is progressing between Northfield and Montpelier, and efforts are making to extend it to Burlington, 52 miles, from Northfield the present year.

The *Rutland and Burlington* Railroad was referred to in our paper of the 10th inst. The road is progressing, at both ends, with a view to its completion from Burlington to Bellows Falls in the course of the present year.

The *Vermont and Massachusetts* Railroad was to be opened at Brattleboro' the present week, and from thence to Bellows Falls, a distance of some 25 miles, a railroad is contemplated; thereby completing the line of railroad communication with this city, in the valley of the Connecticut, from Wells River to Hartford, and by the railroads between Hartford and New York.

The *Rutland and Whitehall* Railroad is soon to be commenced, a distance of 24 miles, so that by the close of the present year the line of railway between Burlington and New York, via Saratoga, Troy, and the Hudson River, may be counted upon as certain.

The assurances are, that nearly two hundred miles of new road will be opened in Vermont during the 1849.

Massachusetts.—The *Norfolk County* Railroad, 25 miles in length, is in progress, and a portion will be

opened during the coming month, and the whole distance during the year.

The *Fitchburgh and Worcester* Railroad, 12 miles in all, is in progress.

The *Grand Junction* from East Boston to the Worcester Railroad, 6 miles, is rapidly progressing, which is to serve as a connecting line for all the great trunk roads leading into the city.

The *Vermont and Massachusetts* Railroad, after years of struggle and embarrassment, is now about completed to Brattleboro, and the people of that enterprising and beautiful village are the fair way of realizing the enjoyment of their long deferred wishes.

The new openings in Massachusetts in 1847 will probably reach 75 miles, under charters already granted, and then are movements for an extension of the *New Haven and Old* Railroad to the line of the Western Railroad, at Westfield, and for the extension of Naugatuck Railroad to the line of the Western Railroad at Pittsfield.

To be Continued.

MINING,

With regard to the amount of the production of the precious metals, M. Chevalier, one of the most distinguished statisticians in Europe, and probably the best authority in these matters of any man living, if we except Baron Humboldt, gives, as the result of his researches, the following calculation with respect to gold:—

America produces	\$10,295,380
Europe	895,660
Russia	20,666,600
Africa & S. Asia,	11,711,000
Total	\$43,568,580 , equal to 138,360 lbs. avoird.

The amount of silver produced, M. Chevalier estimates at 1,917,062 pounds avoird., including 218,750 for China, Japan, and the Indian Archipelago. Of the total quantity, America yields 1,345,412 lbs., against 1,968,750 at the commencement of the present century. At that time the production amounted to—

\$22,948,800 of Gold,	
40,000,000 of Silver,	
Total	\$62,948,800

Whole value of Gold and Silver produced at the present time—

\$43,568,580 of Gold,	
38,883,400 of Silver,	
Total	\$82,451,980

Showing a slight falling off in Silver, and a very large increase in Gold.

Wilmington and Manchester Railroad.

In a late number of the *Marion, S. C., Star* we find the following notice of contracts for grading on the southern end of the Wilmington and Manchester railroad:

"We understand that at the giving out of contracts at Gregg's store on the 1st inst., the entire distance from Lynch's Creek to the Pee Dee river was taken up at the estimates of the engineers. We are also informed that a good feeling was manifested, and quite a number of persons came forward to subscribe who had not done so previously, and several who had been subscribers increased the number of shares. The prospects of the company seem brighter now than at any previous period, and if the balance of the contracts are given out to the same energy and character, we have not the slightest doubt of its speedy completion. All the contractors will

be at work by the 1st of March. The surveying party of engineers reached the village from the river some days ago, having located the road to this place. They proceeded to the Little Pee Dee to select a proper location for crossing that river. From thence they will survey the line to this place, and put the remainder of the road under contract at as early a date as the estimates can be made up."

Patent Office Statistics.

We have received from Washington, a table setting forth in detail the number of patents of each class—the whole being divided into twenty-two—granted to each State from the year 1789 to 1849.—We give the aggregate as follows:—

States	No. of Patents	States	No. of Patents
Maine.....	483	Mississippi.....	23
New Hampshire...	297	Louisiana.....	77
Vermont.....	310	Arkansas.....	0
Massachusetts.....	2161	Tennessee.....	108
Rhode Island.....	234	Kentucky.....	185
Connecticut.....	1156	Ohio.....	749
New York.....	3382	Michigan.....	51
New Jersey.....	461	Indiana.....	114
Pennsylvania.....	2167	Illinois.....	71
Delaware.....	52	Missouri.....	40
Maryland.....	660	Florida.....	1
Virginia.....	631	Texas.....	4
North Carolina....	137	Iowa.....	2
South Carolina....	122	Wisconsin.....	8
Georgia.....	80	District of Columbia.	224
Alabama.....	65		

The following are the numbers granted during the same time to the principal cities:—

Boston.....	623	Philadelphia.....	916
New York.....	1687	Baltimore.....	430

These statements are somewhat curious, and may be regarded as indicative, to a certain extent, of the inventive genius of our people in different sections of our country.

[No one can fail to observe the important difference in the number of patents taken out by the free and slaveholding states. The whole number taken out by the people of the latter being only 2,273, which is little over those taken out in Massachusetts alone; and less, by upwards of a thousand, than the production of New York.]

The Michigan Central Railroad.

The Central Railroad Company, as we learn from the Detroit Daily Advertiser, have made arrangements to run two daily lines from Buffalo through to Chicago and Milwaukee, during the ensuing season of navigation. The cars will leave Detroit for New Buffalo, every morning and evening, and steamboats will run in connection with them, from Detroit to Buffalo, and from New Buffalo to Milwaukee and Chicago. The competition between this route and the Lake line will no doubt be spirited, and as usual, when there is competition, the public will be benefited.

Gas from Water.

This new discovery, which is being adopted very generally in some of the Lancashire towns, is exciting much attention in this neighborhood, and as many of our readers may not be enabled to view the apparatus at the Basford Iron Works, we give a short description of it. That now supplying Mr. Wakefields works only occupies about five feet square, without the gasometer, but including the fire, and consist of two retorts, one occupied by charcoal and a hollow piece of perforated iron, and the other by a mass of chains. Two pipes and a small iron box act as purifiers. For lace gassing, &c., water, and water only, need be used; but where a brilliant light is required, as for factories, &c., a small quantity of oily matter (which Mr. Wakely finds superior to rosin or tar) is added, and the result is, a gas more brilliant than that obtained from coal, and perfectly free from smell and dirt. The apparatus we have alluded to will produce 1,000

feet in ten hours, at an expense of less than 2s., and would cost from £40 to £50; but one calculated for a private family would be put up for £10, including the license.—*Nottinghamshire Guardian.*

Railroad from Toronto to Lake Huron.

We learn from the Commercial Times, Oswego, that the Canadians contemplate building a Railroad from Toronto to Lake Huron, a distance of 75 miles. The petition for a charter is very numerously signed, and the parliament will no doubt grant it. It will afford facilities for travel and produce not heretofore possessed by them, and will be of great advantage to Oswego, as well as our own city. We congratulate our Oswego friends on this further prospect of building up the business of this city, and increasing its prosperity.—*Syracuse Star.*

Androscoggin Railroad.

A movement is in progress for opening a line of Road in Maine, called the new Androscoggin R. R., a distance of 22½ miles. The line of this road is to diverge from the Androscoggin and Kennebec road, where this latter road leaves the Androscoggin valley, and follows this valley in a northerly direction, so that in fact the Androscoggin railroad is a road for the accommodation of the Androscoggin valley between Lewiston Falls and Jay Bridge, a distance of about thirty miles, and from thence to be extended to Farmington, or such other points as the wants of the community demand.

The estimates made by a competent engineer place the cost of construction at less than \$15,000 per mile. The line is so nearly level and direct that the whole exceeds an air line by only seven-eighths of a mile.

Madison & Indianapolis Railroad.

The receipts of this road for the month of Jan., 1849, were.....	\$29,500 00
For January, 1848.....	17,200 00

Increase in 1849..... \$11,300 00
Which is equal to 65 per cent.

The receipts for the months of November, December and January (1848 '49) last were.....	\$88,408 48
And for the same months of 1847 '48.....	61,406 57

Increase this year..... \$27,001 91
Which is equal to 43 per cent.

Steamboats on the Western Waters.

The total number of boats now running upon all the streams emptying into the Mississippi, is 573.—The tonnage of these boats is 118,655 tons; their value is estimated at \$5,189,979; the yearly outlay at \$19,915,753; and annual earnings at \$17,428,840. The largest number of all the boats now running, it is said, *lose money*, while the entire capital is exhausted in four years.

"From Cairo to New Orleans by steamer the distance is 1012 miles; the time taken to traverse it is about ninety hours; the distance by the Mobile and Ohio Railroad is 470 miles; the time necessary to traverse it is only about twenty-four, being a distance of less than one-half; and the time only about one-fourth. The expense is also less in a similar proportion."—*Mobile Tribune.*

If a road can be made from Mobile to the mouth of the Ohio river, and not be more than 550 miles in length, it will command an immense trade and travel. It is to be hoped that the commendable efforts of Alabamians, to tap the business of the Upper Mississippi, may be successful. The exchanges that can be made between the products of the South and those of the North, will be highly advantages to the people of both sections. It is expected that railroads will soon be constructed from Cairo in Il-

linois to Galena and Chicago. At the rate of travel indicated by the Tribune, in three days one can go from Mobile to Lake Michigan, or to the Falls of St. Anthony, as he may desire. From the Gulf of Mexico to Lake Superior will be but a step. Let iron bars bind the South and the North together in commercial and fraternal bonds a hundred fold stronger than all the factions in the Union.

West of England Steel Company.

SIR—In your Journal of the 14th inst. are a few remarks on a proposed new company for manufacturing steel, in the West of England, with peat and iron ore both found in that district. Although it is rather soon to prognosticate, before one has seen the prospectus, or knowing who any of the parties may be, yet it appears to me to be one of the most feasible speculations that has for a long time been proposed, and one, if carried out in an *economical and business-like* manner, may become a most profitable investment.—The fact that peat is a fuel with which iron is manufactured on the continent, is now becoming more generally known in England, and it is satisfactory to hear that enterprising individuals are availing themselves of this, to establish the manufacture of an article for which we are *now entirely dependent on foreigners*, and which we must have at any price; it is really a wonder that, hitherto, none have opened their eyes to the fact, that while we are annually exporting to Germany alone, upwards of 40,000 tons of inferior pig iron from Scotland, under the price of 45s per ton, we are, at the same time, importing above 20,000 tons of good bar iron from that country, Russia, and Sweden, a great portion exceeding £35 per ton, and this going on whilst we possess every requisite knowledge, capital, fuel, and minerals, for making iron at *fourth the price*, of equal quality to that for which so high a price is given. The charcoal in many districts on the continent, requisite to make a ton of pig iron, costs upwards of £4; and this pig is refined and puddled with charcoal at the same dear rate, whilst sufficient peat-charcoal in Devonshire, will not cost £2 per ton of pig; and I well know, that in works using peat, 9 tons will puddle 10 tons of iron; so it is easy to perceive that the first-rate quality of iron may be made in the west of England, at a cheaper rate than on the continent, provided the ore is obtained at a moderate price.

Should the proposed company's object be to make steel direct from the ore, using the carbonate instead of the oxide of iron, they will still, in the price of fuel, have an advantage over our continental neighbors, as, doubtlessly, they will provide themselves with as experienced workmen, probably knowing that a *very slight* variation in the size of the furnace, or proportions of the ores, will cause to be produced cast-steel or cast-iron at pleasure. I made these observations, not from theory, but from many years' practice in erecting and working furnaces and charcoal forges, and should they be thought worthy a place in your Journal, they are at your service.—E. K.: Jan. 17.—*Mining Journal.*

Extension of the Baltimore and Ohio Railroad.

In the haste with which our brief sketch of the remarks made by Mr. Swann, the President of the Baltimore and Ohio Railroad Company, at a meeting of the Board of Directors yesterday, were prepared, the points touched were so imperfectly stated, and the exact bearing of some of them not fully comprehended, that we are glad to have an opportunity to publish the following fuller report of the substance of his remarks, which has been prepared and handed to us by a member of the Board:

Mr. Swann stated that he had been engaged, almost without intermission, since his connection with this Company, in removing the obstacles in the way of the extension of the road. He had had many and serious difficulties to contend with.

The question of route had been finally disposed of, and, he had reason to believe, to the entire satisfaction of all interests. He was happy to congratulate the Board on the adjustment of this vexed question.

After disposing of this question of route, his attention had been directed to the relation in which we stood to the Chesapeake and Ohio Canal Company. The Canal claimed the right of prior location along the North Branch of the Potomac to the mouth of Savage. From the resolutions passed by the Canal Company, it would be seen that this difficulty had been satisfactorily arranged.

Mr. S. said that this was the last obstacle in the way of the prosecution of this road, and the period had now arrived when the road could proceed without further delay.

Mr. Swann said that the cost of the road to the Monongahela had been estimated at \$4,500,000. It might fall short of this amount, but he believed it would not exceed it.

At this point, the revenue of the road would be increased one-half, or \$2,153,743, being equal to 9 per cent., as estimated by the Chief Engineer.

The five per cent. Sterling Bonds could not fall short of \$2,700,000. The revenue of the road he would estimate at \$1,300,000 during the progress of the work, and he thought \$500,000 a moderate estimate for the citizens of Baltimore. This would accomplish the whole amount necessary to carry the road to the Monongahela river, supposing its revenue to keep up.

The road completed to the Monongahela, the entire debt applicable to the Main Stem, might be put down at \$3,200,000—this being the amount of the Sterling Bonds, which would remain as a perpetual loan to the Company. The Washington Branch would be ample security for the million loan, and the Bonds more recently issued.

The entire capital invested in the road at the Monongahela would be \$13,000,000, from which deducting the \$3,200,000 of debt, it would have upwards of \$9,000,000 as the basis of any future loans necessary to complete your connection with the Ohio river, des the subscriptions of \$500,000 from city of Wheeling.

The mail contract, on the completion of road, would be equal to a capital of \$2,

000,000 at the present maximum of \$300 per mile. For this service there could be no rival.

The debt of the Company had been reduced to \$88,700. From the 1st of Oct. to the 1st of April the total obligations of the Company, including interest upon loans, amounted to \$300,000. Mr. Swann said that if no falling off should occur in the revenue during this and the succeeding month, the company would be out of debt the 1st of April or shortly thereafter.

Mr. Swann said that he had every confidence in being able to make the sterling bonds available to the Company. We had always relied upon them as the great source to which were to look, in the extension of the road. He had lost no time in communicating with capitalists abroad, in relation to those bonds. The result of this correspondence was a proposition for the absolute purchase of a portion of these bonds by one of the strongest houses abroad. This proposition was declined. Within a short time past, he was informed that an effort would be made at home, to purchase \$500,000 or \$1,000,000 of these bonds.

He had no doubt that an arrangement could be made, predicated on these bonds, which would enable the Company to move on without delay.

The road being completed to the Monongahela river, this company, in his judgment, had nothing to fear.

Mr. Swann said that he might be over-sanguine in his calculations; but the Board were as capable of judging as himself. His expectations might not be realized; but he had certainly good reasons for assuming all that he had stated in relation to the prospects of this great work.—*Patriot.*

The English Railway Journals, commencing with the new year, and which have recently reached us, are largely devoted to those reflections which the close of the year, and the state of affairs in Europe, are naturally fitted to inspire. It is on such occasions that men speak with an emphasis, to which, at other times, they are strangers; and the testimony they give, comes to us under more than ordinary sanctions; and we may take the reflections they suggest as the best index we can obtain to the state of feeling in the Old World; and we think that we cannot offer anything more acceptable to our readers than the experience which the past year has brought to our brethren across the water, who have been engaged in identical pursuits with ourselves, and who differ from us chiefly in the civil and political institutions by which they are surrounded. We quote, in the first place, from the London Railway Record of Jan. 6th:

The year just ended will be a memorable one in the annals of the world. In the early part of it a Parisian mob gave an impulse to mankind, which will be felt for ages to come. Forces long pent up in the depths of society suddenly burst forth and overthrew all the barriers raised to keep them down. Nations relieved from the pressure of authority and law, reeled to and fro in wild commotion.—All that was good or great recoiled in horror from the fierce agitation, while the dregs of society rising to the surface, enacted for a

time the part of friends. New and applauding maxims of government were proclaimed. Under the name of "Liberty," the will of the most brutal of the populace was to be the sole law. Under the name of "Equality," rank, genius and worth were to be degraded and despoiled. Under the name of "Fraternity," the idle and the bad were to live on the industrious and the good. During some months of fearful suspense, it seemed a matter of doubt, even to the most powerful, whether the fairest province of Europe would not relapse into barbarism, under the hideous misrule of brigands and assassins.

Happily, ere the year has closed, these doubts and fears have given way to the hope of better things. Still, however, the times are critical. It will require all the prudence of the wisest and the best to "lay" the destroying spirit which has evoked, to collect the scattered elements of government, and frame such institutions as will, while guarding against the abuses of power, and the evils of anarchy, possess the all-important qualities of cohesion and stability.

So violent and widespread a convulsion could not occur without being felt over the whole world. This kingdom, though its institutions withstood the shock which laid surrounding thrones in ruins, did not pass thro' the ordeal unscathed. When so large a portion of mankind snapped asunder; the bonds which kept them within the limits of law, all the framework of society was rudely shaken. Those great and susceptible interests which it is the province of governments to cherish and protect languished. The confidence of man in man, ceased. Capitalists, the most timorous of their kind, naturally shrunk from placing their wealth within the reach of men who called property theft, and confiscation justice. The commerce of the Continent fell, as well it might, into a state of collapse. The extremities of the commercial system of Europe being thus paralyzed, England, the great centre in that system, could not fail to suffer in all those important interests which depend, for their prosperity, on the vitality of commerce.

As a necessary result of so much social disturbance and political ferment, public securities fell in price; and, among others, railway shares sunk to a ruinously low figure. The alarmed shareholders, horror-struck at the frightful depreciation of their property, were almost driven to frenzy by the acts of men, who, for objects best known to themselves, strove to create the belief that railways were, one and all, worked at a loss, and that, to conceal the terrible truth, the published accounts were mystified. In self defence, the ruling bodies of the various companies were led to submit to the public, clear and unmistakable expositions of their financial positions. Many painful confessions were thus wrung from the badgered Directors, by a process somewhat analogous to a prolonged tooth-drawing. But the very startling character of some of those confessions is, perhaps, the best proof that a "clean breast" was made. The statements published appear to have in reality been true and faith-

ful accounts of past expenditure, of-availing assets, and of future liabilities, with some high-coloured estimates of prospective profits as a relief to the sombre array of figures.

Though some of these statements were of a kind to calm groundless fears, and to lay bare the arts by which those fears had been fomented, yet it is too true that most of them contained damning proofs of the cupidity of proprietors, of the unwise facility of Parliament, and of the reckless rivalry of Railway Boards. As they appeared one after another in grim procession, they supplied stern comments on the mad doings of the past. Capital wasted in unproductive lines; capital wasted in getting Acts for lines never to be made; the profits of paying lines frittered away in guarantees to companies whose unaided resources would not suffice for their working expenses—such were the discouraging revelations which had to be made; and so are the gorgeous dreams of 1845 to be realised, as if in mockery of human hopes and human foresight. But bad as these things are, the most unsatisfactory portions of the statements were those which disclosed the large amount of uncovered mortgage debts with which most of the companies are encumbered. Already has pressure been applied to force the creation of preference shares to the further detriment of the luckless holders of existing stock; and it is not easy to see how this pressure is to be resisted while confidence in Railway Securities continues at its present lowest ebb.

There are other events in the history of railways during the past year which, if our limits permitted, are worthy of note. In the course of it much taanspired to discourage those concerned in railway, but little to make them despond. It was emphatically a year of trial. The stability of all national and private interests were tested to the utmost; and it augurs favorably of the future prosperity of railways, that they have well maintained their ground. They are, indeed, a new and powerful instrument in the hands of the British people, whose energy, industry, probity, and intelligence, have made this country the marvel of the universe. Who can doubt that this great country, ever remarkable for the elastic vigour with which it recovers from almost overwhelming reverses, will, with so potent an auxiliary as railways, start on a new career of peaceful triumphs, and surpass even its past achievements, mighty as they are, and unequalled in the annals of the human race?—*Railway Record.*

Such is the sombre picture presented to us of the fears, sufferings, anxieties, and discontents which have exercised our English brethren the past year. It is a true one, and what we might naturally expect. For the privileged classes there, change is another word for the loss of everything that makes life valuable. This class require vastly more to supply their wants than the labor of their own hands could produce were they the most skilled in the work of production; but feeling their ignorance of manual labor, they can see nothing in the change that would compel them to supply their wants by their own labor, but starvation and all its horrors.

Yet (barring the local matter of slavery) in this country that state of things exist which they so much deprecate, Liberty, Equality, and Fraternity, with such distinctions & differences as are naturally found in mankind; and while Europe has been convulsed with "fears of change perplexing monarchs," and those nations which have not been torn in sunder by domestic convulsions, feel that they are resting on a sleeping volcano, which they know not how soon may overwhelm them, the past year has done more than any one, since the formation of our government, to promote kind feeling and confidence between all classes—to attach our people to the government—to give stability to our institutions, and an increased confidence in that very kind of property that has suffered much in England; and though this country, in common with many in Europe, has changed its rulers, perfect order and contentment has reigned; for all classes, the rich and the poor, feel that they should be equally sufferers by a change of government; and were all trace of our government abolished, and nothing left but the recollection of it, and we were called upon to frame a new one, the universal voice would call back, in all its main features, the government of the past. England has, and continues to teach us many useful lessons; but has not Brother Jonathan some useful lessons for her, and will Charterism ever be put down, and order and quiet exert their natural dominion over her people until some of those lessons are put in practice.

The following is from the Railway Chronicle of same date.

The silent march of Time has now placed us within the treshoid of a new year; and 1848, with all its disasters and changes, has passed away. Never surely did a few short months present such a series of events! The commercial pressure of the latter part of 1847 appeared to be diminishing, and men reasonably expected that matters were to resume their ordinary course, when the astounding intelligence reached England that the sagacious and powerful king of the French had abdicated his throne, and was a fugitive before his enemies. There is no romance like that of real life, and none of the ex-king's escapes in his long and adventurous career were more remarkable than this last, in which, with his queen, he reached in safety the shores of England, almost penniless, and destitute of even a change of raiment.

It would take up more time than our space will afford to trace even an outline of the various convulsions which followed that in France; the recollection of them are too recent to require more particular allusion, but we cannot forbear congratulating our readers on the manner in which the ensane endeavours of some mischievous and misguided men were met by the majority of their resolute and well-disposed countrymen. The chartists in England and the rebels in Ireland were effectually put down, and, happily, almost without bloodshed! Such events, however, could not but act injuriously on commerce; and we have probably gone through as severe a crisis as ever occurred in Great Britain;—nevertheless we have great reason to be thankful that we have not suffered to anything like the extent that our neighbours across the Channel have done, where credit has been annihilated, and trade all but destroyed.—

Germany and the rest of Europe, excepting Russia, have been convulsed politically and commercially nearly as much. The interest to which we more particularly devote our columns has been very freely blamed as the great and crying evil which occasioned the commercial crisis; but from this we differ. No doubt too large an amount of capital was devoted to the construction of railways—too many were commenced at the same moment, and speculators who undertook to provide thousands, where they should only have promised hundreds, have ruined themselves in the crash their rashness produced, and brought the value of railway property to the lowest ebb. The tide, however, which receded so rapidly, appears now to be steadily on the turn, and unless politics interfere to check its onward progress, we look forward with hope and confidence for the future. We are far from wishing to buoy up vain expectations; but if railways are prudently conducted—and surely directors have had such a lesson lately as ought not to be forgotten—they will yet pay a remunerative interest, and, in spite of the burdens which have been imposed upon them, benefit the shareholders, who though it has been the fashion to abuse them, are still entitled to some consideration.

Let us now look a little to the advantages they have spread through the length and breadth of the land. To those who travel, either on business or pleasure, their value in money, time and safety, is beyond calculation; and whether it is the sovereign or the subject, all in their respective positions are reaping the fruits of the spread of railways. To the consumers and merchants, the facility and cheapness of communication afforded by the iron roads is enormous. Manufactured goods are delivered at every considerable town in England or Scotland, a few hours after the order is received in Manchester, Birmingham or Glasgow; coals are brought to the door of the hall or cottage, and delivered in many places at one-half their former cost, in all at very reduced rates, and an important addition to health and comfort brought within reach of the poorest. These are only a few of the advantages which railroads have introduced amongst us, and yet the capital laid out on their formation has been denounced by some writers as valueless; their construction has been compared to that of the Pyramids, or Versailles; and the national loss assumed to be equally great.—Such exaggerated statements would hardly deserve notice if they had not been made from quarters which command attention. We think, however, that better days are coming, and heartily trust that this time next year may prove the correctness of our views.—When we look at the enormous aggregate which has been received every week during the past year, even in our worst periods of cruel and trying adversity, we see sound grounds for assuming that more prosperous times must bring them a corresponding increase to the internal traffic of the country, which must, of course, re-act to the material advancement of railway property.

The following is from the London Mining Journal and Railway Gazette:—

It was with great unwillingness that we allowed the first Saturday of 1849 to pass by, without congratulating our numerous readers on the advent of the new year. The seasons have returned to us with their wonted regularity, and, as they rolled along, presented the gifts with which nature filled her lap, for the revival and refreshment of our ever independent race. The great clock of the heavens worked on; its wheels want no oiling; its springs require no additional elasticity; and the vast movement will be perpetuated, until the mighty hand that put up and impelled the magnificent machinery shall be put forth to arrest and take it down. We have not been so steady in the little Circle of Christendom; old Governments have fallen, and others, of an untimely birth, have sprung up to supercede them. The framework of European society has been, throughout the year, in a state of painful dislocation, and the changes we have experienced were but the forerunners, it was feared, of greater ones to follow. This was too much the character of the entire year, and how injurious, how ruinous to commerce, and the confident intercommunication of nations, these recollections of the past, and forebodings of the future, must needs be, we need not now delineate.

Notwithstanding this series of storms, the commercial success of the year is highly satisfactory, and under the circumstances, to our minds, surprising. The tempest, terrible as it was, was not strong enough to take the buoyancy out of the commercial principles upon which we had embarked; and certain it is, that had our course been fettered by the old restrictions, or superintended by the old helmsmen, our commercial voyage last year would have been more nearly bounded by the Isle of Dogs, than enlarged to the circumnavigation of the globe. The particular department of industry to the progress and elucidation of which our Journal is devoted, has endured some of the drawbacks and hindrances which have beset almost all the springs of our productive wealth. In mining operations there has not been that activity, nor have they produced that remuneration which the skill, diligence, and capital dedicated to them, had induced the public to hope and to expect. We have been sharers in the general interruption which business has sustained; but we are again feeling a breeze, and filling out our sails. An active prosecution of this branch of industry is reviving, better prices for mining produce is ruling in the market, and we fully expect to see a better scale of profits to adventurers, and of wages to operative miners prevailing, than has recently been the portion of either.—With the Consolidated Three per Cents. up to 89, money must be in great abundance, and waiting but the smallest conceivable impulse to secure its investment. We begin, therefore, 1849, with a large capital in hand, and anticipate the happiest results from its seasonable and judicious mining application; and it is on these prospects, as well as on the

results actually realized in the year just expired, that we wish to congratulate our mining friends, both far and near.

St. Lawrence and Atlantic Railroad.

The St. Lawrence and Atlantic Railroad Company, a few days ago, issued cards of invitation to His Excellency, Lord Elgin, and the members of the Legislature, to ride over the portion of their road now finished to St. Hyacinth, on Saturday last, the 10th instant; an invitation which, by the politeness of the Chairman and Directors, was extended to the gentlemen of the fourth estate.

Accordingly at half-past ten on Saturday morning, there was a large assemblage of members of the Legislative Council, and of the Assembly, at the station house, at Longueuil. His Excellency soon after arrived, accompanied by Lady Alice Lambton, and Lady Emma Brue, looking, we are glad to say, in excellent health, nor suffering apparently in the least from the intense cold of the morning.

His Excellency and the ladies, were received by the Hon. Mr. Morin, Chairman of the Company, and by the Directors, in the most respectful manner, and conducted to a waiting room fitted up for them, until the cars were ready to start.

The distance to St. Hyacinth was effected in an hour and a half.

Immediately after arrival at St. Hyacinthe, the company visited the College, and were introduced to the Reverend Superior, after which they assembled in the large hall below, where an address was delivered to His Excellency by one of the students, congratulating His Lordship, and the Railroad Company on the completion of the road to the village of St. Hyacinth, to which His Excellency made an appropriate reply in French.

At half-past one the company adjourned to the station-house, where the Railway Directors had directed to be spread an excellent collation, to which an abundance of Champagne and other wines enabled all to do most excellent justice.

The health of his Excellency Lord Elgin was proposed by the Hon. Mr. Morin, and was rapturously drunk.

His Excellency, in returning thanks, gave great praise to the Directors of the Railroad for the perseverance they had shown—a perseverance amounting to patriotism—in carrying on their works, at a time when the whole money market of the world was depressed, and when the fall of British Consols—unprecedented for the last sixty years—had deranged financial arrangements in England; and he hoped that the public spirit of the Directors—shewing, that in the midst of difficulty, they had not despaired of their country—would entitle them to the confidence of the public as well as of all who heard him. His Excellency was frequently interrupted by cheers, and concluded by proposing success to the St. Lawrence and Atlantic Railway Company.

The health of the Queen was proposed by the hon. Chairman, who prefaced his re-

marks with an exceedingly appropriate allusion to the day being the anniversary of her Majesty's marriage day, and was drunk with an enthusiasm unbounded. The prosperity of the village of St. Hyacinth was also drunk, and was replied to by P. E. Leclere, Esq., in a very neat address.

The company again embarked about three o'clock, and reached Longueuil about half-past four.

The day although cold was pleasant, and the cars, having stoves fixed in them, were exceedingly comfortable.—*Montreal Gazette.*

Railroad to the Pacific.

We this week lay before our readers the Memorial of Mr. Bayard, praying the aid of Congress in constructing a Railway from the Mississippi to the Pacific. Without discussing at this time the superior merits of any of the routes, we think we hazard nothing in saying, it has become the settled conviction of our people, that we must open a railway communication with our possessions on the Pacific, and that the question which chiefly concerns Congress is, which is the most feasible route, and not the amount of aid to be granted. It should either build the road; or aid in construction by individuals, by reasonable grants of land. Our public domain is valuable, not so much for the revenue we may derive from its sale, as a means of extending our free institutions, and of enlarging our population, which in a pecuniary point of view, is much more for the interest of the old States, than to receive their proportion of the sale of the lands. The events of the two past years have passed by us in such rapid succession, and were of such vast magnitude, as to astonish and bewilder us, and now that we are removed from their immediate influence, it becomes us to take measures at once to adapt ourselves to our new situation, and meet the responsibilities which it imposes. We hope our readers will give the memorial careful attention, as it is the most satisfactory statement we have yet met with, of the advantages of such a road, and the necessity that exists for its construction.

MEMORIAL.

To the Senate and House of Representatives of the United States of America in Congress assembled:

The memorial of William Bayard & Co., respectfully represents that they have for many years contemplated the completion of a railroad through the United States to connect with the Atlantic and Pacific oceans—that William Bayard, acting in concert with others in the United States, visited Europe several years since for the purpose of making arrangements for funds for the completion of said road—that the general monetary depression, and especially the shock which American credit experienced about that time, caused him to defer any action in the matter until recently. In the meantime, your memorialists have sought every means of satisfying their judgments, not only as to the feasibility of the project, but to seek out the best track under all circumstances for the continuation of said road west of the Mississippi river.—The late treaty with Mexico has furnished that route, and they now propose to contract for its construction upon the following terms, to wit:

The main track of said railroad to be made

from St. Louis, Missouri, to intersect the Rio Grande in the neighborhood of the head waters of the Red and Gila rivers, thence to some port or ports in California; *Provided*, That hereafter any chartered company or companies, shall have the right of connecting with the same, by running railroads from Cairo in Illinois, Memphis in Tennessee, Vicksburg or Natchez in Mississippi, or from any other point or points south of said main trunk. This road is to be surveyed and located by engineers appointed by the United States, with the concurrence of the engineer of the contractors. All travellers and officers of our army, who have ever been this route, agree to its practicability, as doubtless would have done our indefatigable and talented pioneer, Col. Fremont, had he have travelled over the same. The United States to grant the right of way, and to set apart the lands along the said road 25 miles on each side, in aid of the construction of the same. The contractors to have permission to dispose of said lands ratably as the road progresses; and for the purpose of ascertaining the progress of the work, and of designating what lands may thus become subject to the disposal of the contractors, the United States shall appoint one or more persons on whose certificates duly communicated to the proper department of government, permission shall be granted to the contractors to dispose of said lands: *Provided*, that the same shall be sold to actual settlers only, at not less than the government price of public lands, and not more than six hundred and forty acres to any one person. The United States shall appoint suitable persons to ascertain whether any, and if any, what amount of lands within twenty five miles of said road belong to individuals, and such quantity shall be granted to said contractors to be selected elsewhere on any of the public lands of the United States subject to sale.

Within thirty days after the completion of said survey, as a guarantee for the construction of said roads, your memorialists and his associates obligate themselves to place in the treasury of the United States a sum not less than *five millions* of dollars in government securities, according to their marketable value at the time of deposit, to be ascertained by the secretary of the treasury. The said deposit shall bear an interest at the rate of six per cent. per annum, which interest shall be paid over to said contractors semi annually; and said deposit shall remain in pledge for the faithful performance of said contract until three fourths of said road shall have been completed, and then refunded to said contractors.

Your memorialists obligate themselves to construct said road of iron rails of the most approved form, which shall weigh not less than sixty pounds per yard; and to complete the same within eight years from the commencement of said surveys; and to carry the United States mails from the Mississippi river to the port or ports selected in California in not exceeding four days; and for the carrying such mails, Congress may fix such compensation as they may deem just and equitable.

In view of the extraordinary magnitude of this work, its immense cost, the influence which it must necessarily exert upon the prosperity of our country and the commerce of the world, the large bounty asked of the government in aid of its construction, and the *quid pro quo* for the granting of such bounty, all justify, in the opinion of your memorialists, more detailed reasons than appear at first blush upon their simple proposition of contract. They therefore beg leave to enumerate some of those reasons.

From the centre of Maine there are continuous railroads, which, with three small links yet to complete, tap the lower Mississippi both at Vicksburg and Memphis and Cairo, a distance of 2,200 miles; and with small connections to be made, tap the upper part of that river at St. Louis, Alton, Quincy and Galena. From Cairo, at the mouth of the Ohio river, there is a railroad projected from St. Louis, and the interior of Illinois, which, when the upper river is obstructed by ice, will at all seasons afford a communication with the low country. The whole line of the lakes from Champlain to Michigan have been tapped at different points by roads running east, south and west. To the east they connect with roads whose great terminus is the commercial emporium of New England, and from thence they radiate to every point of the compass, reaching into almost every workshop of that industrial people. To the south they reach into the great cities of New York, Philadelphia, Baltimore, Cincinnati, and still further south. To the west, they reach the Mississippi at St. Louis, Alton, Quincy and Galena. They have in fact reached the verge of our Mississippi settlements. Where we have people there have they built roads. Shall they stop at the Mississippi?

The events of the last few years, consummated by the late English and Mexican treaties, answer this inquiry in the negative. Those treaties have given us fifteen hundred miles of the Pacific coast. With a vast area of back land capable of supporting many millions of people, with the best ports on that sea, laying abreast of, and within 22 days' steaming of the rich commerce of China and Japan, that our people will cross to the Pacific coast and settle that country rapidly, no one doubts. That they must have our government and protection, and that they must not be alienated from their fatherland by absence and distance all agree. Then to bring them back and unite them in bonds indissoluble is the question. How is that to be done? The answer is plain.

After stating its objections to the route proposed by Mr. Whitney, as lying so far north as to be impassable for a great extent of its line, in the winter, on account of snows, as running twelve hundred miles through a country destitute of wood and water, and as having no good harbor at its western terminus; and to the Isthmus route, as being in the possession and under the control of a foreign power, as liable to be interrupted at all times in case of war, as increasing the distance 5,000 miles, as vastly increasing the expense of transportation, and as being a dangerous route for vessels, it goes on to urge rea-

sons for government aid in construction of the road proposed.

1st. Their pledge of five millions of dollars or more, is a sure guarantee that *it will be completed*.

2d. That when completed, it is through the *heart and centre of our country and people*. It takes its course west from the Mississippi, which is in the heart of nearly the whole of the steam and flatboat navigation of that great valley. At this starting point it unites with railroads which already have bound together nearly the entire commercial interest of our country in one whole. The continuation of this road west will do more to soften the asperity of sectional politics, and to make an unity of interest, commercial and political, than any system within human reach. It is a work, of all others yet devised, the *least* sectional, the most national. It has its eastern termini alike in every Atlantic city from Savannah, in Georgia, to Bangor, in Maine. It will have its feeders upon the Gulf of Mexico, from the mouth of the Rio Grande to Pensacola. The frozen waters of Boston will travel to the gold placers of California, in the same trains with the British and American mails. These trains will return with the luxuries of the eastern world, and the produce of our own mines. Every section of our country will send forth the enterprising to people, and develop a wealth which must necessarily give us a balance of trade against all the world, and consequently a prosperity over all the world. The iron masters of Missouri, Pennsylvania, Tennessee and Georgia will come into a healthful competition for the sale of their metal, which gold diggers will not work. The completion of this road with a single track, at sixty pounds per yard, and at the present prices of iron, will require an outlay for this article of fourteen millions of dollars. At seventy five pounds per yard, it will cost sixteen millions eight hundred thousand dollars, and at one hundred pounds per yard will cost twenty one millions of dollars. When the wants of commerce and public convenience shall require a double track, the double of these sums in iron must be expended. In addition to which the estimated outlay of thirty millions of dollars must be expended by your memorialists for grading, bridge building, engines, cars, depots, etc., before the completion of said road. This large outlay of capital, held forth to the industry and enterprise of our country, must benefit every branch of business.

In a foreign commercial point of view, the continuation of our railroads from the Mississippi to the Pacific, is of transcendent importance to this country. A line drawn from the greatest commercial emporium of Europe to Canton in China, would follow nearly the whole line of our roads from Boston to San Diego, in California. Thus the London mails could reach Boston in eleven, the Pacific in twenty, and Canton in forty two days by steam and the proposed road. All the European correspondence would necessarily take this route, and thereby add immensely to our postal receipts, while at least the lighter articles of eastern luxuries would cease to

make the tedious circuit of Cape Horn. Our depots upon each sea; would be the general rendezvous of European shipping, and at no distant day our country would become, in the language of the present indefatigable and sagacious Secretary of the Treasury, "the great centre of trade and business."

AMERICAN RAILROAD JOURNAL.

Saturday, February 24, 1849.

Locomotive Engines.

According to our recollection, the first locomotive in this country was an experimental engine of moderate size, built by Peter Cooper, Esq., of this city, in 1830. The first one introduced into New England was built by George Stephenson, at Newcastle-upon-Tyne, and imported by the Boston and Worcester railroad for the purpose of running their first trains to Newton in the year 1834. At Boston this specimen of the greatest of mechanical contrivances excited immense curiosity on its arrival, among all classes of men interested in the progress of the mechanic arts in the country. An English engine driver took charge of the iron horse, and displayed its working capacity with the most lively satisfaction, to a wondering and admiring crowd.

To this day, the most lively curiosity is excited whenever a new locomotive is first moved upon the track. No anxious mother is more eager to catch the first glimpse of her offspring, than a locomotive engine builder is to witness the first movement of his first locomotive. It is a moment of throbbing impatience and of anxious hopes.

As soon as this new engine was tried, the inquiry was raised among the sagacious men of Massachusetts, whether they could be produced at home.

The machine shop of the Locks and Canals at Lowell, at once embarked in the work of construction, and for a time supplied many engines for the New England roads, copying very nearly the model of Stephenson. These engines have been found to be of the most admirable workmanship, and though lighter than those in use at the present day for passenger travel, they are still doing good service on many of the branch lines, or used in the construction of new roads for drawing gravel and timber trains.

At an early day M. W. Baldwin started his shop at Philadelphia. Descriptions of his first locomotives are found in the Journal, in some of its earliest volumes.

The next attempt at building locomotives in the United States; was made by Messrs. Long & Norris in Philadelphia, and the business has been steadily continued from that time to this, though for many years past under the name of Norris, Brothers, whose reputation is so well established. The Messrs. Norris have introduced some of the most valuable improvements in locomotive engines, and were among the first to construct an engine capable of successfully ascending heavy grades, a result which has materially changed the character of railroad construction within the last few years.

The Norris engines are remarkable for strength of frame, and excellence of finish. As models of symmetry and graceful proportion, we think it difficult to surpass them.

Since the establishment of Norris works, M. W. Baldwin's locomotive shop in Philadelphia, and Ross Winans in Baltimore have grown to be great establishments. After that, Hinckley of Boston set up his locomotive shop, since grown to be the Boston Locomotive Works.

The splendid establishment of Rogers, Ketchum & Grosvenor, of Patterson, N. J., was, we believe, the next one started in point of time. They are introducing upon the New York and Erie, and other railroads in the country, a class of engines which are giving them the highest reputation as builders.

Within a few years past, a shop has been started at Taunton, Mass., another at Ballardvale, another at Portland, and another at Springfield, and a second shop at Patterson, and at Baltimore; and locomotive engines have also been built at Reading, Pa., and Manchester, N. H.

The Newcastle Manufacturing Company, in Delaware, has a fine shop in successful business, and now take orders for locomotives.

The Mattewan Co. at Fishkill Landing, are also engaged in building locomotives. They have recently embarked in the business under the most favorable auspices, in connection with the Hudson River railroad.

A new shop at Schenectady, under the charge of E. S. Norris, is just starting with new and improved machinery, and full assurances of business.

At Cambridge Port, Mass., Messrs. Davenport & Bridges have accumulated a fortune in the manufacture of railway cars. They have recently associated with them Mr. Lewis Kirk, of Reading, Pa., whose reputation is a complete guarantee of success, and established, in addition to their car shop, an extensive shop for the manufacture of locomotives and all other machinery.

We have here a list of sixteen different establishments already, engaged in this branch of manufacture. We now send engines to Canada, to Cuba and to Europe, and import none. No class of men have done more to raise the standard of American labor, and promote the highest interests of society, than the men who have started these enterprises in our midst. An extensive market is now open before them from the great number of new roads rapidly approaching completion, or in progress.

It is now hardly necessary to say to the directors of new roads, that orders for locomotives should be given as soon as the work of grading is fairly commenced. Many a road has suffered for want of a sufficient equipment at the start.

A subject so fertile in suggestions will require further notice at an early day.

Richmond and Danville Road.

We are gratified to learn that this work is now in rapid progress of construction, the contractors for the first section having upwards of 700 hands actively engaged on it, most of whom are now at work near the Coal Pits, in Chesterfield. We understand that a proposition has been made by the directors to let the remaining portion of the road from Staunton to this place, on terms which, it is presumed, will be promptly accepted by the contractors, but which are rather more favorable to the company than those of the present contract.

We learn further that at the last meeting of the directors, it was determined to build an iron bridge across the river at Richmond, the contract for which will probably be concluded with Mr. Ellet, the famous architect, who constructed the wire suspension bridge at Niagara Falls. It is said the cost will not exceed \$80,000; so that an iron bridge, bearing the impress of artistic skill, and presenting all the elegance of practised taste, may now be constructed for one half the amount that it formerly took to build a wooden one: for the bridge across James river belonging to the Petersburg company cost, we believe, about \$150,000. A wonderful reduction, truly!

The friends of the improvement in the up-country

will be gratified to learn these facts, and will hail them at once as flattering prospects for the company, and as an earnest of the directors to push the work to a speedy and profitable completion.

We have just received the circular of the Trustees of the Illinois and Michigan Canal, who were appointed, under the loan act of \$1,600,000, for the completion of this work. Our readers are aware that after there had been about \$5,000,000 expended, on this Canal, by the State of Illinois, the work was abandoned for some years, for want of means to carry it on. Subsequently the State induced certain of its bondholders to advance an amount sufficient for its completion, and as security for the payment of this loan, the State placed in the hands of three trustees—two appointed by the bondholders, and one by the State—the Canal and all its works, together with 225,000 acres of land lying on the line of the canal, and 6,000 lots lying in the towns of Chicago, Lockport, Ottawa, La Salle, &c. It also guaranteed to the subscribers of this loan a priority of payment of their bonds to a certain extent after the \$1,600,000 was fully reimbursed. The Trustees appointed under this arrangement, organised in 1815, pushed the work vigorously to its completion, and on the 24th of April, 1848, it was opened for business.

Main Canal from Bridgeport (four miles from the fork of Chicago river) to the western termination of La Salle, is 96 miles in length, including the river portion, about 100 miles. It is 60 feet wide at the surface, 30 feet at the bottom, and 6 feet deep.

The following are some of the principal works connected with the Canal:

Des Plaines Feeder to the summit level, by a side cut of 200 feet in length.

Calumet Feeder from the Calumet river to the summit level is 17 miles long, 40 feet wide at surface and 4 feet deep.

Du Page Feeder on the Joliet level, by a side cut of one quarter of a mile.

Kankakee Feeder on the Dresden level is 4 miles long, 40 feet wide at surface, and 4 feet deep. It is conducted across the Illinois river by an aqueduct.

Fox river Feeder (lower) is $4\frac{1}{2}$ miles in length, and is brought in upon the Ottawa level. It is 40 feet wide and 4 feet deep.

Two Pumping Engines driven by steam, for raising water 8 feet high, from the lake to the summit level, for a maximum trade upon the Canal in case of drought in the Calumet and Des Plaines rivers—each engine being capable of raising 6,000 cubic feet per minute.

There are seventeen Locks on the main line, built of the best description of hammered masonry. They are 110 feet long by 18 in width, calculated for boats carrying from 100 to 150 tons. The lift of these locks average 9 feet, the least lift being $3\frac{1}{2}$ feet, the greatest $12\frac{1}{2}$ feet, and the whole lockage 158 feet.

There are Lock-houses for the lock-keepers.

Basins for the accommodation of trade, made generally by enlarging or widening the Canal.—These have been constructed at Lockport, Joliet, Du Page, Ottawa, and La Salle, and are $\frac{1}{2}$ mile in length, and 120 feet in width, to $1\frac{1}{2}$ miles in length, and 200 feet in width.

At La Salle there is a steamboat basin covering an area of 6 $\frac{1}{2}$ acres, communicating with the Illinois river by a steamboat channel 118 feet wide, and nearly a mile in length.

The whole amount received by the Trustees under the loan is as follows:—

Loan exchange & interest.	\$1,611,969 02
Tolls in 1848.....	87,873 91
Sale of lands.....	236,130 42
Incidentals	13,058 74
	<hr/>
	\$1,949,042 09

The total amount of expenditures by the Trustees is as follows:

Expens's negotiating loan,	27,069 18
Construction of canal and feeder.....	1,949,111 19
Hydraulic works, pumping engines & building.	55,772 92
Contingent to general expenses.....	151,981 53
Management of lands...	22,069 55
Maintenance and repairs of canals.....	44,689 47
Interest on loan to Nov. 30, 1848.....	169,165 48
	<hr/>
	\$1,719,859 32

Leaving balance expended..... 229,182 77

This sum is chargeable with—

Unclaimed interest and principal due Oct. 20, 1849.....	\$30,000 00
6 months' interest on loan due Nov. 20, 1849.....	43,300 00
Construction of Calumet feeder.....	25,000 00
Repairs on canal previous opening in 1849.....	20,000 00
Incidental expenses.....	10,000 00
	<hr/>
	\$128,300 00

Leaving as sinking fund on the loan.. \$100,882 77

Amount of receipts on canal 1848.....	87,890 87
Cost of maintenance, '48,	37,944 59
	<hr/>
	\$49,946 28

The revenue for the year 1849, are estimated as follows:

Balance in the treasury..	\$100,882 77
Notes receivable in 1849 for land.....	212,000 00
Canal revenue, 1849....	120,009 00
Interest, rents & proceeds of lands sold, but not settled for.....	37,500 00
	<hr/>
	\$470,382 77

Expenditures in 1849—

Maintenance of canal...	\$40,000 00
General expenses.....	20,000 00
Land sales and contingencies.....	10,000 00
	<hr/>
	\$70,000 00

Leaving a balance towards paying the loan, 1849, of..... \$400,382 77

Estimated value of lands unsold.....	\$1,398,380 05
Balance due on lands sold, not including interest	363,981 00
	<hr/>
	\$1,762,367 05

Showing assets, in addition to the future earnings of the canal, for the payment of its debts, of..... \$2,162,747 82

This Canal is a work of national concern. It probably occupies the best route for water communication between the Mississippi and the Great Lakes. It is constructed on a scale of such magnitude that it will admit of any amount of business, and its completion will give a great impulse to the internal commerce of the country. It gives symmetry to our whole system of internal improvement; and when we consider that Illinois is destined to become the great Western State of the Union, we cannot doubt but that the revenue of this Canal will eventually defray the whole expense of its construction.

Southwestern Railroad Company.

We have just received the first annual report of this company, which is now engaged in the construction of a railroad from Macon, Ga., to Fort Gaines, on the Chattahoochee river. Our readers will recollect that about a year since we published the report of a preliminary survey of the route, accompanied by a map of the country through which the proposed road passes. This company was organized on the 10th of February last, and immediately commenced the work of construction. From the engineer's report it appears that 93 miles are located, being the section between Macon and Richland, Stewart county, and ready for contract, and that on 35 miles the most difficult part of the whole route, the work of grading is rapidly progressing. The route is very favorable for railway construction, the maximum grade being but 45 feet in the mile, and the shortest curves having 2500 feet radius. The whole amount expended on the road thus far is \$63,315 98. The whole amount of subscriptions raised is \$512,220 00. In addition to this, the city of Savannah has guaranteed the sum of \$250,000, payable as soon as the completion of the road is placed beyond contingency. This road appears to be in the hands of right kind of men, and from the energy and perseverance that Georgia has shown in the construction of her works, we have no doubt but we shall soon have the pleasure of chronicling its completion. It will form another important link in the great chain of road which is ultimately to connect New Orleans and the northern Atlantic cities.

Mansfield & Sandusky Railroad,

We have just read the report of this Company, from which it appears that the whole amount expended on account of the road is \$1,106,121 25.—The gross amount of receipts the past year was..... \$85,276 34
Expenses for same period..... 27,355 30

Leaving as net earnings..... \$57,921 04

The receipts of the past year do not vary much from those of the year previous. There has been an increase from passengers, though the Mad River road drew from it much of the travel that formerly took this route from the Lake to the interior of the State. The diminution in receipts arises almost wholly from the falling off in wheat and flour, which amounted to 120,427 bushels of wheat, and about to 43,407 barrels of flour. A road is now in progress from Mansfield to Newark, a distance of 60 miles, (via Lexington, Belleville, Independence, Arkney-Frederickstown, Mount Vernon, Utica, and St. Louisville), is graded and bridged, and will probably be opened the present year. This road, when completed, must exert an important influence over the Mansfield road, and vastly increase its business. It is proposed to extend this road from Newark, via Lancaster, Circleville and Chillicothe, down the Scioto Valley, by Piketown, to Portsmouth, thus forming another line of railway from the Lakes to the Ohio.

The following are some of the principal articles of merchandize carried on the road the past year:

Wheat.....	383,654 bushels.
Corn, oats, and barley...	29,642 "
Flour.....	19,191 barrels.
Salt.....	15,077 "
Seeds.....	887,382 pounds.
Butter and lard.....	767,102 "
Wood.....	332,955 "
Ashes.....	316,380 "
Tobacco.....	110,752 "
Dried fruit.....	211,956 "
Bacon and pork....	114,500 "
Lumber	375,480 feet.
No. of passengers.....	26,313
Received from do.,	\$24,155.

OCEAN STEAM NAVIGATION.

In our paper of the 3d instant, we gave some account of our Merchant Steamers designed for Ocean Navigation. The list embraced no less than twenty in actual service or nearly fitted for sea, besides the new boats already partially contracted for, or projected, amounting to several in addition. Every day brings to us some new fact, disclosing the rapid development of the spirit of enterprise so strongly aroused of late in this new direction.

Already the travelling and fashionable world are anticipating a new avenue for enjoyment, in the shape of a voyage to Europe. Instead of Saratoga and Newport, the White Mountains and Niagara Falls, the fashionable resort for summer amusement will soon be the Alps, the Highlands of Scotland, Paris and the Rhine.

Ten days' sail from New York to Liverpool will soon be sufficient time to accomplish the voyage in the spacious and elegant packets now in progress; and six weeks will suffice for a tolerable acquaintance with European life, under the improved facilities for travel soon at command.

The rush of travel each way will soon reduce the expense of an ocean tour, to one half its present cost, and the people of the two hemispheres will find in this interchange new sources of pleasure and enjoyment. The exchange of ideas and of civilities will have a most favorable effect, not only upon the political and social condition of this world, but upon all the relations of trade and business. Five years will make changes in our midst little dreamed of by those unobservant of the progress of the mechanic arts, as applied to locomotion in the form of the railway and ocean steamers.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc.—STARKS & PRUYN, of Albany, N. York, having at great expense established a Manufactory with every facility of Machinery, for manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of wrought iron work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc., and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	} Canal Commissioners
Nelson J. Beach,	
Jacob Hinds,	} State of New York.
Willard Smith Esq.,	
Messrs. Stone & Harris,	} Engineer of the Bridges for
Mr. Wm. Howe,	
Mr. S. Whipple,	} Railroad Bridge Builders,
	} Engineer & Bridge Builder,
	Utica, N. Y.

January 1, 1849.

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HENRY BURDEN'S PATENT REVOLVING SHINGLING MACHINE.



THE Subscriber, having recently purchased the Right of this Machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right, for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N.Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous—considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder and are much better finished. The subscriber feels confident that persons who will examine for themselves the machine in operation, will find it possesses more advantages than have been enumerated.

For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron. Four sizes being made, it will be well for those ordering, to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD SPIKES & WROUGHT IRON FASTENINGS.

THE Troy Iron and Nail Factory, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory, will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD IRON.

1000 tons T Rails, weighing about 60lbs. to the yard, of the latest and most approved pattern, for sale by BOORMAN, JOHNSTON, & CO.,

119 Greenwich st., New York.

Jan. 20, 1849.

NEW PATENT CAR WHEELS.

THE SUBSCRIBERS ARE NOW MANUFACTURING Metallic Plate Wheels of their invention, which are pronounced by those that have used them, a superior article, and the demand for them has met the most sanguine expectations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufacture.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River Railroad, Housatonic, Harlem, Farmington, and Stonington.

SIZER & CO.

January 29, 1848. if

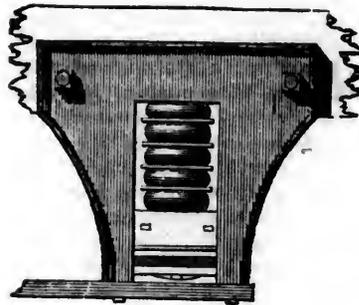
Springfield, Mass.

RAILROAD IRON AND LOCOMOTIVE

R Tyres imported to order and constantly on hand by A. & G. RALSTON

Mar. 20th

4 South Front St., Philadelphia.



FULLER'S PATENT INDIA RUBBER SPRINGS.

—There can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape.—This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest—the most simple, and most durable—there being less friction in this than in any other kind; it can be regulated to any extent desired. A less quantity of rubber is required in this form to make a good spring than in any other because each disc or ring of India rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

This spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders. Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibusses, etc.

G. M. KNEVITT, Agent,
Principal office, No. 78 Broad St., New York.
Branch office, Messrs. James Lee & Co's, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester railroad, wrote an article concerning Fuller's springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, an important part; it is therefore given in full now, and the portion omitted by the New England car company is printed in italics, that the public may judge of the manner in which this "company" pervert Mr Hale's meaning.

[From the Boston Advertiser of the 7th June.]

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers or rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevelt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

NICOLLS'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee

G. A. NICOLLS,
Reading, Pa.

ja45

WILLIAM JESSOP & SONS, CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving, from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—Square, flat & octagon.
Best warranted Cast Steel—Square, flat & octagon.
Best Double and Single Shear Steel—Warranted.
Machinery Steel—Round.

Best and 2d gy. Sheet Steel—for Saws and other purposes.

German Steel—flat and sq., "W. I. & S." "Eagle" and "Goat" Stamps.

Genuine "Sykes" L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms, by WM. JESSOP & SONS,
91 John Street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce St., Philadelphia.
Alex'r Fullerton, & Co., 119 Milk St., Boston.
Stickney & Beatty, South Charles St., Baltimore.

May 6, 1848.

JOAN F. WINSLOW, Agent,
Albany Iron and Nail Works,

1y

JAMES LAURIE, Civil Engineer.

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes Explored and Surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures
October 14, 1848. 6m*

MASONS AND STONECUTTERS WANTED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person to
JAMES HERRON,
Civil Engineer, Navy Yard.

Jan. 1.

10t

RAILROAD IRON.

THE TRENTON IRON COMPANY ARE now turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works, on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents,
17 Burling Slip, New York.

October 30th, 1848.

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage-Railroad, has now run 4 seasons, and is still in good condition. 92v11y

NORWICH CAR FACTORY,
NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of
RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
Orders executed with promptness and despatch.
Any communication addressed to

JAMES D. MOWRY,
General Agent,
Norwich, Conn.,

Will meet with immediate attention.

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RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

**ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,**
Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut,
1y10 near Third, Philadelphia.

RAILROAD SCALES.—THE ATTEN- tion of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.
Factory, 9th street, near Coates, cor. Melon st.
Office, No. 3 North 5th street,
Philadelphia, Pa.

CAR MANUFACTORY,
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RE- spectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description, Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, October 2, 1848. 411t

RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny Conny, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron.—Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
Mount Savage Iron Co., Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.
ANDREW C. GRAY,
a45 President of the Newcastle Manuf. Co.

DIRECT ACTION ENGINES FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Mauldsley, Sons & Field, of London,
may be built in the United States, under license,
which can be obtained of their agent,

THOMAS PROSSER, C. E.,
28 Platt street, New York.

May 6, 1848.

PATENT HAMMERED RAILROAD, SHIP
and Boat Spikes. The Albany Iron and Nail
Works have always on hand, of their own manufac-
ture, a large assortment of Railroad, Ship and Boat
Spikes, from 2 to 12 inches in length, and of any form
of head. From the excellence of the material al-
ways used in their manufacture, and their very gen-
eral use for railroads and other purposes in this coun-
try, the manufacturers have no hesitation in warrant-
ing them fully equal to the best spikes in market,
both as to quality and appearance. All orders ad-
dressed to the subscriber at the works, will be promp-
tly executed. JOHN F. WINSLOW, *Agent*.

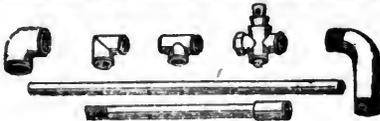
Albany Iron and Nail Works, Troy, N. Y.
The above spikes may be had at factory prices, of
Erastus Corning & Co., Albany; Hart & Merritt,
New York; J. H. Whitney, do.; E. J. Etting, Phil-
adelphia; Wm. E. Coffin & Co., Boston. ja45

TO RAILROAD COMPANIES AND BUILD-
ERS OF MARINE AND LOCOMOTIVE
ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to $\frac{1}{2}$ in calibre and 2 to 12 feet long,
capable of sustaining pressure from 400 to 2500 lbs.
per square inch, with Stop Cocks, T, L, and
other fixtures to suit, fitting together, with screw
joints, suitable for STEAM, WATER, GAS, and for
LOCOMOTIVE and other STEAM BOILER Flows.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Street
PHILADELPHIA.

FAIRBANKS' RAILROAD SCALES.

THE Subscribers are prepared to construct at short
notice, *Railroad and Depot Scales*, of any desired
length and capacity. Their long experience as ma-
nufacturers—their improvements in the construction
of the various modifications, having reference to
strength, durability, retention of adjustment, accu-
racy of weight and despatch in weighing—and the
long and severe tests to which their scales have been
subjected—combine to ensure for these scales the uni-
versal confidence of the public.

No other scales are so extensively used upon Rail-
roads, either in the United States or Great Britain;
and the manufacturers refer with confidence to the
following in the United States.

Eastern Railroad,	Boston and Maine R. R.,
Providence Railroad,	Providence & Wor. R.R.,
Western Railroad,	Concord R. R.,
Old Colony Railroad,	Fitchburg R. R.,
Schenectady Railroad,	Syracuse and Utica R. R.,
Baltimore & Ohio Road,	Baltimore & Susq. R. R.,
Phila. & Reading Road,	Schuylkill Valley R. R.,
Central (Ga.) Railroad,	Macon and Western R.R.,
	New York and Erie Railroad;

and other principal Railroads in the Western, Mid-
dle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents } FAIRBANKS & Co., 81 Water st. N. York.
A. B. NORRIS, 196 Market st., Philad.
April 22, 1848. ly*17

RAILROAD IRON—2500 TONS HEAVY
RH Rail, now landing, and expected shortly to
arrive, for sale on most favorable terms by
DAVIS BROOKS & CO.

July 19th, 1848. 68 Broad street, New York.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings, and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines or Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day from Brattle street, Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

THE SUBSCRIBERS ARE PREPARED TO
execute orders at their Phoenix Works for Rail-
road Iron of any required pattern, equal in quality
and finish to the best imported.

REEVES, BUCK & CO.,
Philadelphia.

ROBERT NICHOLS, Agent,
No 79 Water St., New York.

261f

RAILROAD IRON, PIG-IRON, ETC.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of $2\frac{1}{2}$ by $\frac{1}{2}$ Flat Bars.

25 Tons of $2\frac{1}{2}$ by 9-16 Flat Bars.

100 Tons No. 1 Gartsrhorie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4, So. Front St., Philadelphia

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

TO THOSE INTERESTED IN
Railroads, Railroad Directors
and Managers are respectfully in-
vited to examine an improved Spark-
Arrester recently patented by the un-
dersigned.

Our improved Spark Arresters
have been extensively used during the
last year, on both passenger & freight
engines, and have been brought to
such a state of perfection that no an-
noyance from sparks or dust from the
chimney of engines on which they
are used is experienced.

These Arresters are constructed on
an entirely different principle from any heretofore offered to the public.
The form is such that a rotary motion is imparted to the heated air,
smoke and sparks passing through the chimney, and by the centrifugal
force thus acquired by the sparks and dust they are separated from
the smoke and steam, and thrown into an outer chamber of the chimney
through openings near its top, from whence they fall by their own
gravity to the bottom of this chamber; the smoke and steam passing
off at the top of the chimney, through a capacious and unobstructed
passage, thus arresting the sparks without impairing the power of
the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use
on the following roads, to the managers and other officers of which we are at liberty to refer those who
may desire to purchase or obtain further information in regard to their merits

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent
Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and
Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown
Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wil-
mington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.;
W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer,
Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio
Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive
Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabeth-
town and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah,
Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad,
Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, Presi-
dent Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whit-
ney, of this city, will be promptly executed.

FRENCH & BAIRD.

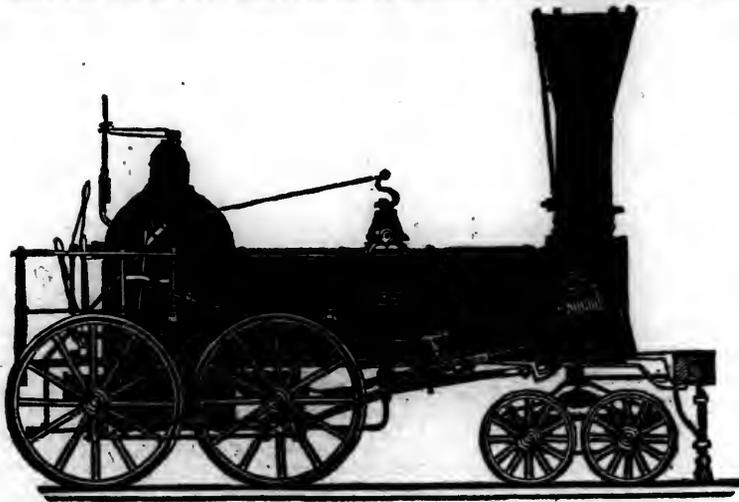
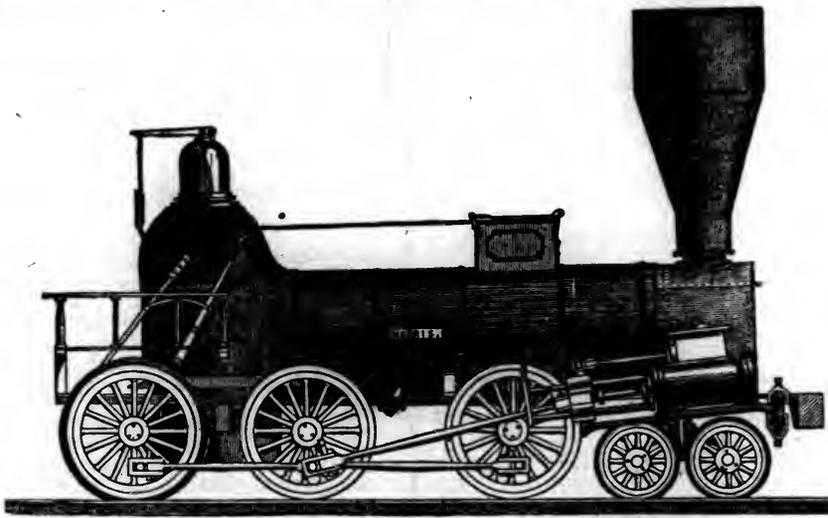
N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reason-
able terms.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the *Journal* of June, 1844.

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NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



CHILLED RAILROAD WHEELS.—THE undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of Spokes or Disks, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St. below 13th,
 Nov. 10, 1847. [tf.] Philadelphia, Penna.

TO LOCOMOTIVE AND MARINE ENGINE BOILER BUILDERS. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufacture: and for sale by

MORRIS TASKER & MORRIS,
 Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 11

TO RAILROAD COMPANIES AND MANUFACTURERS of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. THOMAS & EDMUND GEORGE,
 245 N. E. cor. 12th and Market sts., Philad., Pa.

LAWRENCE'S ROSENDALE HYDRAULIC CEMENT. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 321y

RAILROAD IRON.

THE Undersigned are prepared to Contract for the delivery of ENGLISH RAILROAD IRON, of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc., Iron.

THOMAS B. SANDS & Co.
 22, South William-Street.
 Feb. 3rd. New York.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
 PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —
 SNOW PLOUGHS AND ENGINE TENDERS
 OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.
 The above may be had at order at our Car Factory,
 RUEL DEAN,
 ELIJAH PACKARD, } SPRINGFIELD, MASS.
 ISAAC MILLS, } 1y48

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.
 NORRIS' BROTHERS.

MACHINE WORKS OF ROGERS,

Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.
 Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
 Paterson, N. J., or 60 Wall street, N. York.

T. & C. WASON, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.
 Dec. 25, 1847.—1y.

RAILROAD IRON.

3000 TONS, ABOUT 60 LBS. PR lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by

DAVIS, BROOKS & CO.,
 68 Broad street.
 New York, Sept. 16. 1848, 39tf
 Also on hand—1000 Tons best quality Rails.

MATTEWAN MACHINE WORKS.

THE MATTEWAN COMPANY HAVE added to their Machine Works, an extensive Locomotive Engine department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also, *Tenders, Wheels, Axles,* and other Railroad Machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen,* or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting, and *Drilling Machines,* of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill-Landing, or at

39 Pine Street, New York.
WM. B. LEONARD, Agent.

RAILROAD IRON.

THE NEW JERSEY IRON CO.'S WORKS, at Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to **DUDLEY B. FULLER, Ag't** 139 Greenwich Street.

New York, October 25, 1848.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after **MONNDAY, Oct. 2, 1848.** Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11½, a.m. 12, 2½, 3½, 4½, 6, a.m.
Salem, 7, 9, 11½, a.m. 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m. 3½, p.m.
Gloucester, 9, a.m. 3½, p.m.
Newburyport, 7, 11½, a.m. 2½, 4½, p.m.
Portsmouth, 7 a.m., 2½ 4½ p.m.
Portland, Me. 7, a.m., 2½, p.m.

And for Boston,

From Portland, 7½, a.m., 3, p.m.
Portsmouth, 7, 9½, a.m. 5½, p.m.
Newburyport, 7½, 10½, a.m., 2, 6, p.m.
Gloucester, 7½, a.m., 3½, p.m.
Manchester, 8, a.m., 3½, p.m.
Salem, 7½, 8½, 9, 10½, 11-40*, a.m., 2½, 3, 4½, 7, p.m.
Lynn, 7½, 8½, 9½, 10½, 11-55*, a.m., 2½, 3½, 4½, 7½, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave **EAST BOSTON** for Lynn and Salem, at 10½ o'clock, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave
Marblehead for Salem, 7½, 8½, 10, 11-25, a.m.
2, 4½, 6½, p.m.
Salem for Marblehead, 7½, 9½, 10½, a.m., 12½, 3½, 5½, 6½, p.m.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, a.m., 4½, p.m.
Salem for Gloucester at 9½, a.m., 4½, p.m.
Trains leave
Gloucester for Salem at 7½, a.m., 3½, p.m.
Manchester for Salem at 8, a.m. 3½, p.m.
Freight Train each way daily, Office Merchants' Row, Boston:
Feb. 3 **JOHN KINSMAN, Superintendent.**

ESSEX RAILROAD.—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover. On and after Monday, October 2, 1848, trains leave daily (Sunday excepted,) Eastern Railroad Depot, Washington-st. Salem for South Danvers at 7.45, 9, a.m., 12.45, 3.15, 6.45, pm.

Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9*, am., 3.15*, pm.
Danvers " 9.10, am., 3.25, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10 am., 4.20, pm.
South Danvers for Salem at 7.15, 8.45, 11.30, am. 2, 5.45, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 5.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30*, am., 5*, pm.
* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD. On and after Monday, October 2d, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m. and 3½ p.m. Leave Providence at 8½ a.m. and 3½ p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10½ p.m. Leave Dedham at 7½ 10½ a.m., 1½, 4½, and 9 p.m.

Stoughton Trains—Leave Boston at 11½ a.m. and 4½ p.m. Leave Stoughton at 8½ a.m. and 2½ p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the **DEDHAM TRAIN** will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½ and 10½ p.m. Leave Dedham at 8 10½, a.m., 1½, 4½ and 9 p.m.

WM. RAYMOND LEE, Supt.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848.

WINTER ARRANGEMENT.

December 4th.—Fare \$4.
Leave Philadelphia 8 a.m. and 4 p.m.
Leave Baltimore 9 a.m. and 8 p.m.
Sunday—Philadelphia only at 4 p.m.
" Baltimore only at 8 p.m.

Trains stop at way stations. A second class car run with morning line only.

CHARLESTON, S. C.

Through tickets Philadelphia to Charleston, \$20.
Connecting lines to Charleston leave Philadelphia at 4 p.m. daily—leave Baltimore at 1½ p.m. daily.

PITTSBURG AND WHEELING.

Through ticket, Philadelphia to Pittsburg, \$12.
" " " Wheeling, 13.
All through tickets only sold at office, Philad.

WILMINGTON ACCOMMODATION.

Leaves Philadelphia at 1½ and 4 p.m.
Leaves Wilmington at 8 a.m. and 4 p.m.
N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from

Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily.....\$26 50
Fare through from Charleston to Huntsville, Decatur and Tusculumbia..... 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr, Agent.

125

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES. AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and the Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton.	Between Charleston, and Dalton.
		271 miles.	408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class.	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 85
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.....	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 70
	Molasses, per hoghead.	8 50	13 55
	" " barrel....	2 50	4 2
	Salt per bushel.....	0 18	
	Salt per Liverpool sack..	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows... 0 75	1 50	

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS,

Supt. of Transportation.
Augusta, Ga., July 15, 1847. 44*1y

THE WESTERN AND ATLANTIC Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,

Chief Engineer.
Atlanta, Georgia, April 16th, 1846. 1v1

CENTRAL RAILROAD—FROM SAVANNAH TO MACON. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight. Rates of Passage, \$8 00. Freight—

On weight goods generally... 50 cts. per hundred.
On measurement goods..... 13 cts. per cubic ft.
On brls. wet (except molasses and oil)..... \$1 50 per barrel.

On brls. dry (except lime)... 80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred

On hds. and pipes of liquor, not over 120 gallons..... \$5 00 per hhd.
On molasses and oil..... \$6 00 per hhd.

Goods addressed to **F. WINTER, Agent,** forwarded free of commission.

THOMAS PURSE,
Gen'l. Supt. Transportation.
740

BALTIMORE AND OHIO RAILROAD.

MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points \$7, and 4 cents per mile for less distances. Fare through to Wheeling \$11 and time about 36 hours, to Pittsburgh \$10, and time about 32 hours. Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

BALTIMORE AND SUSQUEHANNA RAILROAD.

Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger

trains run daily, except Sunday, as follows:
Leaves Baltimore at.....9 a.m. and 3¼ p.m.
Arrives at.....5 a.m. and 6¼ p.m.
Leaves York at.....9 a.m. and 3 p.m.
Arrives at.....12¼ p.m. and 8 p.m.
Leaves York for Columbia at...1¼ p.m. and 8 a.m.
Leaves Columbia for York at...8 a.m. and 2 p.m.

FARE.

Fare to York.....\$1 50
" Wrightsville.....2 00
" Columbia.....2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....\$9
Or via Lancaster by railroad.....10
Through tickets to Harrisburg or Gettysburg...3
In connection with the afternoon train at 3¼ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at.....5¼ p.m.
Returning, leaves Owing's Mills at.....7 a.m.
D. C. H. BORDLEY, Sup't.
Ticket Office, 63 North st.

PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.
The Train from Philadelphia arrives at Reading at 12 18 M.
The Train from Pottsville arrives at Reading at 10 43 A. M.
Fares. Miles. No. 1. No. 2.
Between Phila. and Pottsville, 92 \$3 50 and \$3 00
" Reading, 58 2 25 and 1 90
" Pottsville " 34 1 40 and 1 20
Five minutes allowed at Reading; and three at other way stations.
Passenger Depot in Philadelphia corner of Broad and Vine streets. 8uf

JAMES HERRON, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE

HERRON RAILWAY TRACK.
MODELS of this Track, on the most improved plans, may be seen at the Engineer's Office of the New York and Erie Railroad.

NEW YORK & HARLEM RAILROAD CO.

Summer Arrangement.—On and, after Tuesday, June 1st, 1847, the cars

will run as follows, until further notice. Up trains will leave the City Hall for—Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m.

Freight train at 1 p.m.
Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 28 and 8 p.m.

Fordham, 8 08 and 9 15 a.m., 1 20 and 6 15 p.m.
Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.
Tuckahoe, 7 38 and 8 25 a.m., 12 55 and 5 52 p.m.

White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.
Pleasantville, 8 15 a.m. and 5 15 p.m.
Newcastle, 8 a.m. and 5 p.m.

Mechanicsville, 7 48 a.m. and 4 48 p.m.
Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m.

Returning, leave Croton Falls 10 a.m. and 9¼ p.m.
ON SUNDAYS, the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m., 4 p.m.

Croton Falls for City Hall, 7 30 a.m., 4 30 p.m.
Leave City Hall for White Plains and intermediate places, 7 and 10 a.m. 4 and 5 30 p.m.

White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st.

A car will precede each train 10 minutes to take up passengers in the city.
Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87c., to Newcastle 75c., to Pleasantville 62c. to White Plains 50c. 25tf

NORWICH AND WORCESTER RAILROAD.

Winter Arrangement.—1848.

Accommodation Trains daily, (Sundays excepted.)

Leave Norwich, at 6 a. m., 12 m. and 2¼ p. m.
Leave Worcester, at 6½ and 10 a. m., and 4¼ p. m. connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6¼ a. m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars. 32ly

S. H. P. LEE, Jr., Sup't.

BOSTON AND MAINE RAILROAD.

Winter Arrangement.

Commencing Nov. 13, 1848.

Trains leave Boston as follows, viz: For Portland at 7 A. M. and 2¼ P. M.

Great Falls at 7 a.m., 2¼ and 3¼ p.m.
Haverhill at 7 and 11¼ a.m., 2¼, 3¼ and 5 p.m.
Lawrence, at 7, 9, 11¼ a.m., 2¼, 3¼, 5, 6 p.m.
Reading 7, 9 & 11¼ a.m., 2¼, 3¼, 5, 6, 7½ & 10 p.m

Trains leave for Boston as follows, viz: From Portland at 7¼ a.m., and 3 p.m.

Great Falls at 6½ and 9½ a.m., and 4¼ p.m.
Haverhill at 7, 8½ and 11 a.m., 3 and 6¼ p.m.
Lawrence at 6½, 7½, 8½, 11¼ a.m., 12¼, 3¼, 6¼ p.m.
Reading at 6½, 7, 7½, 9½, 11¼ a.m., 1¼, 3¼, 7½, 9 p.m.

MEDFORD BRANCH TRAINS.
From Medford at 6½, 8, 10½ a.m., 2, 4, 6, 9 p.m.
From Boston at 7½, 9½ a.m., 12¼, 2¼, 5½, 6¼, 10 p.m.

The Depot in Boston is on Haymarket Square.
CHAS. MINOT, Super't.
Boston, Nov. 7, 1848.

NEW YORK ANDERIE RAILROAD LINE.

SUMMER ARRANGEMENT. For passengers, twice each way daily,

(except Sunday,) leave New York from the foot of Duane St. at 7 o'clock, A. M. and at 4 o'clock, P. M. by steamboat, for Piermont, thence by cars to Ramapo, Monroe, Chester, Goshen, Middletown, Otisville, and the intermediate stations.

The return trains for New York will leave Otisville at 6 30, A. M. and 4 15, P. M.; Middletown at 7 A. M. and 4 40, P. M.; Goshen at 7 22, A. M. and 5 3, P. M.; Chester at 7 35, A. M. and 5 18, P. M.

Fare between New York and Otisville, \$1 50; way-fare in proportion.

For MILK—Leave Otisville at 5¼ o'clock, morning and evening.

For FREIGHT—The barges "Samuel Marsh and "Henry Suydam, Jr." will leave New York (from the foot of Duane St.) at 5 o'clock, P. M. daily (except Sundays.)

No freight will be received in New York after 5 o'clock, P. M.

Freight for New York will be taken by the trains leaving Otisville at 10¼ o'clock, A. M.; Middletown at 11¼, A. M.; Goshen at 12¼, P. M.; Chester at 1 o'clock, P. M., etc., etc.

For farther particulars, apply to J. F. CLARKSON, Agent, corner of Duane and West Sts., New York, or to S. S. POST, Superintendent Transportation, Piermont.

24tf H. C. SEYMOUR, Sup't.

LITTLE MIAMI RAILROAD COMPANY

Fall and Winter Arrangement, 1847. On and

after Monday, September 20th,

until further notice, a Passenger

train will run as follows:

Leave Cincinnati daily at 9 A. M., for Millford, Foster's Crossing, Deerfield, Morrow, Fort Ancient, Freeport, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, will leave Springfield at 4¼ a.m. Upward train arrive at Cincinnati at 2¼ p.m. Downward train arrive at Cincinnati at 10¼ a.m.

Freight trains will run each way daily.

Messrs. Neil, Moore & Co. are running the following stage lines in connection with the road:

A daily line from Xenia to Columbus and Wheeling, carrying the great Eastern mail.

Daily lines from Springfield to Columbus, Zanesville and Wheeling. Also to Urbana and Bellefontaine.

A line of Hacks runs daily in connection with the train between Deerfield and Lebanon.

Passengers leaving for New York and Boston, arrive at Sandusky city via Urbana, Bellefontaine & the Mad River and Lake Erie railroad, in 27 hours, including several hours' sleep at Bellefontaine. To the same point via Columbus, Delaware, Mansfield and the Mansfield and Sandusky city railroad, is 32 hours. Distance from Cincinnati to Springfield by railroad.....84 miles.

From Springfield to Bellefontaine by stage, over a good Summer road.....32 "

From Bellefontaine to Sandusky city by railroad.....102 "

FARE—From Cincinnati to Lebanon....\$1 00
" " " Xenia.....1 50
" " " Springfield...2 00
" " " Columbus...4 00
" " " Sandusky city 7 00

The Passenger trains runs in connection with Strader & Gorman's line of Mail Packets to Louisville.

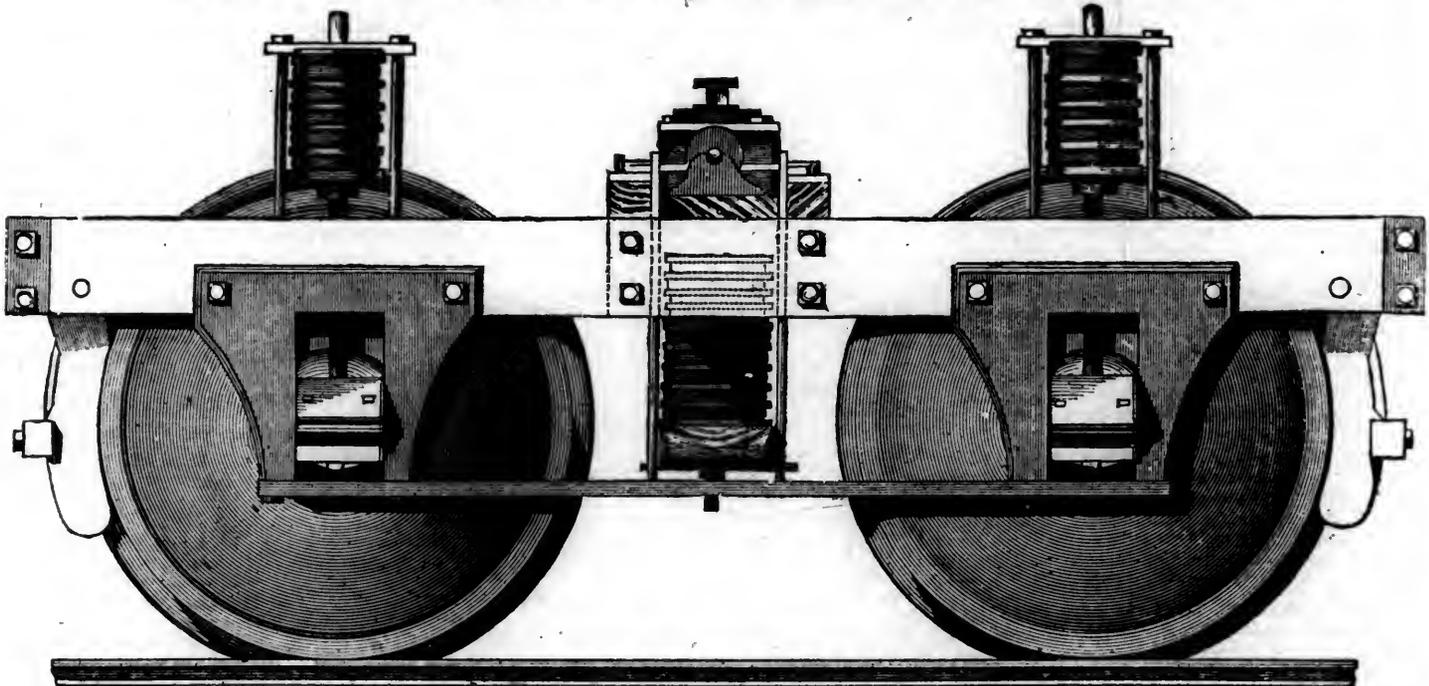
Tickets can be procured at the Broadway Hotel, Dennison House, or at the Depot of the Company on East Front street.

Further information and through tickets for the Stage lines, may be procured at P. Campbell, Agent on Front street, near Broadway.

The company will not be responsible for baggage beyond 50 dollars in value, unless the same is returned to the conductor or agent, and freight paid at of a passage for every \$500 in value over the amount.

47tf W. H. CLEMENT, Sup't.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country, or imported from abroad, beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State street,
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty street, New York, or with F. M. RAY, Agent, 100 Broadway, N. Y.

The following article, from the pen of Mr. HALE, the president of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser, of June 7, 1848: He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material

applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from a very harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt. B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building, B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

PIG AND BLOOM IRON.—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniatta Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine St. Wharf, Philadelphia.

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office No. 98 Nassau street.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

CORROSIVE SUBLIMATE. THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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SATURDAY, MARCH 3, 1849.

[WHOLE No. 672, VOL. XXII.]

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, March 3, 1849.

Office of the Richmond & Danville }
Railroad Company, }
Richmond, 22d Feb., 1849. }

SEALED PROPOSALS will be received at this office until Monday, the 12th March next, for the construction of a STONE BRIDGE over the James River, for the Richmond and Danville Railroad.

Plans and specifications will be ready for examination at the office of the Company by the 6th proximo.

Where prices and responsibility are equal, a preference will be given to the offer wherein the largest amount of the Stock of the Company will be received in payment. ANDREW TALCOTT, Chief Engineer.

Railroads.

Since Monday the 5th ult., regular passenger and freight trains have been running from Boston to Northfield, over the Fitchburg, Cheshire, Sullivan, and Vermont Central roads. The business of this route, says the Windsor Journal, has thus far been quite large, realizing the expectation of the most sanguine. And yet we learn that the business on the routes of the N. H. Central and Passumpsic roads has fully held its own—thus showing an increase of travel and business in proportion to the increase of the facilities of communication. All looks promising for the future.

Railway Progress.

(Continued from page 114.)

Connecticut.—The *New Haven Canal R. R.* is in operation from New Haven to Farmington, and is in progress from the latter place to the line of the Western R. R., within three miles of Springfield. An embranchment of the line to Westfield is intended, provided legislative authority is obtained from Massachusetts.

The *Naugatuck R. R.* is in progress of construction, from the *Milford Junction*, 12 miles this side of New Haven, on the line of the New York and New Haven R. R., to the parish of Winsted, in the town of Winchester. The plan of extending it to the line of the Western R. R., at Pittsfield, only awaits the grant of authority from Massachusetts to ensure its early completion to the place last named; there-by ensuring six parallel lines of Railway between the *Connecticut River and the Hudson*, on the completion of the *Hudson River and Harlem Roads*.

The *Hartford and Willimantic R. R.* is in rapid progress, and the plan of extending it to Providence seems likely to go forward successfully, notwithstanding the "air line" project.

The *New London and Willimantic R. R.* is also in progress of construction.

A Railway from *Hartford to Bristol*, to connect with the *Canal R. R.*, has been agreed upon, and the stock for its completion subscribed.

The *Air Line* project is being vigorously urged in both Connecticut and Rhode Island, with a view of connecting in Massachusetts, with the *Norfolk County R. R.* before spoken of.

This completes the list of New England Railways in progress of construction at the commencement of the year. We find by the New Hampshire papers that the *Dover & Cocheo R. R.* has been commenced upon, and a sharp rivalry has sprung up between that company and the *Portsmouth Great Falls and Conway R. R.*

More than one thousand miles of new Railway are required to finish up the lines already commenced in New England, about five hundred miles of which are now so far advanced that the same can be opened for travel during the year 1849.

New York.—The *New York, Harlem and Albany R. R.*, already extended to Dover, is to be put in progress towards Albany during the coming season.

The *Hudson River R. R.* has a length of line of 142 miles. In a circular recently put forth, the Directors say they will be able to open the road to

Peekskill in the month of July next, Poughkeepsie in autumn, and to Albany in season for the winter business of 1850-1.

The *New York and Erie R. R.* is in progress from Binghamton to Elmira, and assurances are given that it will be opened to Corning, 80 miles from Binghamton, and 315 miles from New York city, during the year 1849.

The *Northern, or Ogdensburgh R. R.*, already opened 12 miles from Lake Champlain, is in full progress; from the most recent information, we learn that a good portion of the distance will be in operation during the year.

A railway from Syracuse to Owego, in Tioga Co. or Binghamton, seems to be regarded as certain of accomplishment at an early day. More than 250 miles of new road will probably be opened in New York during the year.

New Jersey.—The *Somerville and Easton R. R.* has reached such a position, that its completion the present year seems an easy matter. We are assured that it will be put in progress at an early day.

Pennsylvania.—The *Central R. R.*, to extend from Harrisburgh to Pittsburgh, a distance of 251 miles, is in rapid progress. The railway from *Tymanend to Catawissa*, 36 miles will be opened the present year.

The *Beaver Meadow Branch*, 12 miles is in progress, and will be opened the present season.

To be continued.

The Iron Trade.

A most numerous and highly influential meeting of the iron and coal masters took place at Birmingham, on Thursday the 11th. The meeting was not only numerous and respectable, but highly gratifying in its results. The utmost firmness prevailed, and the accounts given by all parties of the improved condition of the trade were exceedingly gratifying. It was reported that many excellent orders had arrived by the last two packets from America, and these, coupled with the fact that our home stocks have become nearly exhausted, led to a determination not to seek orders at present prices.—The engagements entered into during the past quarter will occupy the furnaces two months, and the masters are not disposed to accept of fresh orders unless at an advance. It was stated that the present rates, £6 10s. for bar, and £3 19s. for pig iron, are not remunerative, and nothing but necessity, caused by the recent destructive competition of the Welch and Scotch markets, could have led to such low prices. It was thought, however, that the lowest point was reached, and the prospects for the new year were cheering.

Opening of the Vermont and Massachusetts Railroad.

The ceremony of opening this Road was celebrated at Brattleboro' on the 20th inst. The Road extends from Fitchburgh through the town of Westminster, Ashburnham, Gardiner, Baldwinville, Royalston, Athol, Orange, Wendell, Erving, Montague, Northfield and Vernon, to Brattleboro', 70 miles from Fitchburgh, and 119 from Boston. A very large number of the friends of the road were present, and after having partaken a collation prepared at the Depot, they repaired to the Central Church, where two or three hours were spent in listening to speeches from various gentlemen, for a report of which we are indebted to Perley's Picnic.

ALVAH CROCKER, Esq., President of the Vermont and Massachusetts Railroad Company, recounted the obstacles which had been overcome, and gave an outline of the history of the enterprise. The section of country which this road traverses was examined, with the view of intercommunication with Boston, as early as 1826, and a survey of a portion of the route was made ten years subsequently, in 1836. The charter was obtained in 1844, and the construction commenced in October, 1845; so that the building of the road, it will be perceived, has occupied something more than three years.

Mr. Crocker said that in the year 1842 he came to Brattleboro' for the purpose of enlisting the sympathies and feelings of the citizens in favor of the Fitchburg Railroad. He perambulated every portion of the town, and urged on the people the necessity of their doing something towards the enterprise—claiming that if started it would ultimately arrive at Brattleboro'. At that time to proclaim any such doctrine, a man would be looked upon as demented—and in the first fortnight of his labors, Mr. Crocker obtained not one dollar. He had almost despaired of obtaining any aid in Brattleboro', when two gentlemen came to the scratch, as he termed it, and subscribed for two shares apiece, not without taunts and sneers, however, from the less enthusiastic portion of the citizens. The names of those two individuals were Mr. Noyes, Cashier of the Bank, and Mr. J. D. Bradley. The day of small beginnings was the germ of this enterprise, and from that time the work has steadily progressed. Brattleboro' soon increased her subscription to 80 shares. This was to the Fitchburg Railroad to Boston, 120 miles distant. To the Vermont and Massachusetts Railroad, Brattleboro' subscribed \$100,000.

Mr. Crocker said that he fearlessly proclaimed that no road of the same length had met and overcome so many topographical difficulties. Four miles out of Fitchburg 40,000 yards of quicksands were cut down—quicksands into which, if a laborer fell, he required the aid of his fellow-laborers to extricate him. In coursing up the Nashua, that river is crossed no less than six times—By four wooden and two stone arch bridges. Seventeen bridges are thrown across Miller's river to avoid curvature, and that river, in three or four instances, was diverted from its course, and a new bed made. Between South Royalston and Athol, 80,000 yards of the hardest *pan* imaginable were excavated, and this was only accomplished by working night and day. One ledge was cut through where the steam drill in a whole day only drilled ten inches. The beds of rivers had been turned, and the rivers spanned twenty-five times. He said that the company had started to build one of the best roads in the country, and they had fulfilled their intentions. Besides the natural difficulties which had to be overcome, the company have had to struggle with monetary difficulties, which materially retarded the completion of the road. But Mr. Crocker felt gratified in being able to say that this road, 70 miles in length, and constructed in the most perfect manner, had been completed in little more than three years. Of the prospects of the road, Mr. Crocker spoke most encouragingly. When the branch reaches Greenfield it will control the trade of the Deerfield valley. This branch is in part contracted for. At the commencement of the Vermont and Massachusetts Railroad, at Fitchburg, it unites with the Fitchburg and Worcester. At South Ashburnham, it receives the Cheshire, Sullivan County, Central, Passumpsic and Ogdensburg chain—about 300 miles

of continuous road. At Greenfield it will join the Troy road and also the Connecticut River road. At Brattleboro' it joins the contemplated Vermont Valley Railroad to Bellows Falls, where it connects with the Rutland and Burlington Railroad. The road to Troy will have the lowest grade and the least curvature of any road which could be constructed to the Hudson River. At Troy, a direct course is contemplated to Oswego, on Lake Ontario, and then if we wish we can proceed to the Pacific Ocean. The principal obstacle to a railroad to the Pacific Ocean, Mr. Crocker declared to be the Green Mountains, for, he said, the South Pass of the Rocky Mountains can be passed with a 40 foot grade. Mr. Crocker's plan is to tunnel the Green Mountains. He spoke of the Pacific road in a most enthusiastic manner, and also of Internal Improvements generally. He regretted that the road had not been completed at Brattleboro' before the previous directors retired from office. He paid them a very high compliment for their energy and perseverance, and said that without their exertions the road would not now have attained this point.

IN THE EVENING, Larkin G. Mead, Esq., presided. He stated the object of the meeting, which was to mature plans for the completion of the Vermont Valley Railroad, from Brattleboro' to Bellows Falls. The importance of the project was urged Mr. Crocker. The whole cost had been estimated at \$736,000—twenty-three miles at \$32,000 per mile—and undoubtedly, the road could be completed during the next season. The estimate was thought to be liberal; the highest grade was stated to be twenty-nine feet to the mile. A very liberal charter has been obtained, making the road subservient to the conveniences of other roads. The importance of the road was explained, and it was stated that in 1850, three hundred miles of Railway would be finished to Bellows Falls. A resolution was adopted that the Commissioners be instructed to communicate with the officers of other roads interested, and to call a convention to consider the matter, on the first Wednesday of March. The books were opened and some of the stock subscribed for on the spot.

It is with genuine pleasure that we are able to announce the opening of this road. We do not know of a road, the friends of which have so steadily persevered under so many discouragements and so much opposition. It was evidently not a pet of Massachusetts.—Its friends have at last accomplished their work; and when it connects with other roads it will be completed. We see no reason why it will not do a profitable business.

Political Economy of Machinery.

The February number of the Glasgow Mechanic's Journal contains a translation from a recent French work on Political Economy, by Joseph Ganner. The translation given is the chapter devoted to the political economy of machinery. After noticing the common argument against the introduction of labor saving machines, as throwing laborers out of employ, the writer goes on to say:

In many cases, machines, far from supplanting human labor, have multiplied it. In fact, every abridgment of labor, by reducing the cost of production, carries the manufactured article to the door of a greater number of consumers; and experience proves that consumers multiply in a greater degree than the price decreases, especially when the method of manufacture improves the commodity. The diminution of the price by a fourth, has not been known to double the consumption. We will only cite two examples—printing and cotton spinning. Although the steam-press enables one man to do the work of two hundred, the multiplication of books, the arts which are connected with them, such as the casting of type, the fabrication of paper, the professions of author, corrector, binder &c., employ a thousand times as many persons as formerly were occupied in them* And what a difference in form and price between the manuscripts of early times, and the books of the present! When we ob-

* See an account of the improved "Times" machine, in a subsequent page.—[Ed. P. M. J.]

serve the perfection of the machinery for spinning cotton, and the admirable rapidity with which the bobbins are covered with thread, we may fancy that the greater number of persons formerly employed in spinning have been thrown out of work; yet precisely the reverse has happened. Before the invention of machinery, only 5200 female spinners at the wheel, and 2700 weavers, altogether 7900 persons, were employed in England; whilst in 1787, ten years later, 160,000 spinners, and 247,000 weavers, or 352,000 persons, were reconed. Since that time, mechanics have passed into another phase. The same business is done with fewer workmen, and steam has taken the place of manual labor in a great number of manufactures. However, the number of workmen has increased. Mr. Baines, in his History of the Cotton Manufacture, has established, that in 1833 there were 2'3,000 spinners or weavers by machinery, and 250,000 loom-weavers, in all 487,000 persons. Adding the persons employed in collateral branches of industry, such as printing on stuffs, the making of tulles, embroidery, caps &c., Mr. Baines arrives at the number of 800,000; or 1,500,000, taking into account the old men, women, and children, supported by the work-people; and two millions, reckoning the carpenters and masons employed in building manufactories, and the makers of loom-frames, without their children, and old persons. We arrive at the same figures in comparing the cotton imported in 1769, and that imported in our days. Although it is possible there may be statistical exaggerations, we cannot but acknowledge the great increase of labor employed in the cotton manufacture, in consequence of the invention of machinery intended to abridge it, without taking into account the sailors, the carriers, the merchants, the travellers, the brokers, and the retail dealers, who are engaged in it, each in their own business.

The history of the cotton manufacture would furnish matter which would admit a considerable expansion, if we were to analyse the prodigious increase in the consumption of cotton throughout the world, the employments of various kinds to which it has given rise collaterally, not only amongst the manufacturing classes, but amongst the commercial and agricultural classes as well, and the various products which it has been necessary to make in order to obtain those immensely valuable accumulations of manufactured cotton.*

Thus, if it be true that machinery, at a given moment, displaces human labor, it is not slow to create employment for a much more considerable number, and to compensate injury to individuals by a benefit to society, namely, by enlarging the supply of commodities, and diminishing their price by stimulating consumption, and by multiplying enjoyments, which increase capital and the demand for labor.

These facts would also be an answer to that other allegation, that machinery depresses wages, because the demand for labor will not increase, unless those who employ labor are able to employ and remunerate the increased demand. Machinery for spinning cotton, so far from reducing wages actually raised them during the first ten years after the invention came out. A woman earned two francs fifty centimes, in place of one franc; and a man earned five francs instead of two. Wages were afterwards lowered, by the disproportionate increase of the population; but it is well to remark, that in 1833 Mr. Baines established, by very plausible calculations, that if the 7900 operatives of

† In 1834, M. de Jounes, in his statistics of Great Britain, thus summed up the comparative conditions of the cotton trade in Great Britain and France. Annual manufacture: in England, 900 millions of francs; in France, 250 millions. Home consumption: in England, 400 millions; in France, 193 millions. Individual consumption: in England, 16 francs, 66 centimes; in France, 6 francs, 86 centimes. It was calculated that the cloth exported from England in 1833, was long enough to go ten times and a half round the earth. In a paper, published in the *Journal des Economistes*, (vol. 16.) the exportation of woven goods from the same country in 1845, is estimated at 479 millions of francs; that of thread, at 176 millions; and the demand in 1843, at 263 millions. A franc, we may remind the reader, is worth 9½d. of our money.

1767 had between three and four millions of francs amongst them for wages (three or four francs each), the 800,000 of our days had 455 millions, (560 francs each.) The railways offer analogous facts. We might suppose they would put down drivers, grooms, postillions &c., and render horses less useful and less expensive. Exactly the contrary has happened; and nothing is easier to explain. Do not railways multiply travellers and traffic? and, as a consequence, are not the lateral ways of communication more used, as well as horses upon them.

The perfecting of the means of intercourse diminishes the cost of production, and advances the industry of a people. There is an intimate connection between the improvement of the means of conveyance and that of markets. Our epoch will be especially remarkable for the improvement of the means of communication—rivers, canals, roads and railways. The last, especially, seem as if they would change the face of the world. Following and assisting this formidable development of steam, the results which the new mode of communication do and will produce are uncalculable. The statist will, some time or other, disclose them to us. Travelling becomes a thousand times more common; some villages will assume the importance of towns, and many towns will certainly lose rank. The localities of industry have already been greatly moved; some will be reanimated, others will disappear; joys, griefs unheard of, will flow from the new phases of production, so radically modified by these new and powerful organs of conveyance. In some there will be destruction in some particulars, but reanimation on the whole. But nothing can give us any idea of the mysterious revolution which time has in store, not even the extraordinary results at the end of the last century and the commencement of the present one, of cotton spinning by machinery, and in all branches of industry dependent and similar. It is remarkable that steam is still the first cause, with the simple addition of two rails.

The impulse has been given. The United States, England, and Belgium, have for some years been furrowed by these new modes of communication; Germany and Russia have tasted of this enormous influence; France is hastening forward in the same path; Northern Italy already possesses lines of railway; and the rest of the Peninsula is striving to obtain others. Spain, Portugal, Sweden, and other countries, are also alive to the impulse.

All that we have said of machinery is likewise applicable to discoveries of every kind; to all processes, of what nature soever they may be, which aim at producing more quickly in a better manner—in other words, at a cheaper rate.

COMMERCIAL.

Pork Trade of the West.

Hogs Slaughtered in 1848-9.—In accordance with previous custom, we have, at the close of the packing season, visited each packing house, and from the several statements, made up the aggregate of the season's business in Cincinnati, and immediate vicinity. We find that the whole number slaughtered in Cincinnati and Covington in the season of 1848-9, just closed, is 326,000 head, and the whole number cut here, including all that have been brought in dead by river, canals, railroad and wagons, 410,000 head. This is, we are satisfied, the entire aggregate, as no house, however small its business, has, we think, been overlooked. At the close of last season, we stated the aggregate amount cut to have been 461,000 head, but subsequent developments satisfied us that the actual amount was fully 500,000 head, and so we have before stated it. In comparing the last two seasons, therefore, a falling off of 90,000 head is shown in the season just closed. We have, from our own observation, estimated the difference of the two years at fully 100,000 head, and did we not feel considerable confidence in the individual statements this season, would still be disposed to so estimate the business of the two years.

On recurring to the statistics of previous years, the two last are shown to have been much larger than any preceding, the business of 1845-6 standing next in point of magnitude, in which season 305,000 head were cut here.

We avail ourselves of statistics in possession of friends, and of published statements to show the number cut at sundry points in the West during the past season, and name the number cut in the season of 1847-8 so far as convenient:

IN KENTUCKY.		
	1847-8.	1848-9.
Louisville,	100,000	169,600
Maysville,	10,000	25,000
IN INDIANA.		
Madison,	75,000	85,168
Perrysville,		7,000
Eugene,		7,000
Newport,		5,000
Covington,		5,500
Portland,		3,000
Williamsport,		10,000
Attica,		9,000
Lafayette,		45,000
[The Perrysville Eagle estimates the number packed in Clinton at 16,000 head, and the number in Vermillion county at 35,000.]		
Brookville,		10,000
Laurel,		12,000
Connorsville,		15,000
Cambridge City,		20,000
Indianapolis and neighborhood,		35,000

IN OHIO.		
Milford, all wagoned to and cut here,		6,000
Dayton,		8,000
Plainfield, all wagoned to and cut here,		2,500
Waynesville and Corwin,		12,000
Bellbrook,		3,000
Lebanon,		8,000
Centreville,		1,000
Port William,		1,300
Circleville,		3,000
Chillicothe,		75,000
Columbus,		10,000
Clarksville,		2,000
Wilmington,		4,000
Springfield,		2,000
Freble county,	27,223	20,160

We have not the means at hand with which to make a reliable comparison with the season of 1847-8, in most of the instances omitted, and therefore defer it to a future number. It is seen that there is a large increase in Maysville and Louisville: and in the Whitewater Valley, Indiana, the increase is very considerable, there being the prospect of a public conveyance this season, while there was not last year, by which to bring the product to market. We do not see much evidence of a falling off in the Scioto Valley, and believe that so far as numbers are concerned an estimate of any large falling off in the West, as a whole, will prove a miscalculation, but there is no doubt, we believe, of a falling off in weight throughout this section of country, especially as regards Ohio and Indiana hogs.—*Cincinnati Exchange Reporter.*

Exports of Milwaukee.

By personal inquiry at the different Warehouses, in our city, we have obtained the statistics from which the subjoined table of the exports from Milwaukee during the past season of navigation, was compiled. It is believed to be, so far at least as the leading items are concerned, very nearly accurate, and attests the growing Commercial importance of our young city.

Exports of 1848.	
Wheat,	602,474 bush.
Flour,	92,732 bbls.
Pork,	2,650 bbls.
Lead,	1,883,120 lbs.
Hides,	11,235.
Ashes,	96,104 lbs.
Pails and Tubs,	2,100 doz.
Furs,	12,714 lbs.
Wool,	
Copper,	25,039 lbs.
Broom Corn,	214 bales.
Pulverized Corn,	135 bbls.

We compare the leading items of Export, Wheat and Flour, with the shipments of the same articles in previous years; commencing with 1845 when the first export of Wheat to any amount was made:—

	Wheat.	Flour.
1845	95,510 bush.	7,550 bbls.
1846	213,448 "	14,756 "
1847	598,011 "	34,840 "
1848	602,474 "	93,732 "

If we reduce the Flour to Wheat (at 4½ bushels to the barrel) the exports for the four past years would compare as follows:—

1845,	129,485 bush.
1846,	284,350 "
1847,	744,791 "
1848,	1,024,268 "

The coming season of navigation, if no unforeseen event occurs to check the shipments of produce to the East, will show, we think, a proportionate increase. Judging from the receipts of the past two months there will be in store here, at the opening of navigation, not far from 500,000 bushels of Wheat and 40,000 or 50,000 barrels of Flour. If, in addition to this shipment of last year's crop, the ordinary proportion of the coming crop shall go forward to market next fall, the exports for 1849, in Wheat and Flour, will not fall much short of a million and a half bushels.—*Milwaukee Sentinel and Gazette.*

RAILWAY LAW.

ENGINEER AND SURVEYOR.

The plaintiff, an engineer, sued the defendant, as the Director of a Railway Company, for the expenses of surveys, &c. It appeared at the trial that the defendant had been an active member of the Committee, but that the Company had been completely registered.

Held, that the defendant was not liable, although the Company could not be sued, the contract not having been under seal. (*Stevens v. Green*, 10 *Law Times*, 326.)

In an action of debt for work and labor as an engineer of a Railway Company, and for money paid, it appeared that the defendant was a member of the Managing Committee, and that the Plaintiff having been the promoter, had concocted this scheme, and appointed the Committee-men. At a meeting of this body, a resolution was passed pledging the Board to pay the plaintiff his advances, and supply him with cash as soon as the deposits came in. This resolution was passed in the presence of the plaintiff, who afterwards sued the chairman for work done and money paid subsequently to that period.

Held, that there was not any evidence to go to the jury in support of the case for the plaintiff. (*Pritchard v. Hughes*, 10 *Law Times*, 503 *Pollock.*)

In an action for work and labor as a surveyor against a Provisional Committee-man, the plaintiff claimed by his particulars of demand an entire sum of £600 for surveying from the 1st of September to the end of October, 1845, within which interval the defendant joined the scheme.

Held, that if the plaintiff had entered into a single and entire contract to survey the line before the defendant joined the Company, the latter was not responsible, though part of the work was done after he had joined it; but that the plaintiff's remedy was against the actual contractors. (*Tootel v. Frewen*, 10 *Law Times*, 269.)

LIABILITY OF RAILWAY COMPANIES AS CARRIERS.

Every person employed by a common carrier, whether by the name of sub-contractor, agent, servant, or otherwise, to perform any part of the work which the carrier has undertaken to perform, and every person employed by such person for that purpose, is, "a servant in the employ of the carrier," within the 8th section of the 11th Geo. 4, and 1 Will. 4, c. 68, which renders common carriers liable for the felonious acts of servants in their employ.

A bale of silk above the value of £10 was delivered at a station of a Railway Company, to be carried by the Company as common carriers, to London, and there delivered to the plaintiff, but only the ordinary charge for carriage was paid, the value of the parcel not having been declared, as required by a notice stuck up in the booking office of the Company, according to the provisions of the 11 Geo. 4, and 1 Will. 4, c. 68, s. 2. On the arriva

of the silk at London, the Company's servants put it into a van belonging to A. B. who was usually employed by the Company to deliver in London all goods arriving by their line. The van was under the care of C. D. a porter, and a delivery ticket sent with the parcel, headed with the name of the Company, but signed by A. B. in which it was stated that any servant of the Company taking more than was stated therein, would be dismissed; and in that ticket the names of the several porters were given, including that of C. D.; but it appeared by other evidence, that he was the servant of A. B. hired and paid by, and liable to be discharged by him. The silk never reached its destination, having been stolen by C. D.

Held, that C. D. was a servant in the employ of the Company, within the meaning of the 8th section of the statute.

Semble, that the delivery ticket did not operate either by way of estoppel, or as conclusive evidence against the Company, that C. D. was their servant. (11 *Law Times*, 226,

LIABILITY OF SHAREHOLDERS FOR CALLS.

In an action for calls upon certain shares in a Railway Company, under the statute 8 and 9 Vict. c. 16, s. 26, it appeared that the defendant was not an original subscriber but had purchased scrip certificates of the shares in question, and before the call was made, sent them into the Company with a claim to be entered in their books as the holder thereof. His name was entered in a draft register of shares, and a receipt for the scrip sent to him: but his name was not entered in the sealed register until after the call was made.

Held, that the plaintiffs were not entitled to recover; and, *semble*, that in this respect there is no difference between the case of an original subscriber and that of a transferee. (17 *Law Journal Reports*, 17, 102.)

LOAN-NOTES.

A Railway Company resolved to raise a sum of money upon loan-notes payable at the end of five years, bearing interest at the rate of 25 per cent. per annum, in the meantime, with an option to the holder to convert them at the expiration of three years into shares of the Company at a certain rate per share, under the powers of an Act of Parliament, to be applied for as early as possible; and the Company advertised for tenders accordingly; one half of the loan to be paid by the Company when the tenders should be accepted (February 1842,) one quarter on or before the 15th of April, and the other quarter on or before the 15th of July following. The loan was made by various persons to whom on the payment of the last instalment (July 1842,) loan-notes were delivered, promising to pay the sum expressed therein on the 15th of February 1847, with an endorsement thereon referring to the resolution, and intimating that in pursuance thereof, application was intended to be made to Parliament for an Act, under the terms of which the bearer would be entitled on the 15th of February, 1845, provided previous notice was given, to convert the loan-notes into shares at the price mentioned in the resolution. An Act was afterwards obtained enabling the Company, for the purposes therein mentioned, to issue new shares of such amount, and to be appropriated and disposed of in such manner, for such prices, and by such ways and means, as by the order of a meeting of the Company should be determined. By a meeting of the Company, subsequently held, it was resolved that the new shares authorized by the Act should be raised and allotted to and amongst the holders of loan-notes in the manner and upon the terms dictated by the Act.

Held, that the effect of the Act and the subsequent resolution of the Company, was not to allot the new shares amongst all the loan-note holders unconditionally, but only as they had acquired a right to such allotment by virtue of their antecedent contract.

That the term of five years, at the end of which the loan-notes were to be paid off, must be reckoned from February, 1842, when the first instalment of the loan was advanced; and that the three years during which the holders were to have the option of converting the notes into shares, must be reckoned from the same time.

That from the nature of the property which was the subject of the option, time was of the essence of the contract.

That the endorsement on the loan-notes did not enlarge the time of the option by continuing it until limited by an Act of Parliament, or otherwise. But whether the Company had power to restrict the option, by requiring notice before the 15th of February, 1845, (the end of the three years,) or whether the loan-note holders accepting the notes with the endorsement expressing that restriction, without objection or protest, would be bound thereby?—*quære*. (Campbell v. the London and Brighton Railway Company, 5 *Hare*, 519.

Polarity of Bismuth.

Professor Faraday delivered a lecture, yesterday evening week, at the Royal Institution, Albemarle street, to a very crowded and *distingue* audience, upon the polarity of bismuth. The learned professor said, that he had undertaken to bring before his audience the nature of a certain newly discovered property of matter. Nothing in these days of wonder, was more surprising than the extraordinary progress which had been made in the knowledge of the magnetic force, and of the manner in which that force appeared to dominate over matter; indeed, its influence now might almost be assumed to be as universal as that of gravitation itself. Not long ago he had the honor of exhibiting some of the properties of dia-magnetism; and now he hoped to bring before his auditory clear proofs that the powers which made matter crystalline had something of a starting point in the magnetic forces. He had procured, therefore, a powerful magnet to illustrate his subject; but they must not suppose that the unusual power of the magnet had anything to do with the phenomena, as precisely the same results might be obtained from any magnet. The talented lecturer then, as a preliminary, exhibited his apparatus, which was arranged with a nicety and ingenuity befitting his high reputation as a successful experimenter. The magnet, so to speak, was made magnetic by a voltaic battery, so that by cutting off the communication, it was at once no magnet, and, by restoring it in the next moment, a magnet of the most powerful description. This was shown by the application of pieces of iron to the poles, which were placed there and moved about readily enough; but, in an instant, by restoring the connection with the voltaic battery, they became immovable, and no force of arm could alter their position. But they were not to suppose the magnetic power existed only by contact; for some distance all around, called very properly the magnetic field, the same influence existed; and it was particularly strong between the two poles. This he made apparent by suspending a piece of copper, and making it spin with great velocity, when, upon the poles being made magnetic, the motion was suddenly arrested. To show this more clearly, the professor took a plate of copper, and began to pass it through the space between the poles, after the manner of a carpenter sawing a piece of wood—of course, with the greatest possible ease, as it was in contact with nothing but the atmosphere; but, on the poles being made magnetic, it was moved with the greatest difficulty; and the professor was in the predicament of the aforesaid carpenter sawing a piece of iron-wood with a bad saw. A similar experiment with a plate of copper, turned by a wheel, also illustrated this power most successfully. It only remained to be premised, that other metals were subject to the same power: he had used copper, but iron was influenced in a still more extraordinary degree.

Bismuth was a very beautiful metal, and one most interesting to the philosopher, on account of its being at the head of those bodies which were called diamagnetic. It was repelled from the poles of the magnet almost as strongly as iron was attracted to them. He was casting the other day some crystals of bismuth, and, on subjecting them to equatorial force, he observed that they pointed some this way and some that way, but that each crystal had invariably its own direction. This singular regular irregularity convinced him that it was the result of obedience to some law, and, by a variety of experiments, he discovered that the direction depended solely on the cleavage of the crystals. A great many crystals being all at once subject to the same influence, it became obvious that

the pointing was not the result of any sympathetic influence; if the cleavage of two crystals were the same, then they would point the same, and not otherwise. The learned professor then proceeded to show this peculiarity, by suspending various crystals of bismuth between the poles of the magnet, and in every case, by examining the direction of the cleavage, he was successful in predicting the direction in which the poles of each crystal would set. In the same way, that the indicator of the mariner's compass disturbed, would, when left to itself, return to the north; so the crystals of bismuth, although placed in other directions, would, when left to themselves, return each to its own particular set, pointing indifferently with either end of its pole. This was what he called the polarity of bismuth.

Another curious fact was, that this polarity depended upon crystallisation, for when the very same crystals which had shown a marked obedience to this new law were pulverised, the property was entirely lost. Another consideration of moment was, as to where the line of polarity lay. It was generally said that bismuth crystallised in cubes, but he had never yet procured crystals which which perfect cubes; they were more properly rhomboidal, with all the solid angles taken off at equal planes of cleavage. His experiments then went to prove, that the line of polarity was diagonally from corner to corner, taking the longest breadth of the rhomboid. This formed what he called magneto-crystalline axiality; he used the word *axiality*, rather than polarity, as it better expressed this newly discovered property of bismuth. Other crystalline metals, such as antimony and zinc, he doubted not, possessed the same axiality, but he was not prepared to say in what degree: and a most interesting field was opened for inquiry, scarcely less beautiful than that of diamagnetism. This deservedly popular lecturer concluded his discourse by several other admirable experiments, in illustration of the properties of this newly discovered axiality, and stated that he purposed, at no distant period, to bring some further new peculiarities of bismuth before the Institution.—*London Mining Journal*

Coal in the Straits of Magellan.

The following are copies of reports from Captain Henderson and Commander Paynter, of the *Gorgon*, stating the results of their search for any coal formation in the Straits of Magellan:—

Her Majesty's Steam-vessel Samson,
Rio Janeiro, Oct. 22, 1848. }

Sir,—I have the honor to acquaint you, that in compliance with orders from Rear-Admiral Hornby, to make further perquisitions respecting the coal said to be found in the Straits of Magellan, I obtained at Port Famine, by the kindness of the Governor, a guide to conduct me to the veins of Punta Arenas (Sandy-bay,) and having anchored in Sandy-bay on the morning of the 8th inst., I landed with Mr. Barrowman, second engineer of the *Samson*, and proceeded to the first vein, about seven miles distant from the bay, situated on the north bank of the river Punta Arenas, 40 or 50 feet above the level of the river. The vein is 30 to 40 feet in depth, about 20 feet of which could only be got at for the snow; but all that was visible appeared to be clean and of good quality, and may be worked with great ease. The road, as far as the commencement of the first ridge of the hills from the bay, would be about four miles, over a perfect level; the remainder, about three miles, is over several ridges of hills, and when it reaches as high as the first vein descends over a deep brow to the bed of the river, and is only a footpath. The second vein is a mile inland of the first, and the third a mile and a half inland of the second, and were entirely covered with snow, and cannot be got at until the summer is more advanced; they are represented to be quite as good as the first vein, and also close to the level of the river. Having secured specimens of the first vein, and finding the principle difficulty that would attend the working of the mines would be the want of a good road, I returned to the shore by the bed of the river to ascertain how far it might be practicable to take advantage of its level to construct a road, to avoid that part of the present one which ascends the hill; and, although I found the river very tortuous, I saw no great diffi-

culty in forming a road on its banks to join that of the plain, there being abundance of material, wood, and stone on the spot, some of the trees measuring 3 or 4 fathoms in girth. The bed of the river is filled with pieces of good coal, which must have fallen from the veins of its banks; and as these deposits are numerous, it may be assumed there is plenty of coal in the neighborhood. I observed, also, indications of metallic substances at the bottom of several tributary rills and rivulets falling into its course. The veins have not been worked, nor are there any appearances of their being so, by the Chili Government, which has only established Punta Arenas as an outpost, under the command of a lieutenant and a small detachment, as a matter of occupation. No reliance can be placed on a supply of coal there until a road is constructed, and the means of transport from the mines to the bay secured, as it was only with great difficulty I reached the first vein by the hill road, which was deeply covered with snow. I shall leave specimens of the coal for your inspection, and herewith inclose you the copy of an extract from Commander Paynter, of the *Gorgon*, to Rear-Admiral Hornby, on the same subject, containing a statement of his having examined Laredo bay, together with Mr. Barrowman's opinion of the coal after experiments on board.

I have, &c.

THOMAS HENDERSON, Captain.

The second report is hardly worth giving entire—the principal facts being, that Commander Paynter, with several officers, explored for three miles round the bay, without the slightest appearance of coal. He was informed, however, that there was coal at Sandy-bay, 80 miles from Port Famine, which lay four or five miles in the interior. The extent was not known, the outcrop only having been seen; and it would be necessary, if steamers were to be supplied, that shafts should be sunk, and the veins worked in a proper manner.

Necessity the Mother of Invention.

The existing commercial and manufacturing depression has, it will be seen, stopped in the bituminous districts about one-fifth, and in the anthracite districts nearly one-half of the furnaces. These disastrous effects have aroused a spirit of inquiry and economy which is daily producing new and most important results. The astonishing increase in the produce of the furnaces in the bituminous districts take its origin from the application of steam and engine power to the production of a continuous stream or pillar of blast, in place of the puffing of the old-fashioned wind bellows; and, further, to a discovery of my highly-valued friend, Anthony Hill, Esq., of the Plymouth Works, Merthyr-Tidvil. It is to the science, energy, and research of this gentleman, that the iron trade is indebted for the practical discovery that the cinders produced in the various stages of converting, in our forges, crude or cast-iron into wrought or malleable iron, were capable of being resmelted and reconverted in the blast furnace, and the iron they contained (amounting to 50, 60, and 70 per cent.) could be profitably extracted from them. These cinders were formerly thrown away as refuse, or used only for the repair of our roads and thoroughfares—they are now eagerly sought after, and purchased at values as high as some of our richest iron ores. To Mr. Hill a debt of public gratitude, and something more, is due, which I should rejoice to see properly acknowledged and paid. Mr. Yates, of Rotherham, Yorkshire, has at his works, at Wingerworth, near Chesterfield, erected blast furnaces of an entirely different construction from those in use in this district, and the plan of which he has patented. They are about 20 feet in height, of a peculiar shape, and are blown with a soft fan blast. When I visited them, a few months ago, they were working admirably, and producing excellent pig-iron, at the rate of 120 tons and upwards in a week, at each furnace. These furnaces, and their blowing apparatus and appendages, appeared to me so simple and inexpensive of construction, in comparison with the huge piles of masonry and ponderous machinery of our blast furnaces and engines in Wales, that I imagined they would create a perfect revolution in the iron trade. In the anthracite districts of

our mineral basin, the improvements effected by the late Mr. Crane, and the application by him of hot blast to the smelting of iron with anthracite coal, were acknowledged, certainly not more gratefully than they deserved to be, by those who are interested in the mineral productions of the anthracite districts, wherein the deposit of ironstone or ore is enormous, but its reduction with its accompanying fuel almost new. The recent improvements of Mr. J. Palmer Budd, adopted at his extensive works at Ystalyfera, near Neath, and patented by him, are worthy of the greatest attention. Mr. Budd, who read an admirable paper, explanatory of his improvements, to the chemical section of the meeting at which my address was delivered, and with the kindest liberality invited the members of the association to visit and inspect his works, has succeeded in economising the use and consumption of an expensive and valuable fuel, and in preserving from positive waste, and applying to profitable use, volumes of heat evolved in the process of smelting, heretofore allowed to escape, productive of no use whatever.—*Speech of T. W. Booker, at Swansea.*

Extracts from English Railway Journals.

The London Railway Record, of January 27th and February 3, contain a notice of an interesting pamphlet issued by Mr. R. N. Martin, an author distinguished for many valuable statistical works, under the title of "Railways, past, present and prospective." From this it appears that with the exception of the years 1802, 1809, 1811, 1812 and 1824, (in every one of which two acts were granted) only one such enactment was sanctioned. From 1825 to 1833, the number varied from 5 to 11 per annum;—from 1834 to 1843, the number ranged from 10 to 21—with the exception of 1836, when it was 35—whereas, in 1843 the number had risen to 48; in 1845, to 120; in 1846, to 227; and in 1847 to 296! The number for last session is not stated; but, as our readers are aware, it was comparatively inconsiderable.

Of the Liverpool and Manchester railway—the pioneer of all the rest—some interesting particulars are presented. "One eminent engineer" calculated that the crossing of Chat Moss—a length of four miles—would cost £227,000, the actual cost being £40,000. On this, then the only passenger rail in the kingdom, the number of travellers was in 1832, 356,945; increased in 1845 to 473,847; whereas "now (says the author) the passenger traffic in the United Kingdom numbers more than fifty-two millions a year."

The effect of the successful establishment of the original lines naturally led to the formation of others. The story has often been told, but Mr. Martin puts the result into small compass. He says:

"The successful establishment of the great lines between London and the North of England led, in 1835-6-7, to a 'railway mania'; numerous schemes were started, and the country was mapped out with projected lines. In 1837, however, the restrictions imposed by parliament on the facility for obtaining acts checked the speculative fever, caused an abandonment of many projects, and even prevented the further prosecution of lines already begun. Altho' more than 50 new lines, comprising 1,600 miles, were sanctioned in 1835-6-7, only five new lines, comprising 93 miles, were sanctioned in 1838, and 1839.

"No new line was sanctioned by parliament in 1840; in 1841 only a branch passenger line of 5½ miles to Hertford and Ware; and in 1842 but three new lines were authorised, none of them of considerable magnitude; 1843 produced but few acts for original or branch lines; but in 1844 parliament sanctioned 26 lines, branches and extensions, extending over a distance of 797 miles, requiring a share capital of £11,121,000, and with a power to borrow £3,672,994.

"The principle of competing lines was now, for the first time, acknowledged, by parliament by the

sanction of two lines to Ashton; one by the 'Manchester and Leeds railway company,' and the other by the 'Sheffield and Manchester railway company,' although the distance was only 6½ miles.

"In 1845, the want of any fixed principles in the legislature increased the evil to so great a length that 225 bills relating to railways were introduced; of these 120 acts were passed, and 105 either rejected, withdrawn or postponed to next session. Of the 120 acts passed, 107 related to the construction of new lines, and provided for making 2383 miles of new railway, and required a creation of new share capital to the amount of £43,844,907."

Upon the author's statistics bearing on the amount of capital expended on railway works, we need not dwell farther, than to say that according to his calculations, based on returns to the House of Lords, "it appears that, at the close of the year 1847, £166,938,241 had been actually expended on railways; and in 1848 the railway calls amounted to £33,246,484, showing (exclusively of depentures issued during the year) a total expenditure of £200,184,725." In Ireland, 261 miles of railway have cost £8,260,492, namely, £6,731,250 received by calls, and £1,529,242 on loan.

Passing over some interesting matter as to the progress of the railway system, in which especially reference is made to the "Clearing House," the origin of which Mr. Martin very truly attributes to Mr. K. Morrison, the present manager of the establishment, and Mr. Robert Stephenson, we come to the chapter on the "Advantages of Railways, Mercantile and Agricultural." On this point, a brief extract from the work itself will suffice:—

"The advantages of railways to the internal commerce of the kingdom are incalculable. The time occupied for the transit of goods between Manchester and Liverpool, before the establishment of a railway, was 36 hours; but they were sometimes a month on the road, and the cost was 15s. a ton; now they are conveyed with certainty in two hours, for 7s. a ton. Between Manchester and London the charge was 70s. to 80s. a ton, and they were several days on the road; now they are conveyed in a few hours for half the amount. The canals have been obliged to reduce their fares; in some cases they have been lowered from 33s. to 4s. Goods are now conveyed from Manchester through Liverpool or London to America, in less time and at less cost than they would formerly have been conveyed from Manchester to Liverpool.

"The charge for goods by waggon was, until the establishment of railways, as much as 1s. a ton per mile, at an ordinary speed of 2 to 2½ miles per hour, and by canals from 6d. to 1s. per ton at a less speed, and delayed during winter for weeks. Now the 'London and North-Western Railway' carry bale goods at 2d. a ton at a speed of 20 miles an hour. In fuel the advantages have been enormous; the price has been greatly reduced to the poor in inland districts, and is not higher in winter, when most wanted, than in summer; rail trucks are not stopped by frosts like canal boats. The farmers have benefited by the cheap conveyance of manure, of limestone, chalk, &c., and by the carriage of their livestock, grain, &c., to good though distant market towns."

"Railways have not received any grant of monopoly. If the Government had shut up the 'Queen's highways,' forbidden all coach or horse or steam carriage traffic on those highways, closed all canals, or stopped all river barges or coasters; then indeed railways would have received a monopoly. But they have been subjected to all possible opposition, and, notwithstanding their costly construction and expensive working, they have, by fair competition, by superior accommodation, greater safety, and lower charges, drawn to themselves the largest part of the traffic of the kingdom; but this is not monopoly."

The question of "Compensation," both for land taken and injury sustained by passengers, is next handled—Mr. Martin, in respect of the latter, upholding precisely the views which are expressed in

another article of our paper to-day; and, in respect of landowners, stating, most truly, that numerous instances could be quoted where Companies have paid for a small portion more than the actual value of an entire property; and that the introduction of a railway, so far from being an injury, has subsequently been held forth as one of the great allurements in the sale of an estate.

In respect of the defective, vacillating, and expensive legislation, of which Railway Companies have been the victims, Mr. Martin gives some curious particulars. He says:—

"In 1830 Parliament refused even a hearing to the parties from Liverpool who desired to make a railway to Birmingham and London, because out of 200 parishes the name of a constable-wick had been omitted from the notice. An omission as to the height of a bridge was deemed a sufficient cause for throwing out a bill, no matter what expense had been incurred. One hundred witnesses have been kept waiting in town for three weeks, at an expense of £1,000 a day, while parliamentary committees were passing through the most unmeaning forms, or trifling in a manner worse than childish. The mistake of a No. 68 for a 69 in marking a field on a plan has been reported as a breach of the standing orders. A field, stated to be in parish A, was found to be partly in township B—reported as a breach of the standing orders. An error in the height of a railway over an abandoned watercourse was fatal to the bill. A bill, on which £100,000 had been spent, was rejected without the least inquiry into its merits, because there was some omission in half a million figures, and other trifling errors. Another bill of great importance was rejected because a barn, not worth £5, had not been described on a separate enlarged plan."

So, too, in the case of the Great Western Railway, debated for fifty-seven days in the Commons but thrown out in the Lords without a hearing, and the memorable Railway contests of the Brighton Company, at a cost, for a considerable time, of about £1,000 a day! The Hastings and Harwich, and other schemes, are also adduced in proof of the inconsistent and unjust course pursued in railway legislation. Then also as to land and law costs, the preliminary charges on the Eastern Counties' line being at the rate of £1,800 per mile, while on the Chester and Holyhead, land which before had never let for more than 10s. an acre, sold for £1,500 an acre. Facts of this character are given in abundance, and might easily be multiplied, but we have not room for further details.

Mr. Martin is not an advocate for Government interference with railways. He says:—

"Under a free constitutional Government like ours, it is a general axiom, that the less either the executive ministers of the crown or the Legislature interfere with the internal affairs of the kingdom, except in matters of police and the enactment of laws, the better for the community.

"To place the great thoroughfares of the nation under the supreme direction of the executive Government, would be nearly as bad as leaving the supply of water, food, and light to the authorities. The nation would become helpless, its individual and combinative action would rapidly diminish, and people, instead of relying on their industry and intelligence, would look to everything being done by Government.

"On the whole, therefore, the evils which we have to deplore are not unmixed with countervailing advantages. Full scope has been given to the extraordinary talents and energies of those able men, to whom this country owes the present wonderful inland communications, surpassing in efficiency and convenience those of any other nation; whilst it must not be forgotten, that it would have been a dangerous policy to have placed the control of such a vast interest, and such an extensive patronage, in the hands of any executive government."

Railroad Items.

Among the internal improvement acts passed at the late session of the North Carolina Legislature are the following:

The North Carolina Central Railroad.—The bill to incorporate this important railroad company, which passed the House of Commons on the 18th ult., by 59 to 53, passed in the Senate to its third reading on the 20th ult., by 22 to 19. Its capital is \$3,000,000, of which individuals are required to subscribe \$1,000,000, and the State \$2,000,000.—The main stem is to run through Raleigh and Salisbury to Charlotte, after intersecting the Wilmington and Weldon Road near Goldsboro'.

An act for the relief of the Wilmington and Raleigh Railroad Company; which empowers the company to mortgage the road and its appurtenances to the amount of \$620,000, for the purchase of iron to relay the track, giving to the mortgage to be so created precedence over the State's mortgage. The act also extends the time for the payment of the company's bonds to the State for \$300,000, for money borrowed, to ten years on each bond as it falls due.

The Columbus and Xenia Railroad, it is expected, will be prepared for the superstructure in July next, and will be ready for the running of the cars in October following. It is the intention of the company at once to lay down a heavy T rail; this is as it should be, as it is bad to use a flat bar. This road, when finished, will open a direct railroad communication between Columbus, the seat of government of Ohio, and its great mercantile metropolis, Cincinnati. It will also form an important link in the railroad connection between Cincinnati and Lake Erie at Cleveland, uniting, as it does, at Columbus, with the Cleveland and Columbus road. The advantageous location of this road, its connections with other channels of trade, the present low prices of iron and cheapness of preparing the track for the iron, can hardly fail to render it very productive property.

Ohio and Pennsylvania Railroad.—At a meeting of this Company, held in Pittsburgh on the 18th inst., an election was held for officers, which resulted as follows:

President—William Robinson, Jr., of Allegheny City.

Directors—Thomas Bakewell, of Pittsburgh; Ovid Pinney, of Beaver; Zadock Street, of Salem; Hiram B. Wellman, of Massilon, John Larwill, or Wooster, and Charles T. Sherman, of Mansfield.

A public meeting in favor of the road was held on the 17th inst. The meeting was addressed at length by Solomon W. Roberts, Chief Engineer of the Company, in explanation of the results of the surveys and the prospects of the work. It was shown on the maps that this road, with its extensions, will be the shortest and best line from Pittsburgh for Cleveland, Sandusky City, Toledo, and Chicago; and also the best for a connection with St. Louis. The distance from Pittsburgh to Cincinnati will be 330 miles, by the way of Massilon, Wooster, Mount Vernon, and Columbus; avoiding interference with navigable communications, and passing through the richest and most populous parts of Ohio.

The Chambersburg Whig of the 1st inst. bears the following testimony to the importance of the enterprise which is now being presented to the favorable consideration of the people of Baltimore:

The York and Cumberland Railroad.—The citizens of Baltimore are displaying a new and encouraging spirit in behalf of this improvement. Already renowned for her liberality towards such enterprises that city is striving to raise within herself the greater part if not all the money that may be necessary to complete this important road.

To her indeed it is important—more so than any similar project that is now addressing public attention. Forming as it will a connection with the great central high ways of Pennsylvania, a large proportion of the trade as well, probably, as of the travel upon those routes must be attracted to her market. It will thus make both the canal and central railroad of this State tributary so her commerce and wealth, and as her markets are usually of a higher grade for much of the produce of the coun-

try she will be likely to receive more than an equal share of the profits of that trade.

The road when constructed will also throw it to Baltimore a large proportion of the agricultural and mineral products of this and the adjoining county of Cumberland. A great deal of these already seek that market, notwithstanding the slow and lumbering transportation by tide water and turnpikes; and it may be reasonably calculated that this trade will be immensely augmented when it can be forwarded with the speed and safety of steam power. This road will offer to our citizens the choice of two markets for their saleable commodities—Philadelphia and Baltimore. The former they have already, but under a rate of fare that is hardly low enough to compete with the turnpike gates. This new outlet to the rival city will in all likelihood be the means of reducing the charges upon the other route to what a fair competition for the business may make necessary.

New Haven and Northampton Co.—The annual meeting of the New Haven and Northampton Co., was held on the 17th inst., and the following persons were chosen Directors for the ensuing year: Joseph E. Sheffield, Harvey S. Hoadley, Henry Whitney, and Wm. W. Boardman of New Haven; and Gouverneur Morris of New York. The New Haven Register says the company have decided to extend their road to Springfield, which they will do with all possible despatch.

Chesapeake and Ohio Canal.—We learn from the Alexandria Gazette that "the toll on Coal from Cumberland, upon the Chesapeake and Ohio Canal, has been reduced by the Board of Directors, to 76 cents per ton for the entire length of the Canal."

A large meeting was held on the 30th December last at Mount Holly, N. J., of the citizens of Burlington county, and others friendly to the construction of a Railroad across the State of New Jersey. This is a movement distinct from the Camden and Amboy Company.

The Michigan Central Railroad, we learn from the Detroit Free Press, is advancing steadily on the line west of Niles, and will be finished by the first of May, so that the shores of Lake Michigan and the Detroit River will be united by iron bonds, and the iron horse snorting along with cars loaded at New Buffalo.

The Vincennes Railroad Bill has been defeated in the Illinois House of Representatives; for it, 37; against it, 33; within one of a constitutional majority. The Senate have a general bill which will defeat every railroad in the State. So says a despatch to the Union.

The Marblehead Mercury states that the Eastern Railroad Corporation have asked from the relatives of those who were killed on that road by the collision last November, to bring in sealed proposals, setting a price on their lives. Not over \$5,000 can be recovered by the relatives of any person killed on any railroad in the State of Massachusetts.

Education of Engineers.

The study of engineering presents peculiar difficulties; not from the paucity of information, but from the multiplicity of its sources, which are so many and so widely separated, that the student may well be bewildered and discouraged when presented with a map of his future course. Let us consider a few of the branches of knowledge with which he must be adequately acquainted before he can be said to have mastered the whole of the principles of his profession.

As a large part of his business consists in adapting mineral products to useful purposes, he must be acquainted with the mechanical and chemical properties of minerals, and must be able to distinguish good metal from bad, sound building materials from those which are perishable, &c. He must, therefore, be acquainted with the science of MINERALOGY—OR, at least, that part of it which is susceptible of practical application. The changes which in the progress of time are wrought in those minerals by affecting their molecular or crystalline structure, the value of different methods of working them, the chemical changes wrought by the atmosphere, and the action of foreign substances, are considerations which render indispensable an adequate knowledge of CHEMISTRY. The engineer employed in constructing railways, roads, canals, and harbors, must certainly be acquainted with Ge-

ology; for how shall he estimate beforehand the probable cost of his works, their permanency, or the most judicious mode of carrying them on, unless he know the nature of the soils in which he will have to operate, the order of their succession, their relative depths, and stratification? To estimate the proper form and dimensions of the structures which form part of his works, he must be thoroughly versed in the science of **STATICS**. To determine the most effective agents of mechanical power, and the most economical methods of producing and regulating motion, the knowledge of **DYNAMICS** will be required. The operation of the steam-engine, atmospheric railways, the air-pump, the ventilation of mines, &c., are to be understood only by the investigation of the principles of elastic fluids—**PNEUMATICS**. The sciences of inelastic fluids—**HYDROSTATICS** and **HYDRAULICS**, are essential in constructing sea-walls, breakwaters, canals, and docks, in ascertaining the power of water-mills and hydrostatic-engines, in works of drainage and water supply, and in naval architecture.

The sciences already enumerated by no means exhaust the list included in the engineer's *curriculum*. Most of them involve a knowledge of **MATHEMATICS**, and some of them of its highest branches—in dynamics, for instance, the processes of the Differential Calculus are involved at every step. Mathematical knowledge will, moreover, be required in a most important branch of the engineer's occupation—surveying, and the measurement of works. To lay down the course of a railway or estimate the cubic contents of an embarkment, would be impossible without some knowledge of **TRIGONOMETRY** and **SOLID GEOMETRY**.

The institution of colleges expressly intended for the scientific education of young engineers, is an ample evidence of the general recognition of the abstract sciences for practical purposes. There are now three colleges in London, or its vicinity—King College, University College, and the College of Civil Engineers, at Putney, in which a course of study is adopted for the especial purpose of preparation for the practice of civil engineering. In estimating the value of such institutions, it should be carefully remembered that the knowledge of the engineer is of two kinds—scientific and practical knowledge. The former may be acquired from books in the laboratory or college lecture-room—the latter is to be obtained in the workshop, or the canal or railway works.

The substitution of certainty for conjecture, or demonstration for hazardous and imperfect analogies—These, in fact, are the objects of colleges of civil engineering. The details of the courses of lectures may differ in each, but to all of these institutions may be applied the words of a printed statement respecting the Putney College, in which it is said that "the foundation of the system is laid in a knowledge of the exact sciences and properties of matters—i. e., upon mathematics and chemistry." The mathematical course includes, among the sciences above referred to, as forming a necessary part of the education of the engineer, Geometry, Analysis, (including the Differential and Integral Calculus), Statics, Dynamics, and Hydraulics. Fortunately—most fortunately—in all three colleges, the Mathematical lectures are delivered by *mathematicians*, not by mathematical pretenders, whose acquirements consist in a certain impudent dexterity in dazzling the eyes of those who are more ignorant than themselves, by a display of mathematical jargon. The practical classes of Chemistry afford the student the opportunity of analysing and assaying minerals by direct manipulation. The lectures on Geology include the practical application of the science to architecture, marine engineering, and mining; there are also lectures on civil engineering, machinery, mechanical drawing, &c. We will not venture to assert that this course of instruction altogether supersedes the necessity of further pupillage in the office of a civil engineer; on the contrary, the student is strongly urged to avail himself of that advantage, for without it he never will be fit to cope with any work of magnitude.

We cannot close this account without referring to an incidental advantage of these colleges, in promoting the improvement of engineering literature. For the wretchedly inaccurate works which are palmed on the practical mechanic a few years ago, we

have new and admirable treatises on the various applications of the sciences, by Mr. Hodgkinson at University College, Professor Moseley and Mr. Haan at Kings College, and of the Putney lecturers, by Professor Ansted, Dr. Lyon Playfair, Professor Davies, &c. It is also gratifying to add to this list, the name of Mr. Cowie, as he has announced the publication of his lectures on Hydraulics, combining his own researches with the results of the eminent continental writers on the subject. The *vexata question*es of hydraulics are so many and so perplexing, that this work can scarcely fail of rendering important service to science. Truly the labors of such men are wanted to bring the engineering literature of this country up to the same standard which in France the splendid investigations of Poncelet, Navier and others scarcely less illustrious, have attained.

Submarine Telegraphic Communication with France.

Some interesting experiments were made on Wednesday the 10th ult. at Folkestone, as to the practicability of carrying electric lines of communication over great widths of sea channel. The experiments were conducted under the direction of Mr. Walker, superintendent of the telegraphic system of the South-Eastern Company. They were undertaken to test the possibility of establishing an electro-telegraphic communication with France, by a wire carried over the Straits of Dover; and it was intended to have taken the wire two miles out to sea, on board the *Princess Clementine* steamer, (one of the company's ships), uncoiling and dropping it in the water as she proceeded. The night previous, however, had given token of breezy weather, and on the morning of Wednesday the wind was high; and the waters of the channel being agitated by a considerable swell, it was feared the vessel would roll and toss to such an extent, as to prevent the proper management of the instruments, or keep the needles in their necessary vertical position. It was therefore decided on to pay out 3,600 ft. of insulated wire along the harbor and the side of the pier—one end being connected with the telegraphic arrangements at the Folkestone station, thus being in direct communication with London, and the other attached to an instrument on board the *Clementine*, at anchor in the harbor. All the arrangements having been completed by half-past 12 o'clock, a message was sent to London, to apprise that all was in readiness, after which a continuous correspondence was kept up between the *Clementine* and the stations of London, Ashford, Tunbridge, and Folkestone. At four o'clock the submerged wire was drawn in and coiled up, and was found not to have sustained the slightest injury. The experiments were, it is stated, in every respect highly successful; the length of wire in the sea forming apparently not the slightest impediment to the perfect and free transit of the galvanic current.

The wire employed was not made expressly for the occasion, but had been constructed for the Merstram Tunnel, where it was found that not only the damp on the wires affected the galvanic current, but was still further interrupted by the steam from the engines, impregnated with acid and earthy matters. Its size is No. 16 copper wire, covered to a thickness of about a quarter inch diameter with gutta-percha, under a patent by Mr. Foster, of the gutta-percha manufactory, Streatham, and similar wires will in future be employed in all the tunnels on the lines, which places have been found to cause the only obstructions which present themselves to the free working of the system.

The telegraphic instrument employed was one constructed by Mr. Walker, on a plan to avoid any action from atmospheric electricity. The galvanic coils are mounted on wheels, and the needle is brought to a perpendicular with the greatest facility by turning a stud, which causes the coil to pass in a direction opposite to that to which the needles had been deflected. The conductor for the atmospheric electricity consists of a vertical wire, furnished with radiating points, and a bobbin of wire of a much finer texture than any other in the instrument. This is surrounded by a small brass cylinder, connected with the earth, and any overcharge of electricity burns the fine wire and escapes. This occurred in one instance at Tunbridge Wells, during a thunderstorm, a short time since.

Suspension Bridge at Pesth.

The bridge which is erected over the Danube at Pesth, was commenced in 1840, according to the designs and under the direction of William Tenney Clark, civil engineer, and has just been completed at a cost of £650,000. This bridge, which for magnitude of design, and beauty of proportions, stands first among suspension bridges, has a clear waterway of 1250 feet, the centre span or opening being 670 feet. The height of the suspension towers from the foundation is 200 feet, being founded in 50 feet of water. The sectional arc of the suspending chain is 520 square inches of wrought iron, and the total weight of the same 1300 tons. This is the first permanent bridge since the time of the Romans which has been erected over the Danube below Vienna, it having been considered impossible to fix the foundations in so rapid a river, subject to such extensive floods, and exposed to the enormous force of the ice in the winter season. It now, however, stands as another monument of the skill and perseverance of our countrymen. The bridge was opened for the first time, not to an ordinary public, but to a retreating army, on the 5th of January, 1849, by which the stability of the structure was put to the most severe test, which cannot be better described than by referring to the letter of a correspondent, who writes—"First come the Hungarians, in full retreat and in the greatest disorder, hotly pursued by the Imperialists; squadrons of cavalry and artillery in full gallop, backed by thousands of infantry—in fact, the whole platform one mass of moving soldiers; and, during the first two days, 60,000 Imperial troops, with 270 pieces of cannon, passed over the bridge." This fact cannot but be of importance to the scientific world, since it proves that suspension bridges, when properly constructed, and trussed according to the design of Mr. Clarke, may be erected in the most exposed places, while their cost, in comparison with stone bridges, is comparatively insignificant.—*Times*.

Railroads Opened in 1849.

Portland and Montreal (Me).....	8 miles.
Sullivan (N. H.).....	26
Cheshire (N. H.).....	10
Vermont Central.....	17
Vermont and Massachusetts (Mass)....	21
Connecticut River (Mass.).....	16
Camden Branch (S. C.).....	21

119 miles.

Roads opened Jan. 1, 1849.....6421

Total.....6540 miles of railway in operation in the United States on the 1st day of March, 1849.

Restrictive Legislation.

We see by an exchange paper that a bill has passed one branch of the Pennsylvania Legislature, to repeal the charter of the Erie and Ohio Railroad, for the avowed object of cutting off communication between the Ohio Road and those of the State of New York, and compelling western trade and travel to pass over her own works. Admitting it to be legally competent for the State to repeal this charter, we protest against the exercise of powers for similar object, by any of the State. The very object of the union was to protect the several States from the partial legislation of any of their members for the purpose of benefiting themselves at the expense of others; and we deny the right of any to impose either directly or indirectly, any burdens upon the citizens of any other States, as a tax for the privilege of passing through it. The exercise of such a power would at once put an end to our whole system of internal improvements, and would array the several States of the Union in hostile attitude to each other, and would be equivalent to disunion itself. If a State is so situated that she cannot attract the trade of other States to it, it is her misfortune, for which, other States should not suffer; their citizens have a perfect right to go where they please

and trade where they please. The trade of different sections of the country is the legitimate object for the effect of all the States, and these will secure it, who can offer the greatest inducements. Efforts to divert it from its legitimate channels can never in the end be successful. The legislature of any State must yield in time to the influence of public opinion. So that all advantage gained by partial legislation is temporary, and consequently injury in the end. Pennsylvania is the last State in the Union that should resort to such means, as her position is peculiarly favorable to secure a large portion of western trade, and she can well afford to let business take its natural channels.

AMERICAN RAILROAD JOURNAL.

Saturday, March 3, 1849.

**Ocean Steam Navigation.
Foreign Travel.**

In our last paper we alluded very briefly to the rapid development of the spirit of enterprize in the rapid growth of the steam vessels for Ocean Navigation, and spoke of the effect it was likely to have on the business and travel, when the new facilities now in progress shall come fairly into play. The last arrival from Europe brought us in, confirmation of the views then presented, notice of a scheme in progress at Glasgow, to establish a new line of steamers direct with New York, from that city. We hear also of further movements at home in the same general direction.

A few years ago the scientific world yielded their general assent to the truth of the assertion of Dr. Lardner, that the proposition for navigating the Atlantic Ocean by steam was an absurdity. The problem was solved by the arrival of the steam ships *Sirius* and *Great Western*, on the 23d day of April, 1838, both on the same day, in New York harbor.

We now have a semi-monthly line in winter, and a weekly line in summer, between this continent and Liverpool, in the *British and North American Royal Mail Steam Ships*, known as *Quinquids* line, consisting of eight in all, reaching alternately New York and Boston. There is also the *Sarah Sands*, a regular packet steamer between Liverpool and this city.

The *Southampton & Bremen line*, consisting of the *Hermann* and the *Washington*, is so successful that a new line is to be established between New York and Havre, touching at Southampton, taking the place of the *United States*, recently disposed of to the government of Prussia.

E. K. Collins, New York and Liverpool line, to consist of five new steamers, including the Atlantic and the Pacific, with three new ones of the Glasgow line, will complete a list of twenty one steamers running across the Atlantic Ocean, direct, between the two continents. New projects will not be long in ripening, which will soon secure direct lines of steam packets between the principal cities of the old world and the new.

The lines of railway on each continent are progressing with still greater rapidity, and the traveller from the Old World, in visiting the New, will soon find the same facilities of travel as are now being opened to us on the Continent of Europe.

Great Britain has for years been covered with railway lines. On the Continent of Europe the progress of railways is opening its whole surface to the man of commerce and the pleasure tourist. At the time when these facilities have just been entered upon by the merchants of New York in our midst, the railway lines have just been connected;

and from the shore of the British Channel, at Calais & Boulogne, the lines of railway have recently been opened "right through the very heart of Europe, embracing in its course the great capitals of the North, and at the same time opening up the means of communication with the various continental nations of the South."

Supposing the increase of speed in the new steamers in Collins' Line be equal to their increased superiority over any other vessels afloat, we may safely calculate on a passage to Liverpool in ten, or at all events in twelve, days from New York or Boston. A traveller may then go to London by railway, 200 miles in 5 hours; from London to Folkestone, 83 miles, in 2½ hours; from Folkestone to Boulogne, by packet, 26 miles, in 2 hours; from Boulogne to Paris, 170 miles, in 6½ hours; from Paris to Brussels, 231 miles, in 11 hours; from Paris to the Rhine, 529 miles, in 43 hours; from Paris to Leipsic, 757 miles, in 67 hours; from Paris to Warsaw, 1,263 miles, in 114 hours.

Including all detentions, a person may now go from New York to Warsaw, in Poland, the termination, for the present, of the Great Northern Line, in twenty days, or in less time than it took in Franklin's time to go from Boston to Washington and return.

From London to Berlin, under the present system of things, it is arranged that there need be no delays on account of political surveillance, and nothing to interrupt one's progress except the ordinary station stoppages upon the line.

From Berlin South, the line will soon be completed to Vienna, to Switzerland, and eventually to Venice, and to Rome. Crossing the Alps, a traveller may soon find himself again in Paris, at Boulogne, and at London. At London he may book himself at Euston Square, for Glasgow, 390 miles distant, or for Edinburgh, 426 miles, or for Perth, 450 miles; and never change his carriage till he is in the latter city.

After viewing Melrose Abbey, Abbotsford, and Ben Lomond, he may take the Railway at Perth, Arbroath, or Forfar for Glasgow, or one of the four regular trains between Edinburgh and Glasgow, proceed on to Liverpool, or take a Glasgow packet for New York, and return to his own home in this city in 45 days time, having visited all the places named.

All this, and much more, will be accomplished within two years. The man of taste and business will of course regard this as merely the outline of a route requiring long rests at various points, for investigation and repose. We are speaking of the possible for the man of business and despatch.

From this state of things, the most extraordinary results are to follow. A passage to Europe will, in two or three years time, cost less than one-half the present amount required. People of different lands will visit each other more and more. The exchange of ideas will reciprocally act upon the people of different nations. The various languages now prevalent will gradually assimilate; opinion will grow into harmony, and the nations of the earth shall make war no more; but Liberty, Equality, and Fraternity become roads of life and meaning.

Railroad from New York to Burlington, Vt.

We now have a line of Railway from New York to Albany, by the way of the New Haven and the Housatonic Railroads. In the course of two years from this date, the Hudson River Railroad is expected to be opened. The Harlem Railroad will, in due time, be finished.

The distance to Albany, by the Hudson River Road is.....	142 miles.
Greenbush to Troy.....	6
Troy to Saratoga.....	31
Saratoga to Whitehall.....	40
Whitehall to Rutland.....	24
Rutland to Burlington.....	65

Total..... 308 miles.

The entire line is finished, or in a fair way towards completion, except the short distance of 24 miles between Whitehall and Rutland. This line should be finished as soon as the road from Rutland to Burlington is open.

The best route to Montreal is now by the way of Boston and Montpelier, a distance of some 400 miles, or by the Worcester and Nashua. The Cheshire and Central Roads, a trifle less in distance only.

Are the New York merchants aware of the importance of filling up this gap from Rutland to Whitehall. It will secure to this route the entire Canadian travel between Montreal and New York.

It will make the connection complete with all the roads to be extended from Burlington towards the Canada line and Ogdensburgh.

Cleveland and Pittsburg Road.

We have just received the report of the Chief Engineer and Directors of this Road, which is to connect the above cities, running through Ravenna and Wellsville, on the Ohio River. The whole distance between Wellsville and Cleveland has been located, and 50½ miles have been placed under contract, and the remainder will probably be put under contract in a few months. The following is an estimate of the cost of the road from Cleveland to Wellsville:—

Graduation, masonry and bridging..	\$581,320 49
Superstructure, and Rail weighing	
75 lbs. per yard.....	919,780 98
Land damages.....	30,000 00
Cattle guards.....	8,000 00
6 miles of Turn-outs.....	72,000 00
Road and farm Crossing	7,600 00
Add 8 per cent. for contingencies, engineering, and superintendence...	129,496 43

\$1,748,201 90

Estimated cost of depots, engine and car houses, locomotives, &c.....

328,000 00

\$2,076,261 90

The maximum grades are 50 feet to the mile for four and two-third mile; on all the rest of the line the grades do not exceed forty feet to the mile. The minimum cases have a radius of 1,200 feet.

	Miles.	Feet.
Distance from Pittsburg to State line..	39	1,620
" State Line to Wellsville.	8	360
" Wellsville to Passenger		
Depot at Cleveland.....	98	960
" Pass'r. Depot to the Pier.	1	3,720
	147	1,380

The surface of Lake Erie at Cleveland is 76 feet lower than the surface of low water in the Ohio at Wellsville.

We have not room to copy the estimates of the business of this road, which are given at length in the above report. As the road is to cost, according to the estimates, but about \$20,000 per mile, and passes through the oldest settled portion of Ohio, through a fertile and densely populated country, abounding in coal and iron, and connects Cleveland with the public works of Pennsylvania by the short-

est feasible route, and can have no rival road for many years to come, we think that these facts are sufficient proof that the route will be good property to its stockholders, as well as advantageous to the public. Its completion will add much to the value of the railways and canals that connect, or that are designed to connect, the Atlantic and the waters of the Ohio.

MISSOURI.

Lexington and Mississippi Railroad.

A Bill to incorporate a Road from Lexington, on the Upper Missouri, to some point on the Mississippi, to be fixed by Commissioners appointed by the State, has passed the Legislature. The State has also appropriated \$10,000 for a survey, upon certain condition. Efforts were made to cause the road to terminate at New Madrid, Ohio city, commerce, and other points, which were rejected.

Mobile and Ohio Railroad.

We are gratified to learn, from our southwestern exchanges, that there hardly remains a doubt now that the great project of constructing a railway from the head of the Mobile Bay to the first high land on the Mississippi River below the mouth of the Ohio, will be carried through, without any unusual delay. Four parties, it is stated, are now engaged in the preliminary survey of the route. The first division commenced operations at Mobile, the southern terminus. The second, a hundred miles north on the route. The third, started from Jacksonville, one hundred miles yet higher up the route, and on the Tennessee River, to meet the second division. The fourth, started from Columbus, Ky., about fifteen miles below Cairo, to continue to Jacksonville.

The stock is not yet all taken, but the people of Mobile, and along the line on the road, intend to secure enough among themselves to grade the route and lay the timbers—reasoning correctly, if they do this, that the capitalists of the east will furnish the means of building the superstructure.

The Mobile and Ohio Railroad will probably be the first section completed, in that great commercial channel whose iron track is to stretch from the Ohio River at Cincinnati, via St. Louis, to the waters of the Gulf of Mobile.

Progress of the Western and Atlantic Railroad.

The Chattanooga Gazette of the 26th ult. says:—Notwithstanding the very unfavorable weather for the last month or two, we are pleased to witness and to learn that the enterprising Contractors on the W. and A. Rail Road are pushing forward the work with an energy and perseverance, that gives an earnest that it will be completed by the next fall. By a gentleman just in from the Tunnel, we are informed that they have penetrated the ridge on the south side about 320 feet, and the north side about 200 feet. This, considering the unfavorable season, and the difficulty in obtaining suitable hands, and getting under head way, is pretty fair work. There remains nearly 900 feet to be tunneled. The opening of good weather, and the more complete arrangements for the work, will enable the Contractors to push it forward more rapidly, and we are led to believe that daylight will be seen through it by the next Independence day, or in a few weeks after. The Tunnel is the main obstacle in the way of running the cars to Chattanooga by the 1st of October. On all the rest of the unfinished part of the road, the work will be easily finished in time.

The Lexington and Frankfort, Ky., R. R. is expected to be completed by the 1st of September next.

The Louisa Railroad extension, of 27 miles, terminating at the Dock in Richmond, will probably be finished by the end of the year, as the grading is very light, and there is a large force at work on the line.

Connecticut River Railroad.

This road extends from Springfield, Mass., to the line of Vermont, 52 miles, and connects with the Vermont and Massachusetts Railroad, a short distance south of the State Line. From this junction the Vermont and Massachusetts Road extends to Brattleboro.

It only requires 22½ miles more of railway between Brattleboro and Bellows Falls to complete the line from Wells River, Vt., to the city of New York.

New York to New Haven.....	76 miles.
New Haven to Springfield.....	62
Springfield to Brattleboro.....	63
Brattleboro to Bellows Falls.....	22½
Bellows Falls to Windsor.....	26
Windsor to White River.....	17
White River to Wells River.....	39½

305 miles.

If the New Yorkers should look at this matter as the Bostonians would do under such circumstances, the cars would be running between Wells River and Canal street, in this city, before the end of October.

In another column some account will be found of the doings at Brattleboro, in relation to this subject, on the 20th ult.

The annual report of the Connecticut River Railroad states the cost at \$1,588,874. The receipts of the year are as follows: From passengers \$88,637; freight \$71,807; mails, express, &c., \$4,798—total \$165,242; being an excess of \$41,290 over the corresponding year. The expenditures are \$79,955, of which \$53,558 have been laid out on new engines and cars; leaving a surplus of \$86,797 to be divided, after paying interest to the amount of \$10,620, and reserving \$39,884 for other contingencies, two dividends of 4 per cent. each.

Railways in Canada.

A numerous and highly influential meeting of the friends of Railway enterprise, took place at Donegana's Hotel on Friday evening, the Hon. George Moffatt in the chair. As the subject is one of very great importance to the welfare and advancement of the Province, we propose to give a somewhat full report of what was said at that meeting. Want of time and space compels us, however, to postpone the report until our next issue; in the meantime we give the resolutions—together with the names of the movers and seconders—which were adopted with the utmost unanimity. The following are the resolutions:—

Proposed by G. F. Tiffany, Esq., seconded by Mr. Galt.

Resolved, 1.—That no country can properly develop its various resources, or keep pace with the progress of the age, without the aid of Railways, and that to Canada in particular, on account of her peculiar geographical position and climate, which closes the communications by water for nearly one-half of the year, this description of internal improvement is become absolutely necessary.

Proposed by the Hon. Mr. Ferrier, seconded by Mr. Sheriff Boston.

Resolved, 2.—That the example afforded by those countries in which railways have been most extensively constructed, demonstrates the wisdom of adopting, at the commencement, a general plan or system, by laying down Main Trunks with suitable branches, and extending to such system Legislative aid and protection, until the whole shall be completed; and that, although this Province is far behind many other countries, in the actual construction of this description of internal improvement, yet, by

availing ourselves of the experience to be derived from them in laying down such a system, which was overlooked, and is now regretted by them, this country may, in the end, find no cause of regret for the delay.

Proposed by Mr. Sheriff Coffin, seconded by the Hon. Adam Ferrie.

Resolved, 3.—That the general surface of the Province, from Quebec to its Western boundary, presents a most favorable line for such main trunk of railway, being for the most part a gentle inclined plain, unobstructed by any mountain or great elevation to be overcome, and that this main trunk may be so laid down as not to disturb the present business centres throughout the country, or to interfere with its expensive and important canals and water communications, but will be of the highest advantage to them, and that by means of proper branches, such as that part of the St. Lawrence and Atlantic Railroad from Melbourne to the Province Line, and the line from the City of Hamilton to the Suspension Bridge over the Niagara River, full benefit may be derived from the Railways in the United States in our commerce with that country and with the Atlantic seaports at all seasons of the year.

Proposed by Mr. G. E. Cartier, seconded by J. Egan, Esq., M. P. P.

Resolved, 4.—That the necessary funds which will be required to carry out and realize the foregoing plan cannot in all probability be provided without Legislative aid for many years, and in consideration of its importance and necessity to the best interests of the country it is entitled to such aid. That this meeting desire the matter to be brought under the notice of the Legislature, and as it is proper in so doing to suggest some plan by which in the opinion of this meeting the action of the Legislature may be exercised with safety to the credit of the Province, we respectfully beg leave to recommend the following, viz:—

That a Main or Trunk Line of Railway, with its necessary branches, leading from Quebec to the Western boundary of the Province be adopted and divided into suitable sections, to be taken up by separate companies; that no other line be granted, which will in any degree interfere with any portion of such line and branches, until the whole shall be completed, and as soon as any one of the companies owning any section of such line shall have called in and expended in the construction of their work, the one-third of the estimate expense of the same, such company shall be entitled to claim the credit of the Province, in order to raise the other two-thirds by loan, of the credit so advanced or furnished, together with the interest thereon; and for further security the estimates and expenditure may be made to the satisfaction of competent Engineers appointed by the Government.

Moved by P. E. Leclerc, Esq., seconded by John Torrance, Esq.

Resolved.—That the following gentlemen be, and they are hereby, appointed a Committee to carry out the foregoing resolutions, five of whom shall be a quorum:—The Hon. A. N. Morin, M. P. P., Sir Allan MacNab, M. P. P., Hon. James Ferrier, W. F. Coffin, Esq., P. E. Leclerc, Esq., H. Sherwood, Esq., M. P. P., J. Egan, Esq., M. P. P., George Desbarats, Esq., Absalom Shade, Esq., G. S. Tiffany, Esq., P. J. O. Chaveau, Esq., M. P. P., Hon. J. A. McDonald, — Cowan, Esq., of Waterloo, and A. T. Galt, Esq.

We have much pleasure in giving a place in our columns to the proceedings of the Railway Meeting held at Donegana's Hotel, on Friday evening, which was numerously attended, not only by some of the most respectable and influential citizens of Montreal, but by many Members of both Houses of the Legislature, some of whom, we perceived, took an active part in the proceedings, thus showing that this most necessary improvement is gaining for itself an influence, and with that portion of the community whose duty it is to lead the impulses of the country in the general improvement necessary to its prosperity. We trust, ere long, that active legislation may be the fruit of this growing interest, and that railway communications may be established throughout the length and breadth of the Province, as fast as prudence may dictate the investment of the necessary capital; and we see no reason for doubting that a trunk line, as contemplated, would

pay more than legal interest, from its sections, as fast as completed.

Having said thus much upon the scheme generally, we may be permitted to remark, that the St. Lawrence and Atlantic Railroad appears to us eminently calculated to lead the van in the development of this or any other railway scheme which may be laid before the country, embracing, as it does, within itself, more capabilities of public utility through its position, than can be afforded by any other line of road in the Province.

It is the shortest line between the St. Lawrence and the Atlantic ocean, and will afford the means of cheap conveyance, open at all seasons of the year, for the produce sent by our Provincial canals to the sea; and without its aid these magnificent works must be imperfect, the climate closing, as it does, the natural access by the river for nearly one-half of the year. It has further the advantage of affording to the city of Quebec an access to the sea, through Melbourne, at nearly the same distance as Montreal, and opens to the two sections of the Province east and west of this city, the means of reaching the markets of the United States at their leading Capitals, or through them of Great Britain and the world at large, at all seasons; and it, no doubt, will form a portion of the Halifax route for seventy miles, should that great enterprise be consummated by the joint efforts of these Colonies.

A road which thus unites within itself the power of subserving so many public interests, and which must be a profitable investment, ought not to be permitted to languish from want of the aid of an enlightened Legislature, particularly when private enterprise has placed its works in a position to offer good security; and it is due to the perseverance, industry, and skill evinced in its execution, that it be supported and sustained.—*Montreal Pilot.*

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

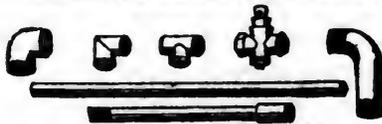
James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE
Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

Direct Action Engines FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES, of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1½ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Norwich Car Factory,
NORWICH, CONNECTICUT.

At the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of

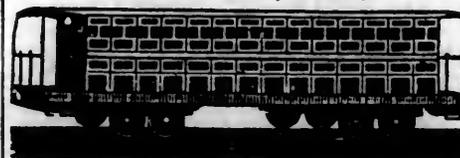
RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
Orders executed with promptness and despatch.

Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,

Will meet with immediate attention. 1y8

CAR MANUFACTORY,
CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848. 44tf

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —

SNOW-PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
SPRINGFIELD, MASS. 1y48

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF
Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SCHENECTADY LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

The undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.

February 24, 1849.

Mattewan Machine Works.

The Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

MANUFACTURERS OF IRON AND STEEL.

RAILROAD IRON.

THE NEW JERSEY IRON CO'S WORKS AT
Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street.

New York, October 25, 1848.

Pig and Bloom Iron.

The Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartschrorie.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.**
No. 4 So. Front St., Philadelphia.

LOCOMOTIVE FOR SALE.

(NOW RUNNING.)

A Good Locomotive Engine and Tender in good running order, for sale low. Address

E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.

February 24, 1849.

4t8

Railroad Iron.

1000 Tons T Rails, weighing about 60 lbs. to the yard, of the latest and most improved pattern, for sale by BOORMAN, JOHNSTON & CO., January 20, 1849. 6w

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to COOPER & HEWITT, Agents, 17 Burling Slip, New York.

October 30, 1848.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President Mount Savage Iron Works, Troy, N. Y. ERASTUS CORNING, Albany. WARREN DELANO, Jr., N. Y. JOHN M. FORBES, Boston. ENOCH PRATT, Baltimore, Md.

November 6, 1848.

RAILROAD IRON.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO., 22 South William street, New York.

February 3, 1848.

RAILROAD IRON.

3000 Tons, about 60 lbs. per lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by DAVIS, BROOKS & CO., 68 Broad street.

New York, September 16, 1848.

Also on hand—1000 tons best quality Rails.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by A. & G. RALSTON, 4 South Front St., Philadelphia.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory, PARK WORKS, SHEFFIELD, Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps. Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc., etc. All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS, 91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia. Alex'r Fullerton & Co., 119 Milk street, Boston. Stickney & Beatty, South Charles street, Baltimore. May 6, 1848.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed. Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand. All orders addressed to the Agent at the Factory will receive immediate attention. P. A. BURDEN, Agent, Troy Iron and Nail Factory, Troy, N. Y.

LAP-WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS, Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- Charles Cook,
- Nelson J. Beach,
- Jacob Hinds,
- Willard Smith, Esq.,
- Messrs. Stone & Harris,
- Mr. Wm. Howe,
- Mr. S. Whipple,
- Canal Commissioners of the State of New York.
- Engineer of the Bridges for the Albany Basin.
- Railroad Bridge Builders, Springfield, Mass.
- Engineer & Bridge Builder, Utica, N. Y.

January 1, 1849.

FRENCH & BAIRD'S Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine, by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't no. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

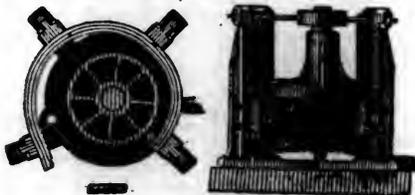
FRENCH & BAIRD.

Philadelphia, Pa., April 5, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

ALSO,

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by

ALLEN & NEEDLES,

No. 29 and 28 S. Wharves near Chestnut St., Philadelphia.

February 24, 1849.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

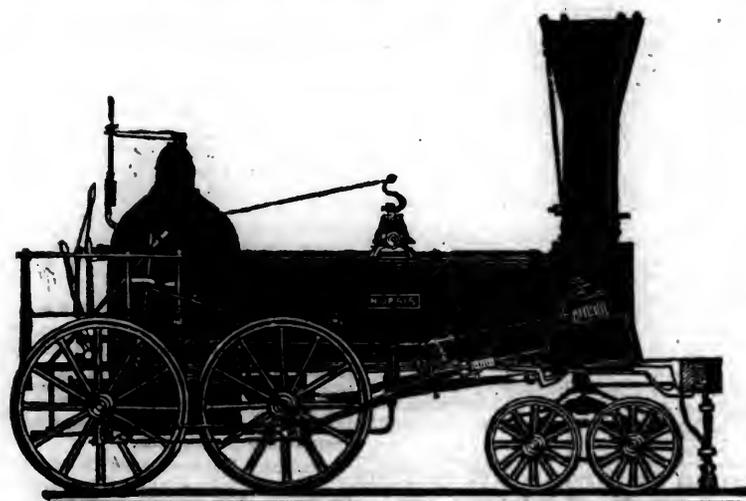
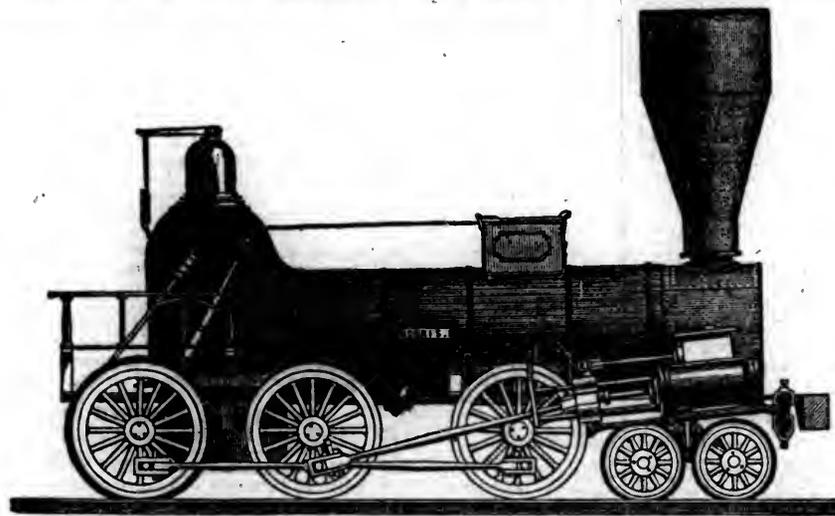
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

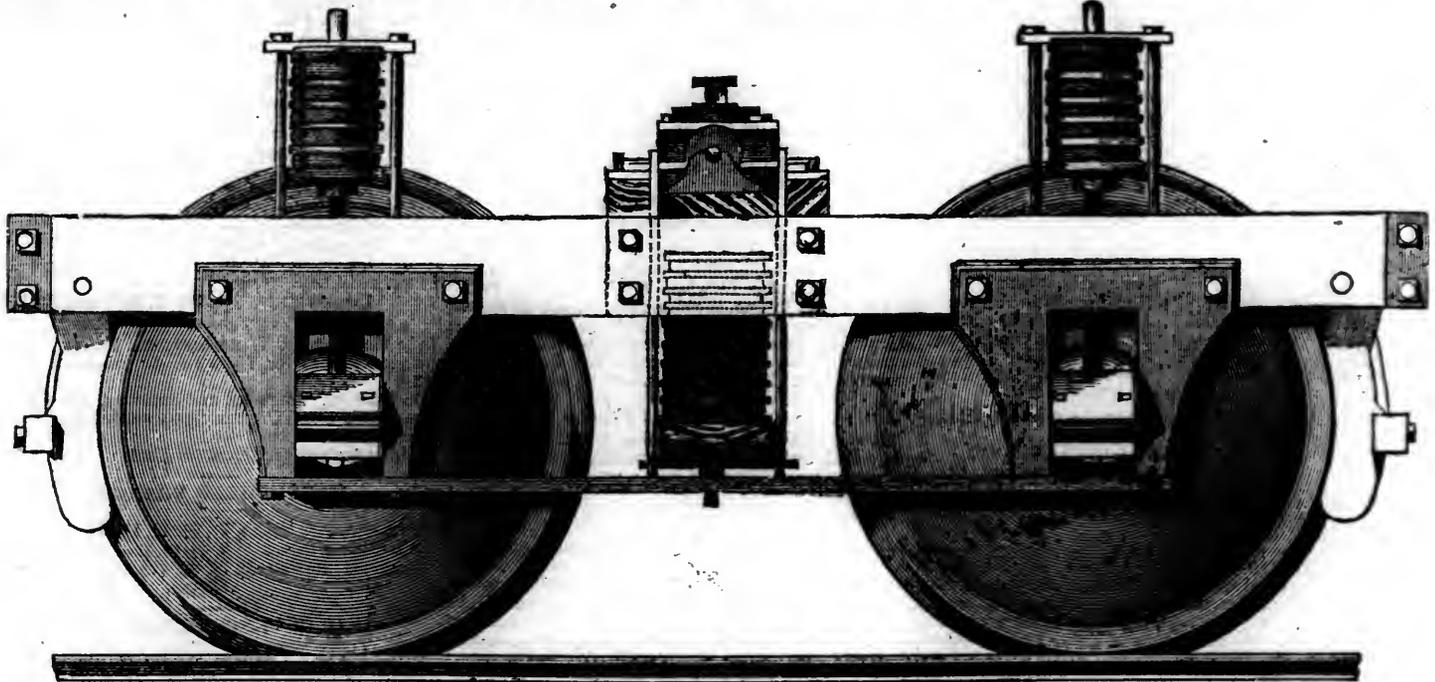
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY.

They have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,

Office 99 State-street.

Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with

F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt, B. & W. R. R.

June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,

Supt. Car Building B. & W. R. R.

Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanised India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.

BRADLEY & RICE, Car Builders.

Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,

142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street, below Walnut,
1510 near Third, Philadelphia.

MASONS AND STONECUTTERS WANT-ED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred: and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good Machinery men can also find employment in the Navy Yard. Apply in person, to
JAMES HERRON,
Civil Engineer, Navy Yard.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WRIGHTMAN,** manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Eric. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.

January 1st, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 8.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morisiana and Harlem at 7.20, 8.50, 10 am., 12 m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20 am., 3.18 pm.

Underhill's Road at 8.10 am., 4.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.

Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morisiana and Harlem at 7.20, 8.10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broom st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morisiana and Harlem at 8 o'clock am. di

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leaves Baltimore at 9 am. and 9½ pm.
Arrives at 9 am. and 6½ pm.
Leaves York at 5 am. and 3 pm.
Arrives at 12½ pm. & 8 pm.
Leaves York for Columbia at 1½ pm. & 8 am.
Leaves Columbia for York at 8 am. & 2 pm.

Fare to York \$1 50
" Wrightsville 2 00
" Columbia 2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg \$9

Or via Lancaster by railroad 10

Through tickets to Harrisburg or Gettysburg 3

In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5½ pm.

Returning, leaves Owing's Mills at 7 am.

D. C. H. BORDLER, Sup't.
Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Gingseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 75
	Molasses per hoghead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	0 65
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, Sup't of Transportation.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is no in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.

Returning, leaves Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½, pm., Train from Cincinnati, and 2½, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia \$1 90
Do do Springfield 2 50
Do do Sandusky City 6 50
Do do Buffalo 10 00
Do do Columbus 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick Harper's Ferry, Martinsburg and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—

Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—

Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.—1848.

Winter Arrangement. December 4th.—Fare \$4.

Leave Philadelphia 8 am., and 4 pm.

Leave Baltimore 9 am., and 8 pm.

Sunday—Philadelphia only at 4 pm.

Baltimore only at 8 pm.

Trains stop at way stations. A second class car run with morning line only.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Connecting lines to Charleston leave Philadelphia, at 4 pm. daily—leave Baltimore at 11½ pm. daily.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$20.

Wheeling, 13.

All through tickets only sold at office Philad. Wilmington Accommodation. Leaves Philadelphia at 1½ and 4 pm. Leaves Wilmington at 8 am., and 4 pm. N.B.—Extra baggage charged for.

J. R. TRIMBLE, Gen. Supt.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the *Arch*, *Suspension* and *Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

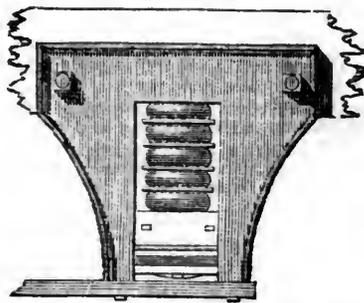
THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on *certain conditions*, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, **74 BROADWAY, up stairs**, or of **W. RIDER & BROTHERS, 58 Liberty Street**, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

This spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.
Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester

ter Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.
"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevelt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing-Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

	Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,		92	\$3.50	and \$3.00
" " Reading		58	2.25	and 1.90
" " Pottsville		34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50 cts. per hundred	
On measurement goods	13 cts. per cubic ft.	
On brls. wet (except molasses and oil)	1 50 per barrel.	
On brls. dry (except lime)	90 cts. per barrel.	
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts. per hundred	
Oh hds. and pipes of liquor, not over 120 gallons	\$5 00 per hhd.	
On molasses and oil	\$6 00 per hhd.	

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculmbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily - \$26 50
Fare through from Charleston to Huntsville, Decatur and Tusculmbia - 22 00
The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE SUBSCRIBERS ARE PREPARED TO execute orders at their Phœnix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO., Philadelphia.
ROBERT NICHOLS, Agent,
No. 79 Water St., New York.

AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO.

NOS. 9 & 10 PRIME'S BUILDINGS,

(THIRD FLOOR,)

54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum	\$125 00
One column " "	50 00
One square " "	15 00
One page per month	20 00
One column " "	8 00
One square " "	2 50
One page, single insertion	8 00
One column " "	3 00
One square " "	1 00
Professional notices per annum	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,

HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 10.]

SATURDAY, MARCH 10, 1849.

[WHOLE No. 673, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, March 10, 1849.

Our friends who have not already forwarded the amount of their subscription for the current year, will please remit the same to us by mail.

To Engineers and Contractors.

A suggestion was thrown out in the Journal of the 13th of January last, under advice of a valued friend, as to the expediency of publishing a list of engineers and contractors, with the public works upon which they are engaged, charging a sum per annum for each name. This would give the members of the profession an opportunity to know where their brethren are engaged, and their address; also where an engineer can find an old well-known contractor, should he be in want of a good man to do some important piece of work; and where, too, good assistants could be found. Since then, several friends have added their testimony in favor of the plan. We have commenced the list in the present number of the Journal.

There is no doubt that great convenience to some, and profit to others, will result from the constant publication of such a list of engineers and contractors, on the different lines of railroad, and especially to those out of, but desiring, employment. We therefore insert the names of engineers, contractors, draughtsmen and others in responsible positions on railroads, and in machine shops, for two

dollars per annum to subscribers, and for five dollars to all parties not taking the Journal.

In a few instances we have taken the liberty of inserting the names of friends who have been for years subscribers to the paper, and from whom we have received no reply to the suggestion. Will our friends please examine the list, and express to us their wishes should they desire any change in it.

Railway Progress.

Continued from page 129.

In extending our observations upon Railroads in progress, in the southern and western States, we find more difficulty in satisfying our minds from the fact that the larger number of undertakings are of comparatively recent date. The history and the experience of the past show that the most sanguine minds of this day are hardly aware of the difficulties to be encountered upon a long line, before it can reach its final completion. There is a strong determination on the minds of the capitalists and business men of the country against all speculative railway schemes, and are increasing a disposition to withhold support from new projects till the amount of capital necessary to their completion is in some way made certain.

The experience of the Reading railroad, and some other similar enterprises, show that the safety of the capitalist is found in the fact, that the cost of the road is represented by the share capital. Indebtedness of any sort is found to be a hindrance to the success of every enterprise, however well the interest is secured by a surplus of receipts over expenses. Every effort should therefore be made to secure the capital stock by the sale of shares, rather than resort to expedients by the hiring of money.

The long lines of projected roads at the south and west must, to ensure their success, be urged forward only so far and fast as the share capital can be called in.

Commencing at favorable terminating points, the roads should be brought into use by short stages and finished as they progress. A steady perseverance in this line of policy will bring rapidly into use all the spare capital of the country, and the returning dividends will soon give the necessary confidence to the capitalists of other portions of the Union; and in a very few years the Mississippi valley will be tapped at several points, and its business distributed to the several Atlantic cities, now eagerly struggling for this great prize.

Maryland is destined ere long to realise the great object of her ambition, by the completion of the Baltimore and Ohio railroad to the navigable waters of the Ohio river, but we do not hear that any further distance will be opened the present year.

The York and Cumberland railroad seems likely to be soon entered upon, and though within the limits of the State of Pennsylvania, is an enterprise of the city of Baltimore; and the distance from York to Harrisburg, — miles, has only to be finished to give to Baltimore a share in the trade arriving through the Pennsylvania canals, or over her great Central railroad to Harrisburg.

Virginia has only to adopt the line of policy indicated in the admirable letter of Peter Clark, Esq., published in this Journal under date of January 6, 1849, to become one of the greatest, if not the greatest State of the whole Union. The enterprise of Maryland, of New York, or of Massachusetts, would have placed the city of Norfolk along side of Baltimore or Boston.

A railway from Norfolk to the Ohio river, on the most favorable route, would command more business than any route yet opened, or attempted by any Atlantic city to secure the trade of the west. We cannot learn, however, that there is any ground to expect any more railway openings in Virginia during the present year, though the Louisa railroad seems likely to be put in progress, and the Lynchburg and Tennessee railroad is reported to be under contract, as is also the Richmond and Danville railroad, as will be seen by their advertisement in this Journal.

North Carolina.—The Wilmington (N. C.) and Manchester (S. C.) railroad, 160 miles in length, 100 of which are in the latter State, is just commenced upon. A small portion of the distance in South Carolina was put under contract in December last. In another portion of this day's paper, in "Railway Connections," we allude to this route as the grand link that is now wanted to fill up the line between Maine and New Orleans.

The North Carolina Central railroad, alluded to in our last issue, is soon to be put in progress.

The Charlotte and South Carolina railroad, from Charlotte (N. C.) to Camden, is 110 miles in length — runs about 12 miles in North Carolina. About 90 miles from Camden is under contract, in the State of South Carolina.

The Greenville and Columbia railroad, 160 miles in length, is now in progress — and 126 miles are

under contract. This line will be eventually extended to the Tennessee river.

South Carolina is extending her great trunk lines northerly, in the direction of Wilmington, Fayetteville and Charlotte in North Carolina, and southwest into Georgia and Tennessee. The city of Charleston is now exhibiting a degree of energy and forecast unexampled by any other city in the Union, and seems in a fair way of becoming a rival of New Orleans for the trade of the upper portions of the Mississippi valley.

To be continued.

Arrival of the America.

This steamer reached Halifax March 8, and her news was immediately forwarded by express and telegraph. It is very favorable, and important in a commercial point of view.

There continues a good demand for American security. U. S. Six per Cents. continue in demand on the continent, and orders for the stock have been executed at 106½. Money continues to get more abundant, and the rate of interest rules low. The English funds have receded. Consols in London on the 23d, 92½ to 93½.

Cotton.—There has been a further advance in cotton, with immense sale, 270,065 bags having changed hands within the last four weeks. The quotations are—4½d. Uplands, 4½d. Mobile, 5d. New Orleans.

The Grain Market.—The Grain market is dull, with the following quotations:—American and Canadian white wheat, 7s. 2d. a 7s. 4d.; red do., 6s. 6d. a 6s. 8d. Flour—Western canal and Richmond, 26s. a 26s. 6d.; Philadelphia and Baltimore, 26s. 6d. a 29s.; New Orleans and Ohio, 26s. a 27s.; Canadian, 25s. 6d. a 26s. 6d.; do., sour, 25s. a 26s.

The Iron Trade, Feb. 24.—With regard to iron, the demand continues large, and prices improve.—We quote present prices in Liverpool:—Merchant bar, £6 per ton; best bar, £8; hoops, £8 10s.; sheets, £9; Scotch pig, nett cash, £8 5s.

The Great Western Railway Company of Illinois.

We have before us the Bill which has recently passed the Legislature of Illinois, confirming and amending the Charter of the Great Western Railway Company. The bill authorizes the completion of the road commenced by that State, running from Cairo to the terminus of the Illinois and Michigan Canal, at Peru, and from thence to Galena and to Chicago. This charter is the most liberal and peculiar in its character. Among the important features are, that "The right of way which the State may have obtained, together with all the work and surveying done at the expense of the State, and all materials connected with said road, (including an expenditure of over one million of dollars), is granted to said Company; and the Governor of the State is required to hold in trust, for the use and benefit of said railroad, whatever lands may be donated or otherwise secured to the State of Illinois by the general government, to aid in the completion of the road from Cairo to Chicago," as this charter is given to the President and Directors of the Cairo City Company, and their successors in office. No shares are to be issued for the creation of capital therefrom. The bill provides that—

The capital or funds which may be required and are necessary from time to time for the objects authorized by this act, shall be obtained by the sale of bonds or obligations, to be issued in the name of and upon the sole security of the whole property, estate, and income of the Great Western Railway Company, and which indebtedness may be made payable at such times and places, and with such rates of interest, and in such form and manner, as the directors of the said company for the time being shall deem most proper and expedient: *Provided*, That no obligations issued by the company for loans shall be considered or deemed a lien

upon or secured by the income or property of the company, unless such indebtedness shall be signed by the president and treasurer of the company, and its corporate seal affixed thereto, and countersigned by the president and treasurer of the Cairo City and Canal Company; and also certified thereon that it is recorded in the office of register of deeds for Alexander county, Illinois; the number, by whom signed, when and where due, the rate of interest, date and amount of all such indebtedness, shall be entered in a separate record book kept for that purpose; and upon payment by the company of obligations thus signed, sealed, and recorded, they shall be returned to the said register's office and cancelled, which shall be evidence of the payment thereof.

As security for the payment of principal and interest of all bonds and obligations issued conformably to the preceding section, the whole net income of all rents and tolls derivable from the road, works, buildings, lands, and other property of the company, shall be, and are hereby declared to be, specially held pledged, and irrevocably secured to the holders of the said bonds or obligations of the company, against the claim or claims of all other parties, until the principal and interest of all such indebtedness shall be fully paid, according to the terms of the loan; and the surplus income of the company, after providing for the annual interest upon these loans, shall be invested as a sinking fund in the Government stock of the United States, or it may be applied to the liquidation of the indebtedness of the company.

Whenever the said company shall have paid and discharged all its obligations and indebtedness, assumed or entered into under the provisions of this act, that then and forever thereafter the said company shall be held to pay to the treasurer of the State of Illinois, for the use of the State, one-fourth of the whole net income annually received from the road herein authorized to be made: *Provided*, That no Legislature shall, at any time hereafter, so reduce the tolls as to produce less than twelve per cent. nett per annum upon the cost of said road, without the consent of said company.

Thus leaving three-fourths of the nett annual income of the road to be expended (after the cost of same, as above provided, shall have been paid) to the protection and improvement of the "Cairo City Property."

The great value and importance of this road to Illinois, and the country generally, is ably set forth in a memorial from the citizens of that State to Congress.

From the mouth of the Ohio to the Illinois river the road is to run nearly in the centre of the State, and through a region distant from the Mississippi and Illinois rivers on the west, and the Ohio and Wabash Rivers on the east. A new outlet to market will thus be opened to an extensive agricultural region, now filling up with a hardy and industrious population. Moreover, the navigation of the rivers, above the junction of the Ohio and Mississippi, is more or less obstructed every year by low water and by ice, in consequence of which the upper country is shut out during a portion of the summer and winter from the Southern markets; whereas this road, commencing at the confluence of the Ohio and Mississippi rivers, where they are never frozen over, will afford to an extensive range of country uninterrupted access to perpetual steamboat navigation. The scope of its usefulness in that respect will be greatly enlarged by the extension of the road to the mineral region in the northern part of the State and in Wisconsin, and by finishing the cross roads already partially constructed from the Illinois river, through Jacksonville, Springfield, Decatur, and Danville, to connect with the Wabash and Erie Canal in the valley of the Wabash. In this connection it will afford, while the navigation of the lakes is obstructed, a choice of markets to almost the entire State of Illinois, the way being open, as well by the Illinois and Michigan canal and upper lakes, as by the Wabash and Erie, the New York canals, the Hudson river, and the Western railway, to New York and Boston, and the numerous intermediate cities and towns.

In the same degree will this improvement facilitate the importation of foreign and domestic goods into the interior of Illinois from New Orleans on the south, and New York and Boston on the east—thus reducing the prices to the people, while it increases their means of payment.

To the travel as well as to the trade of the country, this railroad is destined to be of the utmost consequence. To its termination, at the mouth of the Ohio, the navigation from New Orleans, in the largest and most commodious steamboats, is always open. On the north, it is destined not only to reach the territory of Wisconsin, but, connecting with the Illinois and Michigan canal on the one hand, and the Wabash and Erie canal on the other, it will form, with existing improvements, a connected route for the travel, in steamboats, railroad cars and canal boats, between New Orleans, New York, and Boston, and the immediate points with which they are connected by similar improvements. From desire of change, many travellers will at all times take this route from and to the mouth of the Ohio; and when the navigation of the rivers above the mouth becomes uncertain, from low water in summer, all the through-going as well as the local travel will make this route, as will also the local travel when the rivers are obstructed by ice. Already does a large portion of the travel from the Southwestern section of the Union to the cities of the watering places of the North go by way of the lakes; and the completion of this improvement, increasing its comfort and lessening the time occupied, will greatly increase the proportion of those who, for comfort, health, and pleasure, will prefer a northern route. Nor is the time distant when those who seek relief from the discomforts and diseases of the summer in the Southwest will divide their attention between the existing watering places of New York and Virginia, and new establishments to spring up on the waters of the great lakes and the upper Mississippi, to which this road will at the proper season, afford the only direct, certain, and comfortable means of access. In fine, although it will not prevent trade and travel upon the rivers at all convenient seasons, it will form the only connecting link in the North for *uninterrupted* trade and travel between vast regions, embracing half the present population of our Republic. By the construction of branch roads to Alton, St. Louis, and other points on the Mississippi, its advantages will be still further extended; and should Michigan push her railroads across the isthmus and around the south end of Lake Michigan, a connection will undoubtedly be formed with those improvements, to the mutual advantages of both parties.

A glance at the map, and the route of the road running through the centre of the State nearly its whole length from south to north, must convince even the unreasoning of its vast importance to the people as a local improvement. It may be compared to a new river opened through the State, superior to the Mississippi and Illinois, or the Ohio and Wabash, because always navigable, and free from the malaria, so fatal to human life, which their waters sometimes engender. It will give to a long range of high prairie country more than the advantages of river bottom lands, without their unhealthiness. It will immediately add to the value of real property within reach of the road to many times the amount of its cost, and, in the permanent market afforded for the products of the soil, open an inexhaustible mine of wealth to the citizens and the State. The whole amount of what was public lands in the State of Illinois, according to the report of the Commissioners of the General Land Office, exceeds thirty-five millions of acres, and of them there remains unsold at this time more than fifteen millions of acres. These lands in general are among the best farming lands in the world, and they remain vacant only because of their distance from navigable waters, and their being, in a measure, destitute of fuel and timber. The railroad will at the same time open a market to them, and bring them timber for building and fencing from the forests on the lower part of the line, and coal for fuel from the inexhaustible beds in the same region. The effect will be not only to bring these lands into market, and promote their settlement, but to triplicate or quadruple the value both of the located and those now unlocated, adding immensely to the wealth of the State, and to her means of raising a

revenue. And the same effect will be produced upon the routes of all branch roads which may be constructed to the right and left, whether to Alton, St. Louis, and other points on the Mississippi, or to Shawneetown, Terre Haute, Covington, or other points on the Ohio and the Wabash.

The commanding position of the terminus of this Railroad at Cairo, and the certainty of its final completion, has already induced the formation of other companies, to connect with the mouth of the Ohio, viz.: one from Charleston, via Nashville; another from Mobile directly. It is also contemplated to make a road from Norfolk, Virginia, to Knoxville, thence to unite with the Charleston and Nashville Road; the great object of this line of road being to open the most direct, expeditious, and cheap, inland communication with the valley of the Mississippi and the Western States.

We understand that arrangements are making to place the management of the Company under such organization as will both secure the confidence of the public, and thereby the capital necessary for the immediate commencement, and the rapid progress of this great work.

In conclusion the charter provides that—

All lands that may come into the possession of the said company, whether by donation or purchase, and which are not required for the use, security, or construction of the road herein authorised to be made, shall be sold by the company within five years from and after the completion of said road, otherwise all lands not sold shall revert to and become vested in the State of Illinois: *Provided*, That, until said lands are sold, they shall be, and are hereby, declared pledged, held, mortgaged, as security for the payment of the bonds and obligations of the company, authorised to be issued under and in conformity with the provisions of this act; and the proceeds of said lands, whenever sold, shall be wholly applied to the payment of the indebtedness of the said company, and for no other purpose whatever.

The Iron Manufacture:

British and American, in 1849.

On considering the prospects of the iron manufacture, as depending upon the future range of prices of iron in Great Britain, and particularly as dependent upon the prices in Scotland, which is the country now so directly the scene of competition with the iron manufacture in the United States, we are of opinion that certain very decisive views may be obtained from the annual statements of the business of the river Clyde, which documents for the year 1848, have recently been received in the United States.

From these statements it appears that the total quantity of iron manufactured in Scotland, amounted to no less than 600,000 tons in the year 1848.—This shows an increase of 60,000 over the manufacture of 1817, and shows, also, the remarkable circumstance that the manufacture, which was only in infancy within the last ten years, in Scotland, has risen from 44,000 tons in the year 1838, to 600,000 tons in the late year of 1848. Thus is one quarter of all the iron made in the world, now seem to be manufactured in Scotland, in the short period which has passed since the discovery of the black band iron ore, with the simultaneous invention and the application of the hot blast.

We next find in these tables of the production of iron in Scotland, that the exports of pig iron to the United States have been 90,235 tons for the year 1848. This is an increase of 45,242 tons on the quantity exported to this market in 1847, and of 76,337 tons on the quantity for 1846, in which year only 13,918 tons were received from the Clyde.

During the same period it is estimated that of bar iron considerably above 100,000 tons were received from Wales—the railway iron alone, having been 67,000 tons in the year 1848. Altogether about 25 per cent. of all the iron consumed in the United States, is thus shown to have been furnished by the iron manufacturers of the British Islands—nor is it a subject of surprise that smelting furnaces, rolling mills, and foundries should have been closing in

rapid succession, in all parts of the United States, throughout the whole of the year 1848.

For, it is not asserted by those conversant with the iron interests of Pennsylvania, that any power of competition exists here, against the prices of iron arriving from Scotland and Wales, and it becomes an inquiry of vital importance, in how far this importation of British iron may be destined to increase or to diminish in the course of the year 1849.

Many persons have been expressing the opinion that the arrivals of Scotch iron must soon cease, by reason of the known and undoubted loss which has resulted from its manufacture at the prices of the year 1848. The average price in the Clyde has been £2 2s. 4d. per ton, and this price is 7s. 10d. sterling below the known cost of production of iron at even the best situated works in Scotland, where £2 10s. is the lowest price at which mixed numbers can be sold in the Clyde. But notwithstanding this loss of capital on the operations of the year in Scotland, there are reasons for supposing that the manufacture of iron will not be discontinued from that cause—but on the other hand, that the quantity to arrive in the American markets, may be even greater in the present than the preceding year.

For, the iron manufactured on the Clyde is almost all exported to foreign countries, only the comparatively small quantity of 30,000 tons having been manufactured into bars in Scotland in any one year. The larger portion of this iron is consumed in the manufacturing districts of England, or is sent to France, Germany, and other countries of Europe, or to the East Indies and the South American States. The increase of demand in these markets is therefore requisite to the cessation of the forced exportations to the markets of the U. S.

But the state of business in the manufacturing districts of England, it is to be apprehended, has revived in only a slight, and probably a merely transient degree, so far as the latest accounts enable a judgment to be formed of the state of affairs in the European States. Increased confidence appears to have prevailed in the London Money Market, and a stimulus had been communicated to the general manufacturing system of Great Britain—but new revolutionary movements appear to be probable in Paris, and a renewal of depression of business in England, would almost inevitably follow a renewal of political troubles in France. The rise in the prices of iron, which is reported by the Europa steamship, amounts to but little more than the advance which has been reported in the months of December and January, and which has never failed to be again lost, on the arrival of the next steamship, if bringing intelligence of a renewal of troubles of a political kind.

One of the principal causes of the depressed prices of iron in Great Britain is in the excessive increase of the manufacture during the last ten years. The premature extension of the English railway system, in the years 1835, '36, and '37, led to the erection of great numbers of furnaces and rolling mills on the calculation of inexhaustible supplies of iron being required for these undertakings, but this has proved to be a widely over-estimated calculation, and the leading railway lines of Great Britain being now generally completed, and the revolutionary state of Europe being unfavorable to these peaceful undertakings, the quantity of iron for railways has most extensively decreased, and the present depression in the manufacture is chiefly owing to that circumstance, in combination with the general shock to all credit and manufacturing operations, as following the European political troubles of the late year of 1848.

For, not only has the consumption of iron decreased in Great Britain, in the last year, but the exports from the Clyde alone, are given in these tables, as decreased by the large quantity of 64,000 tons to Germany and France alone. In the midst of this falling off in the European demand for iron, it is to be apprehended that the manufacturers will be compelled to continue to force the markets of the United States.

We now come to inquire into the circumstances under which the iron manufacturers of Scotland thus continue their operation under a large and decided loss of money in the year, and why the quantity made at this rate of loss of capital, has increased in the year 1848, and may be expected to continue to increase in the present year, notwithstanding

this disastrous state of the iron manufacture of the Clyde.

The leading difference between the manufacture of iron in Great Britain and in the United States, consists in the Royalties or the annual rent of mineral lands, which is a charge entering into the cost of production very much more heavily in Great Britain than in this comparatively new and more extensive region of iron ore, and of limestone and coal.

The royalties in South Wales enter at the rate of 8s. sterling into the cost of a ton of pig iron, in Staffordshire at the rate of 8s. 9d. per ton, and in Scotland, some of the leases of the land containing the black band iron ore, have been taken at the rate of fourteen guineas per acre, which is considerably higher than the royalties either in Staffordshire or Wales.

It therefore follows that an iron manufacturer in Scotland cannot suspend his operations, without the loss of the entire annual rental of his mineral lands, and which amounts to about twenty per cent. upon the whole value of the pig iron at the present rate of £2 2s. 4d. per ton. Then the delapidation of buildings, machinery, with the loss of interest upon the capital invested in the business, all are additional inducements to the continuation of furnaces in blast, and it is always considered better to be prepared for any immediate benefit to arise from a change of times.

But whilst the British iron manufacturer is under the disadvantage of high royalties for his minerals, he possesses the great counteracting advantages of labor at prices very far below the wages which prevail in the iron manufactures of the United States. Reduction of wages are made until workmen can only exist with strength sufficient to perform the labors of the day—on the unfortunate laborer the burthen never failing to fall in all fabled countries of the world, and as the wages of labor compose almost all the rest of the expenses of the iron manufacture, after the royalties are paid, it is in the low rate of wages that the advantage is so much greater to the manufacturer of iron in Great Britain than to his competitor here in the United States.

For, at this time the average wages in Great Britain are, for colliers, 11s. to 12s. sterling per week, exclusive of powder and candles; fillers 15 to 16s. per week; refiners, 20s.; puddlers, 20s.; assistant puddlers, 10 to 12s.; rollers, 18 to 20s.; founders, 16 to 17s. per week, and these are full rates, and for first rate men.

Such rates of wages are two-thirds below the rates which are, or ever have been, or ever can be practicable in any part of the United States. For in the British islands, the laborer is a prisoner in a small expanse of country, he cannot wander far from the place of his usual employment, and must submit to any wages which may be offered in times of depression of trade. But in Pennsylvania, the iron ore digger, or the collier, or the filler of the furnace, can cross over the Allegheny mountains, and find the wages of agricultural labor in the boundless regions of the Western States. To retain laborers at reduced wages will ever be found impossible in Pennsylvania, and wages will probably be two-thirds lower in Scotland, or in Staffordshire, or in Wales, than in the average of the United States.

The immediate consequences to be expected from the opposition of Scotland and Great Britain, generally, with its population of unpaid laborers, is, that Pennsylvania can have no real prospect of prosperity for its staple manufacture, so long as the state of prices remain without a wide alteration in Europe. The latest report from the iron districts of Scotland, is to the date of February 10th, which gives the reason of the late advance of prices, that "large orders for iron had been received from the United States," &c. Thus our own market is the means of superceding still further the home production of iron, and this process will undoubtedly go forward without any limitation to the importation of pig iron from Scotland, so far as circumstances now can be foreseen for a long period to come. The manufacturer of iron in Pennsylvania cannot forget that in Scotland there is furnace power for the production of 650,000 tons of pig iron in this year, and that the state of the European and other markets, renders too probable the arrival of the greater part of this British iron, in the already over flooded markets of the United States.

Connected with this important subject, we extract the following from the London Mining Journal of February 3, 1849;

* * * Next we find railway property, with the exception of a few lines, in a state approaching to bankruptcy, without traffic—without funds—and many of its shareholders already more than half ruined. In place of projecting new lines, funds cannot be found to complete the half of those begun. It is, therefore, very evident that there will not be much time, in session 1849, taken up with the consideration of bills for new lines. From these causes, combined with the general depression of trade, the iron founders and machine makers are all but idle—not a few of them entirely so: nor do they see any prospect of a speedy improvement. No one will deny that this is the *actual state of matters*—nor do we think it likely that even the most sanguine among the high-priced pig iron theorists will be courageous enough to attempt to draw a parallel between the prospects of the trade in the years 1844-5, and that of 1849, with any hope of success. Do the facts above stated justify any speculation in Scotch pig iron, or any advance on its present price of 48s. 6d. per ton? The following particulars may assist parties who have viewed the course of the market since Christmas last as natural, to answer the question with more satisfaction than they have at present the means of doing.

We have already stated the production and stock in 1844, we will now give that of 1848. The production was 600,000 tons, at a cost of 40s. to 45s. per ton, and the stock Dec. 31 not less than 110,000 tons; the latter has accumulated at this date to at least 130,000 tons, and will increase in the same ratio for the next two months, if not longer. By the end of June there is every probability the stock at Glasgow will amount to somewhere about 200,000 tons, in addition to which, be it remembered, a very large quantity is stored in England for sale. The following will be found, on the closest calculation, to be a very moderate view of approximate make, consumption, shipments, and stock, for 1849, viz.:

Stock 31st Dec., 1848. Tons..	110,000
Make in 1849.....	650,000—760,000
Shipments—United States, America, equal to 1848, (which was double 1847, the latter being triple 1846).....	90,000
All other foreign ports, say equal to 1848.....	72,000
Coastwise.....	227,000
Local consumption for all purposes.....	170,000—559,000
Leaving as stock, 31st Dec., 1849.....	201,000

These statements will bear investigation, and are calculated to serve as a caution to those who expect to make a fortune in the article at the present price, and prevent shipwreck on the sand which engulfed so many votaries in the speculation in Scotch pig iron in 1845-46.—*Philadelphia Commercial List*

SCIENTIFIC.

On the Formation of Coal.

The ash of coal contains no alkalies, but only silica, alumina, and the oxide of iron. This proves that the alkalies, such as potash, originally in the wood, must have been removed and carried off by water when the wood was in a liquified state.

The coal formation rests upon the old red sandstone; and, as the old red sandstone possesses the first fossil remains of animal life, so the coal formation presents us with the first fossil remains of vegetable life. Coal is therefore the first production, or the first series of vegetable formation, which were as primitive in their form, as we find the animals were in the first attempts of creative power in their kingdom.

In respect, therefore, to the alkali not being found in coal, we must either conform to what we have said above, or come to the conclusion that the primitive vegetables had no alkali in them. In peat, we find no traces of potash; but this may be owing to the long maceration that it has undergone in lying up in its bog state.

If iron be the coloring matter of coal, then iron will always be found in coal; and such is the fact. Iron may be said to have its primary, secondary, and tertiary states. We find it in its first state in ferruginous granite; secondly, in the old red sand-

stone, in trap rocks, basalt, &c.; and thirdly, deposited with carbonaceous and aluminous matter. The first stage presents us, we say, with the origin of iron; the second, with the progress it has made, or the first step for a useful development of its qualities; and in the third and last place, we see that end accomplished. It appears to have been one principal cause of the formation of coal. It has been made to undergo all these mutations to produce this important end. For when the earth arrived at that primitive state, that it could give birth to vegetable substances, such as would be proper for the formation of coal, iron was required to form that coal. Such were the arrangements of the Great Chemist, that he had provided for the requisite supply of iron in this great laboratory, that the moment it was required it should be at hand. No sooner is the quantity of vegetable matter sufficient by its accumulation than a layer of iron supervenes and forms over it a roof, which, whilst it thus renders the coal imperishable, it also, by the wisest forethought, so arranges its position, that it is rendered easily workable by man in times far remote from its construction. As in all other wonders of nature, we see here the foreknowledge of the Great Architect.

But there are other substances found in coal: these are arsenic and sulphur. We have said there are no alkalies; but we name this again, because it is impossible to conceive the notion that any vegetable substance is without alkali. If coal was formed from vegetable substances, then the operation of converting such substances into coal must have deprived these substances of all alkalies, and thus we obtain two results as inevitable consequences. 1st, The wood must have been in a state of partial decomposition and liquification in order to part with the alkali; and 2d, Water must have been present to edulcorate the matter, otherwise the alkali would be found in coal. But sulphur and arsenic are found in coal. These two articles are the greatest mineralizing substances that we have, and they are the articles to which coal is indebted for its crystalline form, as in many other minerals. Coal might, therefore, be called, in one state of its formation, partly a bisulphured of carbon, mixed with an arseniate of potash, the alkali being so far retained in this state of progress. Probably the arsenic acid was originally arsenous acid; for, taking the wood as we find the constituents of oak, we should have C35 H20 O20, whilst, if we take splint coal, we have C24 H13 O0. The great departure of oxygen from the coal may be accounted for by its transportation to the arsenous acid, making it into arsenic acid—arsenic acid being As x 50; whilst arsenous acid is As x 30. We may thus see in this a probable mode by which the wood lost its oxygen. We do know that by the action of heat and water the alkali and arsenic would disappear,* and scarcely leave a trace behind them. During this action we have the precise moment when the coal made or took up its crystalline form. Further, at this time the oxygen of the wood might supply the sulphur in like manner, and make it into sulphuric acid, and thus the minerals, such as the iron, which we find in coals, would be made into a sulphuret. Such results as these are not hypothetical, but bounded by true chemical principles; they are therefore facts, contingent upon the matters and substances themselves, and are consequent upon their union under the apparent circumstances under which they have met together. How the sulphur and arsenic became present, it is not our province now to consider; but that they were present, and in large quantities, although so small a portion is now apparent in them, is also a fact, because they are there still, as the remainder or remnants of an operation performed.

It is chemically true, that wood, iron, sulphur, arsenic, properly set to work, in their behaviour under proper and fitting circumstances, would form crystalline coal; nor would it be difficult to form coal from such an admixture in an artificial manner. That nature has done it by proper chemical action is evident—she acts by no other rule. Such laws are therefore the rules to be pursued in imitating her. We can make carburet of iron, which is indeed coal, only it has a maximum quantity of iron; and to make carburet of iron with a minimum

* Arsenic is found very abundantly in the strata immediately above the coal.

quantity of iron is indeed to make coal, the whole matter being only a matter of degree.

Ammonia Destructive to Leather.—Ammoniac emanations from manure in stables are most pernicious to leather, it being rendered quite brittle and useless in a very short period; consequently, harness ought never be allowed to hang up in stables.

Wrought Iron Cofferdam.—Last month the experiments undertaken by Mr. Brunel, at the instance of the Admiralty, for carrying the railway bridge across at Saltash, for the Cornwall Railway, were brought to a successful close. For the purpose two old gun-brigs, purchased of the government, were moored over the spot, and a wrought-iron cylinder, of $\frac{1}{4}$ inch boiler plates, strongly rivetted together, 65 feet high, and 6 feet diameter, and of 28 tons weight, was sunk in profundis. The necessary apparatus for pumping out the water was then applied, and the experimenters, who afterwards descended to the bottom of the cylinder, had the satisfaction of finding that at 11 or 12 feet below the mud, there was a foundation of solid rock for the piers. The bridge will be of large dimensions, the Admiralty requiring that it shall have a clear width of 300 feet between the piers, and a clear height of 180 feet above high-water mark. Over it will pass the entire passenger traffic from Plymouth to the Land's End.—*London Civil Engineer.*

Peat Charcoal, prepared on the principle patented by Mr. Jasper Rogers, is a complete disinfectant when applied to offensive matter, the noxious effluvia being entirely destroyed by it. A manufactory for it has been erected in the forest of Dartmoor. It is cut out in cuts of 8 to 10 inches diameter, and immediately carried to a powerful press, where it is reduced about two-thirds in bulk, and nearly deprived of its water. It is then loaded in the trucks, and is conveyed to the works, where it is boiled in a mixture of coal-tar, pitch, peat naphtha and other hydrocarbons. After saturation and drainage, the peat is fit for charging the retorts, composed of fire-clay, 9 feet long, and 5 feet in diameter, holding two tons of saturated peat each, and capable, when in full operation, of working 8 tons each in 24 hours. The gaseous products from these retorts pass inuch after the mode adopted in ordinary coal-gas works, along a hydraulic main, and through a long set of condensers, whence, after being deprived of all its condensable adjuncts, the purified gas is brought, by means of pipes, beneath the retorts, where it serves as a very powerful fuel. The condensed matter from the peat contains an immense proportion of stearine or vegetable tallow, oil and naphtha. When the retorts are discharged, the charge requires to be drawn into a close iron chest on wheels, with a tightly fitting lid, which must be immersed in water, as the charcoal retains its heat for a very long time; and if quenched with water, as is the case with gas-coke, it imbues so much of that fluid as very materially to deteriorate its quality. The extraordinary effects it has had upon smiths' work in particular, chiefly from the total absence of sulphur—has been such, that it has acquired the concurrent testimony of several intelligent smiths. The absence of clinker at the nozzle of the bellows, the perfect freedom from scale on the iron, so that an iron horse-shoe looks like one of steel, and that delicate instrument, the weaver's pick, when broken, is wedged together with ease.—*Ibid.*

Valuable Products of Peat.—At a recent meeting of the Royal Society, for the promotion and improvement of the growth of flax in Ire and (the Marquis of Downshire in the Chair), Mr. Owen, of London, referred to a discovery which his friend Dr. Hodges, would say, was worthy of the deepest consideration of every one present. Having heard, some time since, that from peat there could be produced ammonia, naphtha, soda ash, oil, spermaceti, and some other substances, he left London for Paris, and called on an eminent chemist there. He had been previously speaking on the subject with a Mr. Reece, also an eminent chemist, who told him that for the expense of 30%, he could produce from 100 lb. of peat, chemical results to the value of 148s. It was Mr. Reece who referred him to the Paris chemist, and when he (Mr. Owen) produced to the Paris chemist the statement of Mr. Reece, as to what he could do with the peat, the former assured him (Mr. Owen) that he could really do all

that he had stated in the document. He then rang a bell, and ordered the results of his experiments to be brought up from his own laboratory; and then he (Mr. Owen) saw with his own eyes the sperm candles made, the ammonia, the oil, and the soda ash produced from peat: and the chemist thought this was the greatest discovery of the age, and one which would evidently convert the greatest obstacle to improvement into the greatest blessings, and double the fertility of the soil, to an extent that none could estimate. Well, he (Mr. Owen) being a man of business, declined to take any of these statements for granted, and consequently he had got a great number of experiments made by Dr. Hodges and his friend Mr. Reece, which were entirely confirmatory of all the statements made by his friend Mr. Reece. But still, not to deceive himself or others, he was determined to have an experiment made on a large scale, and had employed the largest apparatus in use for that purpose; and he rejoiced to tell this meeting that his great experiments had commenced, and the results were beyond all expectations for everything had succeeded to his utmost wishes. Mr. Owen here handed to the Chairman a sample of the spermaceti so prepared by him, which was minutely examined by his lordship, and a great number of other gentlemen in the room. He came there as a friend of Ireland, and he would return to England in a few days highly gratified with the result of this meeting, and with his love and admiration of Ireland greatly increased. It was expected that, according to Mr. Reece's system, they might be able to work 100 tons of peat per day; this would, in a short time, clear the land of the peat, and thus produce one of the greatest possible blessings to Ireland, in clearing the land, and making it fit for agricultural purposes.—The Chairman said that peat was of considerable value in the north of Ireland, but in the south it was going to waste.—*Ibid.*

Conway Tubular Bridge.—The deflection which lately took place at the testing of the second tube over the river Conway, by Captain Symonds, the government inspector, was very slight, and the result is stated to be highly satisfactory. Before any of the testing weights were drawn into the tunnel, it was ascertained that the deflection then existing was 1.86 inch. The testing ballast amounting to 235 tons, 14 cwt., 2 qrs., caused an additional deflection of 1.56 inch only, thereby showing that, with the whole of the above superimposed weight, the departure from a straight line was only to the extent of 3.42 inch. The load having been withdrawn, in less than ten minutes the whole structure regained its former deflection. The variation in the adjoining tube, which has now been in use for so many months, does not, it is reported, extend even to the 1/16 part of an inch.—*Ibid.*

Suspension Bridge at Pesth.—The Pesth Suspension Bridge, which is erected over the Danube, at Pesth, was commenced in 1840, according to the designs, and under the direction of William Tierney Clark, civil engineer, and has just been completed at a cost of £650,000. The bridge, which for magnitude of design and beauty of proportions, stands first among suspension bridges, has a clear waterway of 1250 feet, the centre span or opening being 670 feet. The height of the suspension towers from the foundation is 200 feet, being founded in 50 feet of water. The sectional area of the suspending chains is 520 square inches of wrought iron, and the total weight of the same, 1,300 tons. This is the first permanent bridge since the time of the Romans, which has been erected over the Danube below Vienna, it having been considered impossible to fix the foundations in so rapid a river, subject to such extensive floods, and exposed to the enormous force of the ice in the winter season. It now, however, stands as another monument of the skill and perseverance of our countrymen. The bridge was opened for the first time, not to an ordinary public, but to a retreating army on the 5th of January, 1849, by which the stability of the structure was put to the most severe test, which cannot be better described than by referring to a letter of a correspondent, who writes—"First came the Hungarians in full retreat and the greatest disorder, hotly pursued by the victorious Imperialists; squadrons of cavalry and artillery in full gallop, backed by thousands of infantry—in fact, the whole plat-

form was one mass of moving soldiers; and during the first two days, 70,000 Imperial troops, with 270 pieces of cannon passed over the bridge." This fact cannot but be of importance to the scientific world, since it proves that suspension bridges, when properly constructed and trussed according to the design of Mr. Clark, may be erected in the most exposed places, while their cost in comparison with stone bridges is insignificant.—*Ibid.*

How the Mechanical Virtue of Fuel is Estimated and Expressed.

1. In explaining the mechanical effects of steam, it has been already shown that whatever be the purpose to which the force of a steam-engine be applied, its effect may always be represented by a certain weight raised a certain height. 2. Whether an engine be employed to drive a mill-wheel, to propel a ship, or to draw a carriage, the tension or resistance to be encountered at the working point may be universally represented by an equivalent weight. 3. Thus it is easily understood, if a locomotive engine draws a train of carriages, that the tension of the chain which connects the engine with the train will be the same as if the same chain, in a vertical position, had a certain weight suspended to it; and the same will be true, whatever be the nature of the resistance to the moving power, or the manner in which this moving power may be applied. 4. It has been usual also to express the mechanical efficacy by the number of pounds raised one foot; for whatever be the resistance, and whatever be the space through which the moving power acts upon it, the effect can always be reduced, as has been already explained to an equivalent number of pounds raised one foot. 5. The mechanical duty of coal, thus explained and applied to a steam-engine, has been technically called the *duty of the fuel*. Thus, a bushel of coal consumed in the furnace of an engine will enable such engine to exert at the working point a mechanical effect equivalent to a certain number of pounds raised one foot high; the effect is the duty of the fuel, or as is sometimes said, the duty of the engine. 6. The duty of the engine is therefore not the entire mechanical effect developed by the fuel in producing evaporation; for a portion of the mechanical power of the steam evolved in the boiler, and in some cases a very large portion of it is expended in moving the machinery of the engine itself; all such portion intercepted, therefore, between the furnaces and is the working point. The duty, properly speaking, is the net mechanical force developed by the steam, or such portion only which is available for the work to which the engine is applied. 7. The duty of engines varies within very wide limits, according to the purpose to which they are applied. In this respect, engines may be reduced to three classes:—1st, Such as are used in the mining districts of Cornwall, where the economy of fuel is pushed to its extreme limit; 2dly, The stationary engines used in the manufactories generally, in which class may also be included marine engines; 3dly, Locomotive engines on railways. 8. In the Cornish engines, where alone very accurate observations are made on the mechanical effect produced, and on the economy of fuel, it has been found in some cases, that by the combustion of a bushel of coals, an effect has been produced by the engine equivalent to 125 millions of pounds, or what is the same, 62000 tons raised a foot high. This however is not to be understood as an average result. In producing it, the utmost care was taken to guard against every source of waste of power. 9. The more common duty obtained from a well-managed engine used in the mining districts has been from 80 to 90 millions of pounds, or at the rate of one million of pounds raised one foot for every pound of coal consumed—a result remarkable enough in itself, and easily remembered. 10. In the ordinary stationary engines belonging to the second class, where the same scrupulous attention to economy cannot be or is not paid, the duty, according to the commonly received estimate, is, in round numbers, about 20 millions of pounds for a bushel of coal, being four times less than that of the good Cornish engines, and six times less than the duty which has in certain cases been obtained. 11. In the locomotive engines worked on railways, the economy of fuel is of course still less; but in this application of the engine the economy of fuel becomes a consideration so subordinate, that it need not be enlarged on

here. 12. The great economy obtained in the engines used in Cornwall is the result of a variety of contrivances, some of which, such as the protection of the machinery from radiation, have been already mentioned. The boilers are constructed of extraordinary magnitude, in proportion to the power expected from them; the furnace is of proportionate size; the combustion is slow; the heating surface is very extensive, and the intensity of heat upon it very slight; the flues are of great length, and the heated air is not permitted to escape until the last available portion of heat has been extracted from it; the fuel is managed in the furnaces with the most extreme care, and combustion being perfect. Added to this the steam is used at a pressure of from 35 to 50 lbs. per square inch above the pressure of the atmosphere, and the expansive principle extensively applied. 13. In giving these last estimates of the duty of fuel in the engines used in the manufactories generally, it is right to observe, that owing partly to the difficulty of ascertaining the actual mechanical effect produced, and partly to the negligence of proprietors of engines, the estimates of duty are of the most loose and inaccurate description. When an engine is applied, as is generally the case in Cornwall, directly to the elevation of water or other heavy matter, it is easy to observe the mechanical effect it produces; but when an engine is applied to give motion to the works of a factory, to drive spinning-frames, power-looms, or printing-presses, it is not so easy a matter to reduce the effect it produces to an equivalent weight raised a given height. In the case of locomotive engines the same difficulty ought not to exist; yet it is surprising that, until a very recent period, errors the most monstrous prevailed respecting the real mechanical effect produced by these machines. It was, for example, long assumed as a maxim, that the resistance offered by a given train of carriages to a locomotive engine was independent of the speed, or in other words, the same at all speeds. This error was not brought to light until the year 1838, when it was demonstrated, by a series of experiments conducted by me, that the resistance was augmented in a very high ratio with the speed.—*Dr. Lardner's Rudimentary Treatise on the Steam Engine.*

We commend to the careful attention of our readers the account of the life and character of George Stephenson, the great *Prophet of Railways*, which appears in our present number, as one of the most useful and interesting pieces of biography that we ever met with. Its length obliged us to exclude other matter, for which our readers will be more than compensated by the interest it possesses.

The Life and Character of Geo. Stephenson.

BY J. SCOTT RUSSELL, ESQ.

It will be recorded that about the middle of the nineteenth century locomotives first began to run upon railways, and that George Stephenson, the President of the Institution of Mechanical Engineers, was the man to whose original genius chiefly, the world was indebted for the discovery. It is difficult for us, to whom the terms railway and locomotive are household words—to us who live, move and have our being, among railways and their manifest social results—to go back again, even in imagination, to the beginning of the last twenty years when we were without them. So fast, indeed, we may be said to have lived through those twenty years; so much we have been able to travel over, and see, and learn, and do, that it seems longer to go back over these twenty years, than over centuries of the slower times that went before. We, who have this day come our hundreds of miles to this meeting, and may still have to return hundreds of miles to our homes this night, will find it hard to believe in the records of perils, privations and delays, which, but a few years ago, made a journey from Newcastle to Birmingham one of those serious undertakings in life which were anticipated with apprehension, and recollected with congratulation. We now do more work, and see more society, acquire more knowledge, by personal observation in one day of railway life, than we were wont to do in weeks of "the good old time." It will be necessary, however, to task our imaginations, and go back to the times before

Stephenson, in order duly to appreciate the full value of the benefits which his labors have conferred upon us.

It is not, however, alone, with what George Stephenson *did* that we are concerned; still more important it is for us to consider what George Stephenson *was*. His title to our gratitude is no doubt great; but his claim to our admiration as a man is still greater. As a plain laboring workman, we first find him distinguished by his untiring industry, by his zeal for the interests of his employers, and by his steadiness, sobriety and honesty. We next find him, after having mastered all the details and drudgery of his business, continually on the watch for improvements, cultivating habits of accurate observation, and spending every leisure moment in classifying and comparing the results of his own observation, and in deducing from them hints for future improvement. Did an accident occur in his mine, his whole thoughts were immediately directed to the means of preventing its recurrence. His business, in the humble capacity of a brakeman, took him casually to the vicinity of a condensing steam engine where the property of his master, through ignorance and mis-management, was in danger of suffering serious damage. The young brakeman had already carefully studied the nature of its parts, and thought over the principles of its construction; the regular engineer had been baffled in his remedies, and despaired of a cure; but the youthful brakeman confided in the strength of his conviction, and boldly undertook the task of refitting the machine; the stubborn engine became at once, in his hands, obedient and useful; he had discovered for himself the secrets of the steam engine; and at five and twenty the young coal worker had become a mechanical engineer.

Thus early were the results of his self-education manifest. He had mastered the discoveries of Watt. It is true, indeed, his whole life had been one of discovery; but as yet he had discovered no more than those who had gone before him. His had been the best of all education—the education which a truth-loving mind, working its way among dead matter, and wrestling with the laws of nature, receives directly from nature itself—an education far more profound and prolific than words, books or lectures can ever impart. He had learned the laws of nature at first hand, and by experience; he new partially what the true properties of matter were; he felt that what they were, was exactly what they ought to have been; and however indefinitely he might be able to give reasons to others for his belief, yet one of the most valuable results of his practical self-education was to give him that implicit confidence in his own right understanding of nature, which carried him so boldly through the herculean undertakings of his future life. The whole first years of his early life were, in this way, one continued chain of discovery. Who can tell the pleasure, or weigh the profit, which such an education bestows on the simple and correct student—compared to the formality of written dissertations, and the dryness of second hand knowledge?

As yet, we have said he discovered nothing new; but he was now on the eve of making a discovery, the reputation of which has enobled the name of one of our greatest chemical philosophers. A mechanic, James Watt, had already anticipated the philosophers Cavendish and Lavoisier in the analysis of water; and another was now about to anticipate Sir Humphrey Davy in the invention of the safety lamp.

That Stephenson was the original inventor of the safety lamp is now happily beyond doubt. Like most other inventions which seem to make their appearance in several places simultaneously, at the moment when the want of them has come to be deeply and generally felt, the safety lamp seems to have started into being nearly at the same moment in London and Newcastle. Stephenson and Davy had both discovered the principle on which they proposed to proceed, before either had made the lamp; but Stephenson's was made and used the first. That Stephenson first invented the lamp admits of no doubt, however much the question may remain as to how far Davy may not also be entitled to the merit of equal originality; priority to Stephenson no one can justly lay claim.

It is as a professional engineer and a practical mechanic that we here have chiefly entrusted to us

to do justice to the memory of our distinguished president. But we should do violent injustice to our own feelings, if we were to pass altogether without notice his social character and private life. It is well for us all to recollect, that mere eminence as mechanics, or mechanical inventors, is not enough in the social world to make us either command the love or respect of our fellows. It is as men, chiefly, that we respect one another; it is moral character and social virtue for which we chiefly love each other. It has, indeed, been remarked by some, on the character of our profession, that the continual struggle with tough, hard, and refractory substances which form the business of the engineer, has the effect of communicating a hardness of character, an obstinacy of disposition, and a rigidity of temper, to men of our craft, which does not add to their excellence as members of society. It must be remembered, however, as a palliative for such faults, where they exist, that every inventor is at first in a minority of one; all the rest of the world is, for the time, against him; and it is often only by a long and hard fight that he at last succeeds in converting his minority into a majority.

Invention is, therefore, a battle with the world; and it is not always easy for the inventor again to consider with complacency his enemies in the field, and to adopt them as his companions in the closet. The antagonism between the inventive man and the sceptical world is apt to extend itself to the social state. But Stephenson was, happily for himself and the rest of the world, a man endowed with no common share of the feelings which make the intercourse of life useful to himself and delightful to his friends. His energies had been sufficient to carry him through much opposition without cooling the ardour of his affections, originally warm and genial, and, above all, without chilling the enthusiasm, or closing the openness of disposition, which characterised the sanguine youth. In his latter days he was distinguished for the childlike simplicity of his character, for the transparency of his intentions, for the singleness of his purpose, and for the straightforward manly honesty of his conversation and dealings. If he could hate an enemy, he never masked his antipathy by hypocrisy; but he was a warm and earnest friend.

Greatly, however, as Stephenson's name will continue to be distinguished among us as the inventor of the safety-lamp, and as a youthful mechanic of wonderful shrewdness and sagacity, it is as the first constructor and chief inventor of locomotives and railways that he will be known to posterity. It is in this capacity that he has conferred on society blessings which are rapidly extending to the widest limits of civilization, and which already cover Europe and one half of America. The introduction of railways is the great distinguished event of the thirty years' peace, and to them must principally be attributed the strong bonds of amity which are continually drawing nations closer and closer together. It is to railways, and the unity of international interests arising from them, that we are indebted for the maintenance of that peace, unbroken for thirty years, and for the very remarkable events we are now witnessing in the existence of a *casus belli* in the heart of Europe, and yet of the invincible reluctance of the great powers to supply the fuel for a general war. The peace of Europe will now, we may trust, by the progress of railways, and the consequent multiplication of intercourse, be rendered as substantial as the peace of the nations of the heptarchy of England; for we have nearly reached that part of railway intercourse, when the capitals of different nations of Europe are not separated so far from one another, either in the length of time, or in the rarity and peril of intercourse, as were the five capitals of the Anglo-Saxon kingdoms of our ancestors; Canterbury, York and Gloucester were then more distant than are now London, Berlin and Vienna.

How all this was early brought about, how much George Stephenson had to do with it, is now too familiar to every mind to need repetition. You all know how he early got permission from Lord Ravensworth and the proprietors of Killingworth collieries to make an iron substitute for the horses that drew his coal wagons; how he succeeded in driving teams of wagons some six miles an hour; but all of you who recollect the huge unwieldy looking monsters of that early time, and especially those

who, like myself, then had to do with them, must remember how little we dreamed of seeing these clumsy affairs go 10 or 20, much less 50 or 60 miles an hour. Indeed, whether we look at the railway or machine, both would have been smashed to pieces, had any force accelerated their speed to 10 miles an hour. It was never dreamed of, except by one dreamer, who believed in 10, 20, 50 and 100 miles an hour, and who had recently determined to reach it.

The two inventions which have been combined to produce the modern railway system, may be said to be the malleable iron rails and the locomotive engine. These were the two elements of high velocity—each of which formed the absolute condition of the existence of the other. Without the system of laying a continuous wrought iron rail, the notion of a velocity of 50 miles an hour could not have been entertained; and without the locomotive engine, such an expensive line could never have proved remunerative. Most of us can remember when the idea of laying wrought iron bars of 50, 70 or 90 pounds weight per yard, for continuous miles, was an expense so utterly beyond the conception of the time as not to be entertained for a moment; and this for an obvious reason, that no particular amount of traffic would have paid for it. I think I am warranted in saying, that no amount of traffic which horses, merely, could convey along a line of modern railway could yield a remunerative return, unless, perhaps, under peculiar circumstances, which are exceptional; I am therefore, I think, safe in saying, that the wrought iron railroad was essentially dependent on the locomotive engine. But that the modern locomotive engine could not subsist without the wrought iron rail, and its multifarious appendages of chairs, keys, locks, sleepers, switches, crossings, sidings, and turntables, is too evident to need proof. Without the smoothness of the rail, the engine would be jolted to pieces, and without the easy motion which it gives, the engine could not be made to draw a sufficiently profitable load to pay; and, further, unless made of wrought iron, it would be impossible to attain the high speed of the locomotive without imminent danger. It therefore appears that the continuous wrought iron railway and the locomotive engine were inventions intimately related to each other, and each a condition of the other's success. To Stephenson we are indebted for the chief features of improvement in both. It was the joint perfection of the road and the engine which created the Liverpool and Manchester line, and all the progeny of that wonderful and gigantic experiment—an experiment whose complete success now bears incontrovertible testimony to the genius of the man.

There are several lessons which the life of Stephenson should enforce upon us, the members of a profession which he advanced, and of a society which he so materially assisted in founding, and in the promotion of which he took a constant and deep interest. Indeed we cannot cast even a hasty glance back over the events of his life, without perceiving that the foundation of our society was an act most appropriate to the termination of a career so arduous and successful. Let us endeavor to define some of those objects, and then consider how we can best accomplish them.

In the first place, then, one of the great objects of our society is the encouragement of mechanical invention, and the promotion of scientific improvement. Thus it becomes our duty to supply to this generation a great want, chiefly felt by Stephenson in his earliest career. The unhappy moments of his youth were those in which his inventions encountered the opposition of prejudice and interest, and when his propositions were decried, because of their very originality—because they were new, strange, unheard of, and therefore contrary to verified opinion. What he wanted and could not find in his youth, this society presents to the youthful genius of his generation an enlightened, unprejudiced, and first ordeal, where every youthful inventor, every mechanic of original talent, every proposer of that which is new and promises to be useful, will find a body, of experienced practical men, to whom the country looks up as her wisest sons, ready and willing to listen to the plans, to test the proposals, to weigh the value, and to award the praise and approbation to which the rising Stephenson of this generation may aspire; but which the

old Stephenson could no where find, and in the want of which he was compelled to expend many years of vigor and energy in obscurity and penury. Let us see that in our hands no youthful genius, however little known, shall find his genius obscured, or his energies discouraged, eclipsed, or extinguished. If I rightly interpret the feelings of this society, they would hail with welcome any discovery, and cooperate heartily and disinterestedly in giving to the world its benefit, and to genius its honors and rewards.

Another circumstance must have greatly impaired the means of usefulness of Stephenson in his early life, and one that he most deeply felt—viz., the want of knowing that which other men were doing, and had done before him, in subjects allied to those in which he was occupying his mind. Thus much we know with certainty, that no man was more happy to communicate, in after-life, to others, the abundant stores of practical knowledge he had accumulated, and that no one felt a more kindly interest in the inventions and plans of younger men, or was more disposed to promote their interest and forward their views. Let us regard it as a part of his legacy so to impart, liberally, to all younger members of the profession, what more knowledge or greater experience may have enabled us to acquire. After all, there is no tribute more gratifying to the members of our profession, than the due appreciation by each other of that which each of us may have done to advance the interests, and increase the resources, of mechanical sciences.

It would not be fair to the character of our late president to omit from our recollection the very large and original views which he entertained on general science. It has been too common in our profession to place science and practice in opposition to one another, as if true science and hard practice could be possibly opposed. If science means that which is carefully ascertained, and accurately defined, and truly demonstrated, then it is impossible that any sound practice can possibly stand in opposition to or independent of it. If practice means the knowledge which is founded on the actual facts and experience of intelligent men, it is impossible to see how the largest amount of that knowledge possessed by any one man, can differ from the extensive and generalised facts in which science embodies the experience of all mankind. Stephenson is an example of a remarkable freedom from this prejudice. He was eminently a practical man. He wrought early, and much, with his own hands. He had wrestled matter and knew all its qualities by feeling it, and pushing it, and pulling it—by cutting, and filing, and chipping it. He had hammered it hot and hammered it cold—he had melted it and moulded it, planed it and sawn it, broke it across, pulled it asunder, and twisted it round. He knew its action and its reaction, its inertia and its momentum, its *vis mortua*, and its *vis una*. His was supremely practical and personal acquaintance with the laws, and property, and phenomena natural to matter, whether solid or liquid, fluid or gaseous, mineral or aerial, more than any man who has ever risen to eminence. Stephenson was entitled to rank as a consummately practical man. But was he not equally, or more, a scientific than a practical engineer? Was there a bolder theorist than he was? Were there ever more daring scientific speculations than those wild flights in which his genius delighted to break forth? On chemistry, vegetable physiology, vital mechanism, electricity, galvanism, the theories of gases, on the inert constitution of matter and of heat, and even on the mechanism of the mind itself, he had deeply thought, propoundedly read, and boldly and fearlessly speculated. Every step in his life was the realisation of what had before been a theory. It is true he was not educated early in the rudiments of science, at school or at college; but what of life? what is life but a great school? Is not the press our school, and necessity our school of invention? Stephenson read and studied science;—he was not ignorant, but he was self-taught. Before he became a great man he had studied profoundly; and he does not appear to have ventured on any construction or invention, before having accurately, and generally truly, calculated, by the principles of science, its probable and actual results. In all his works, Stephenson exhibits to us embodiments, eminently practical, of the profoundest principles of mechanical science. Let the men among

us who desire to emulate him most, endeavor to combine, in the greatest degree, the truest science with the soundest practical science. These are not times in which any of us can afford to dispense with any science, or any practice, that it may be in his power to obtain.

I will now venture upon an illustration of the advantage of uniting high science with extensive practice, which has often occurred to me as an excellent illustration of Mr. Stephenson's scientific knowledge, and also an illustration of the advantage he would have derived, as a practical man, from having been still more profoundly scientific than he was. Stephenson, we know, invented the fish-bellied rail, and a great invention it was thought in its day. The Liverpool and Manchester railway was opened with it. It was an invention to give, with a small addition of metal to the under middle size of the rail, nearly double the strength; and this it successfully accomplished. But here he stopped short: he had not science enough to see, that by making the wrought-iron bar in long lengths, stretching over a number of blocks, or sleepers, he had brought it into a new condition, to which a much higher rule was applicable;—he neglected the difference between a rail having a joint at every chair, and one having only a joint at every fifth or sixth chair; had he perceived that, he would have invented the parallel rail, and would have learned that the joint cars require to be nearer together than those removed from the joint by a fixed proportion. The fish-bellied rail was a failure. It was the result of science; but of science of which there was not enough. It was also the result of practice; but of practice under different conditions. It was reserved for Mr. Buck, a profoundly scientific pupil of Stephenson's, to develop the true science of the wrought-iron rail. Where not a little science had failed, a little more made the invention perfect. Let us learn from this to be always trying to obtain a little more science, as well as a little more practice, than we have got,—remembering that Stephenson continued his education of himself to his dying day.

The best testimony, however, which Mr. Stephenson has borne to the value of scientific education to a practical man, is to be found in the course he adopted for the training of his own son to our profession. The assiduity with which he labored at clock-making, the cleaning of watches, or any other industry, in the intervals of his regular business, in order that he might be able to afford to him those blessings of education of which he himself so deeply felt the want, is one of the most charming features of his character. His most earnest desire, in early difficulty, was to give Robert all those precious thoughts and truths which he himself only acquired late and too laboriously. And how admirably his plan succeeded, his son's unclouded success, both as a mechanical and civil engineer, are the evidence to us, as indeed they were the subject of just pride to himself, who never spoke of his son without strong emotions of joy and pride. There are none of us who will question either the justice of his pride, or the soundness of his plan of education.

It is one of the peculiarities of genius to inspire those within its influence with some of its own fire. This was peculiarly the case with Stephenson. Nearly all the present ornaments of our profession have been his pupils. He was the founder of a school of eminent engineers, who in England, Europe and India, and are now extending, amongst all portions of the human race, the blessings of those great bonds of civilization and social intercourse which he first fabricated. It is to his labors, and theirs, that this country owes the addition of £200,000,000 to its productive wealth, the opening up of a host of new branches of industry, the quickening and invigorating influence of rapid and cheap intercourse; and to him that the poor everywhere owe the blessings of cheapened coal, and the facilities of social enjoyment and healthful recreation.

In this brief notice of the chief features and character of our late president, which I have thus imperfectly, although most earnestly, sketched amid the bustle of business, I have dwelt mainly upon such features and characteristics as were peculiarly interesting or instructive to us, as members of an institution founded, in a great measure by himself, for professional purposes. I have regarded, therefore, chiefly his professional character; but I cannot

conclude without expressing an earnest wish that his life as a man, exhibiting the beauty and excellence of his character in all its cheering aspects, as a boy, as a workman, as an engine-man, as a viewer, as an engine-builder, as an improver of mineral railways, as the engineer of the Liverpool and Manchester railway, should be written by some one who has leisure to collect, from his many friends, all their recollections of him, while they remain fresh and accessible. I should desire also to see a detailed account given of his progress, his difficulties, and his means of success in any one of his labors. This would be a most valuable and instructive work, and I do not know on whom it should devolve more properly, to see such a work executed faithfully and judiciously, than on this society, whom he made the favored recipients of his knowledge and experience, and who ought to consider themselves as his literary and scientific executors, to whom the world may naturally look to see justice done to the memory of one of England's greatest men, the founder of our railway system, and of the Institution of Mechanical Engineers.

Pacific Rail-road.

A great meeting has been held in St. Louis in favor of the Rail-road from the Mississippi to the Pacific, at which the Mayor of the city, Hon. John M. Kume, presided. The following gentlemen were appointed a Committee on Resolutions, viz.:—Thos. Allen, N. Ramsay, Robt. Campbell, D. H. Armstrong, — Harvey, T. B. Hudson, John Simonds, A. B. Chambers, M. Blair, Charles Kemble and J. B. Crook.

Resolved, That the bill introduced into the Senate of the United States by the Hon. THOMAS H. BENNETT, to provide for the location and construction of a National Central Highway from the city of St. Louis, on the Mississippi river, to the Bay of San Francisco, on the Pacific Ocean, is hailed with lively interest and satisfaction by the people of St. Louis, as embodying one of the grandest conceptions of great and beneficial statesmanship, and of comprehensive and enlightened patriotism.

Resolved, That in view of the vast Territories of the United States lying between the Mississippi River and the Pacific Ocean, and with reference as well to the development of their immeasurable resources, as to the purposes of efficient government and the perpetuity of union, and looking also to the invaluable commerce of the Northwest Coast, the Pacific Islands and the seas, and the East Indies, a NATIONAL CENTRAL HIGHWAY, of the character alluded to, across the continent, is a work worthy of the Nation, as tending in the greatest degree to promote the grandeur, strength, durability and glory of the Republic.

Resolved, That inasmuch as the projected railroads of the United States, now approaching a system, seem to converge from many different and cardinal points to this city, and as it is also nearly the centre of navigation by running waters, and in the chosen and natural pathway of the emigrant to the West, propriety, economy and deference to the natural laws of trade, and movements of population seem to approve the choice of the city of St. Louis as a fit point of departure or terminus of the projected road.

Resolved, That the Senators and Representatives of St. Louis in the General Assembly of the State be respectfully requested to make their best exertions to procure from the Government of our state the immediate tender to the Government of the United States the RIGHT OF WAY for such a road as above described through the State of Missouri, upon any route which the proper authorities of the United States may select, as, in their judgment, the most practicable.

Resolved, That the Senators and Representatives of St. Louis in the General Assembly of the State be respectfully requested to urge the passage of a resolution by which the united and favorable judgment of that body, in behalf of the projected highway, may be made known to the government of the United States, and especially to the Senators and Representatives of Missouri in Congress.

Resolved, That we tender to our honorable Senator, PAUL SENATUS, who by his latest and greatest measure, has added new lustre to his own high

name, and reflected additional honor upon the state he represents, the assurance of our cordial and undivided approbation and support, and that we shall look with lively hope to see his resolute exertions continued, until the great commerce of the Pacific and of the Atlantic shall meet each other in the Valley of the Garden and Granary of the World.

Resolved, That the proceedings of this meeting be published in the city papers, and that copies thereof be transmitted by the Chairman and Secretary to the President of the United States, and to our Senators and Representatives in Congress, and to the Governor of this State, and to our Senators and Representatives in the General Assembly.

Resolved, That the thanks of this meeting be tendered to Col. Charles A. Fremont for his intrepid perseverance and valuable scientific explorations in the regions of the Rocky and California Mountains, by which we have been furnished with knowledge of the Passes and altitudes of those mountains, and are now able to judge of the entire practicability of constructing a railroad of them from St. Louis to San Francisco, in California; and that the officers of this meeting be requested to furnish Mrs. Fremont, (Col. Fremont being in California,) with a copy of these proceedings.

All of which were unanimously adopted. The construction of a Railroad to the Pacific, is to be one of the great and absorbing questions which is to occupy the attention of our people, and we are happy to record an early movement in its favor in the right quarter.

AMERICAN RAILROAD JOURNAL.

Saturday, March 10, 1849.

The Past and Future.

We believe that the first part of the nineteenth century will stand out in the page of the future as one of those remarkable epochs in which, under the influence of some grand idea, or by the aid of some new agent, the human mind receives one of those great impulses which stand out as land marks in its progress. It seems to be the order of Providence in the education of the race, that when it has reached that state in which the past fulfilled its mission, and accomplished all it can toward this progress, a new revelation is vouchsafed which carries him one step further in his march of improvement. Some of the most remarkable of those epochs have been the invention of letters, and the art of printing, and the discovery of the magnetic needle. Man heretofore has been mainly occupied in releasing his mind from the bondage in which it has been held by his ignorance of the laws of physical nature, by the study and unfolding of those laws, and he has now reached that point in which the forces that reside in matter are placed in his control, and enable him, to the eye of the uneducated, to wield the attributes of a superior order of beings.

By the application of the powers of steam and electro-magnetism to the arts of life, the present age will be signalised by a more rapid change in the order of society, and the progress of the race, than any former one. We are bidding adieu to that period in which the highest powers that man has thus far employed in the execution of the most important schemes that concern life, beside in muscles of flesh, and ushering in one in which the forces that govern matter, infinite from their very nature, are to be the agents of his will.

In this new order of things, we may expect results corresponding to the magnitude of the causes at work. By means of these new agents under his control, man already, as far as his own planet is concerned, enjoys a sort of omnipresence. His ideas, through the medium of electricity, reach a person one hundred miles distant quicker than thro' the medium of his voice in the same room. By

steam power all the various products of the earth are rapidly, and with trifling expense, centred in the same spot. Under these influences the old relations of society are rapidly disappearing, and new ones are taking their place. Tradition is fast losing its power over the mind of man. Respect paid to pre-eminence of station, founded upon the great qualities of our ancestor, and by virtue of which alone, society has awarded the same to his successor, is giving place to respect for individual excellence. The learned professions, as they are termed, are fast losing that reverence and respect, and those emoluments they once commanded, and are ceasing to be considered the most desirable fields for the young man entering upon an active life. A knowledge of the physical sciences, and the laws of nature, are now a more certain path to wealth and station than the most accurate and critical knowledge of "the traditions of men." How is this new movement, which is doing so much for the physical and intellectual wants of man, affecting his moral nature? Is this keeping pace with his intellectual progress? Far from it, we fear. That it must, in the final result, elevate and give supremacy to his moral nature, is certain, because this is the object and end of all progress; but the intellectual always outstrips the moral. This is the order of Providence, and we have Divine authority for saying, "first the natural, then the spiritual."

Wabash and Erie Canal.

It appears by a circular recently issued from the office of the Wabash and Erie Canal Company, that three important divisions of the Canal, embracing a little over 16 miles of the main line, (from Coal Creek to Newberry) the estimated aggregate cost of which was \$790,171 51, have been completed, or are under contract for completion, at an actual aggregate cost of \$781,719 77. There are now employed 1250 laborers, and an effective force, equal to 1780 men on the entire line from Coal Creek to point Commerce. The force south of Terre Haute is 850 men, and an effective force equal to 1215 men. The Erie Canal of New York is 363 miles in length. The Wabash and Erie Canal, when finished to the Ohio River, will be 375 miles in length, in Indiana, and including the eastern end of it which lies in the State of Ohio, will be 459 miles in length from Toledo to Evansville, the longest canal in the United States. The second instalment to the advance of \$800,000 was payable on the 1st day of February, 1849, and by order of the Board, the third and final instalment is required to be paid on the 1st day of July, 1849.

To the Readers of the Railroad Journal.

Our readers, and particularly our friends, who advertise in the Journal, will feel gratified that it now appears in a new type and on better paper than at the commencement of the year. These changes, together with the removal of the office from Philadelphia to New York, and the change of editor and proprietorship, has prevented us from bringing out the paper on the day of publication. Besides this annoyance, several typographical errors have been suffered to go uncorrected, from the hurry of our compositors and pressmen, in a portion of the copies, in one or two instances. A similar apology will not, we trust, be again necessary as the work is now brought up square with the time.

We particularly regret some typographical errors in the number of Feb. 3, in our article on the Price of Iron, for we perceive that the article is copied without credit, errors and all, in the recent March number of Hunt's Merchant's Magazine.

Tennessee and Georgia Railway.

The Hiwassee Railway, otherwise known as the East Tennessee and Georgia Railway from its southern terminus to Knoxville, Tennessee, as we understand, is in progress of construction under a contract by which the contractors are to receive \$1,850,000—\$1,150,000 in stock in the road, \$200,000 in bonds of the State of Tennessee, and \$700,000 in the bonds of the company, or cash at their option. This does not include the bridge over the Tennessee River, which is otherwise provided for.

Railroads in the United States.

We are indebted to Col. John McRae, Engineer of the South Carolina Railroad, since our last issue, for more full details than we have before been able to procure, of the progress of railways in the Southern States.

He gives the length of line of the Camden Branch of the South Carolina Railroad as 37 miles, instead of 21 miles, embracing from the South Carolina Railroad, 105 miles from Charleston and 24 miles from Columbia.

This gives us an aggregate of railways in actual operation, March 1, 1849, of 6,556 miles, within the United States. Estimating their cost at \$30,000 per mile, they represent on aggregate capital of \$196,680,000.

The *Railway Record*, of London, will please to note the facts here given. The learned Editor, Mr. Robertson, in a very satisfactory manner, alluded to the vague estimates put forth by some of the American papers, representing the amount of capital expended upon Railways in the United States at \$1,000,000,000, at the close of the year 1848. It is gratifying to see that the railway system of this country is well understood by the intelligent public of Great Britain.

Railway Connections.

As it is not within the scope of the General Government to construct any system of internal improvement in the shape of Railways, for the purpose of facilitating commerce, all the enterprises originate with the several States, and have for their primary object the advantage of the State that originates them. They are usually constructed to connect important points, or accommodate the business of a particular section. But the trade and commerce of the country being entirely independent of State lines requires for its convenience a system of railways co-extensive with, and adapted to, the wants of the whole country, and this influence is gradually moulding the independent and apparently capricious legislation of the several States into order and symmetry, and uniting these various systems into one harmonious whole.

These connections are opening a new era in the value and usefulness of railroads. When the roads of the different States shall be united, the iron rail will become another electric wire through which any persons upon a line of railway in the most remote part of the country can touch every section of the Union. The manufacturer in the extreme north can forward his products directly to his southern or western consumer, and thus, as it were, possess a constant market at his own door. And in turn, the southern and western planter and farmer, can distribute their agricultural products among their northern consumers, as they are wanted, without being interrupted as they now are by the unnavigable state of the rivers from ice in the winter, or droughts in the summer.

These connections are rapidly going on. The New York and New Haven road, which has just

been completed, has united the railroads of New England and the Middle States. The vast amount of travel which passes over this road shows the importance of this connection. Over it, as a trunk line, the New York merchant and manufacturer may now forward, direct to his customer, in almost any part of New England, without breaking bulk, and receive in return the products of that section. The completion of the Hudson River road will open a direct connection with the roads of Central New York and the Lakes. Pennsylvania is busily engaged in connecting her extensive system of internal improvements with those of Ohio, and Ohio is uniting herself with those of the States still further west. In the south, the Wilmington road is being extended to the South Carolina roads. Her roads are connected with those of Georgia, and this latter State is extending her railways to a navigable point on the Chattahoochee, with a view of ultimate extension to Mobile and New Orleans. In two years from this time there will be a line of railway from Maine to steamboat navigation on the Chattahoochee—affording a continuous inland route of railroad and river navigation from Portland to New Orleans, with the exception of a short distance along the Gulf of Mexico. Charleston will soon unite herself with Cairo, at the Junction of the Ohio and Mississippi, by means of the road which is now in construction through Tennessee, and Mobile is also connecting herself with the same point. From Cairo a road will soon be constructed north to Chicago on lake Michigan, which is to be intersected at various points by the great lines running east and west, thro' Ohio, Indiana and Illinois. Thus with no other principle than the laws of trade and the local interest of the different sections, the Union is being fast bound together with these iron bands; and every road in the country, the most insignificant and remote, is becoming more valuable from every dollar that is expended upon the roads with which it is connected, and every additional mile of railway constructed enlarges the sphere of usefulness of those already built. All engaged in this work are co-laborers together for the good of the whole.

It is impossible but that the best results should follow from thus uniting together the various parts of the country—results, the value of which are not to be measured by the ordinary standards of dollars and cents, but the higher one of social and intellectual progress. It will introduce different sections of the country to each other, and secure uniformity of ideas, views and interests; and when men come to understand one another, mutual confidence and good will succeed that suspicion and distrust which universally attends to a state of unacquaintance and isolation; and thus all engaged in this work of railway construction are fulfilling a double mission, and advancing the intellectual and moral as well as the physical good of their fellow men.

Hudson River Railroad.

The readiness with which the loan of \$500,000, required for the prosecution of this work, was taken is a gratifying evidence of the confidence felt in the road, so important to the city of New York. Its completion at the earliest practicable moment is now rendered certain. The road has been constructed in view to the formidable rivals it must encounter in parallel lines of road on one side, and a navigable river on the other. From its superiority to all other roads in the country, in its grades and curves, as well as being the shortest route to Albany, it will, we think, successfully compete with all the other lines of communication in the summer time. In

the winter its superiority to all other routes must be apparent. The following are the takers of the Hudson River railroad loan of \$500,000. It is understood that 1 per cent. was allowed on the bids:

Peter Lorillard,	\$30,000	J. Boorman,	\$100,000
J. Davis Wolf,	30,000	G. G. Howland,	20,000
W. A. Spencer,	15,000	Japeth Bishop,	20,000
George Bruce,	10,000	Thos. Suffern,	20,000
Peter Scermerhorn,	10,000	J. Hooker, for self	
Benj. DeForest,	10,000	and others,	25,000
W. W. DeForest,	6,000	Edward Jones,	5,000
Adam Norris,	15,000	A. C. Flagg,	4,000
C. V. S. Roosevelt,	5,000	Math Vassar,	10,000
Jas. H. Roosevelt,	3,000	W. A. Davies, for	
Alex. Marven,	5,000	self and others,	14,000
J. B. Johnson,	2,500	G. B. Butler,	2,500
M. Van Schaick,	10,000	Ward & Co., for	
Elisha Peck,	10,000	sundry persons,	150,000

Champlain and St. Lawrence Railroad Company.

At a half-yearly meeting of the Stockholders of the Company held January 15, 1842, at the Office of the Company, —

JOHN FROTHINGHAM, Esq., was called to the Chair and Mr. W. D. LINDSAY acted as Secretary.

JOHN MOLSON, Esq., Chairman of the Committee of Managements, made the following

REPORT:

GENTLEMEN:—As Chairman of the Committee of Management of this Company, it becomes my duty, in accordance with usage, to make the customary annual report of the affairs of the Company for the past year. When it is considered that the year 1848 has been one of unexampled commercial distress, it is a source of gratification to me to be able to congratulate the Stockholders on the uninterrupted prosperity of this company; for whilst most public institutions have suffered considerable depression, ours has comparatively suffered little. This you will be enabled to judge of by the statements embracing the affairs of the various departments of our road, which I have the honor of submitting to you.

I have, therefore, with the sanction of the Committee, much pleasure in recommending that a dividend be declared of Four Pounds per share, payable on the first day of March next, out of the profits of the business;

In accordance with the recommendations made by the Stockholders at the annual meeting last year, I am happy to inform you that T Rail has been purchased and laid on the remainder of our road for a distance of about eight and a half miles. This improvement has been done in the most satisfactory manner, and completes the road in its whole extent, with the exception of a few unimportant improvements which remain to be done in the spring to put the road in perfect working order. These can be effected at a very trifling expense.

On reference to the statements I have laid before you, you will not fail to remark that a large outlay has been incurred for the purchase of the iron rails, cars of various descriptions, additions and improvements to our wharves at Laprairie and St. Johns, a moveable storehouse on the wharf at Montreal, repairs to bridges and various other things, most of which being permanent improvements will require but little future outlay, except such as may be rendered necessary from an increase of our business. We have likewise in the course of preparation for the ensuing season, other cars of various kinds, having reason to anticipate a considerable increase in our business, in consequence of the completion of the Saratoga and Whitehall railroad, which has been lately opened to the public.

This road now affords an uninterrupted line of communication between Montreal and New York, which, I have no reason to doubt, must and will conduce largely to the advantage of our company; more particularly as the owners of the steamboats on Lake Champlain, I am informed, are preparing to increase the number of their boats in order to establish a day and a night line across the lake. Having to keep pace with our neighbors from the United States, it became of imperative necessity not only that our road should be placed in a state to meet the wants of a growing trade, but on a footing equal to theirs.

To carry out the improvements which have been effected, involved a large outlay; and the Committee of Management, in order to meet this, felt it their duty to call in the remainder of the Stock, and also (with the concurrence of a special general meeting, convoked for the purpose) to create three hundred new shares, as permitted by our charter.

The gross amount of the receipts during the year amounted to £20,344 0s. 4d., showing a decrease on last year of £2,131 13s. 9d.

Although the result of our operations shows a decrease to that amount, I am happy to be enabled to state that this deficiency has been met by a reduction in our expenses to the extent of £983 14 11.

JOHN MOLSON, Chairman.

The following gentlemen were elected the Committee of Management for the ensuing year:

B. Brewster,	D. Finlayson,
J. Carter,	Wm. Workman,
P. W. Dease,	Sir George Simpson,
A. M. Delisle,	John Molson,
	Wm. McDonald.

At a subsequent meeting of this Committee, JOHN MOLSON, Esq., was unanimously re-elected Chairman, and B. BREWSTER, Esq., Deputy Chairman, for the ensuing year.

ENGINEERS.

Arms, F. C.,

Georgia Railroad, Augusta, Ga.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Crocker, Wm. B.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. P.,

Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.

Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Jones C. F.,

South Oyster Bay, L. I.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

Minot, Charles,

Boston and Maine Railroad, Boston, Mass.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Nicolls, G. A.,

Philadelphia and Reading Railroad, Reading, Pa.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Robinson, James P.,

Aandrosgegin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

To Contractors.Office of the Richmond & Danville }
Railroad Company, }
Richmond, 22d Feb., 1849. }SEALED PROPOSALS will be received at this office until Monday, the 12th March next, for the construction of a **STONE BRIDGE** over the James River, for the Richmond and Danville Railroad.Plans and specifications will be ready for examination at the office of the Company by the 6th proximo. Where prices and responsibility are equal, a preference will be given to the offer wherein the largest amount of the Stock of the Company will be received in payment. **ANDREW TALCOTT,**
Chief Engineer.**BUSINESS CARDS.****James Laurie, Civil Engineer,**

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m***James Herron, Civil Engineer,**OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.**Railroad Iron.**THE NEW JERSEY IRON CO'S WORKS AT L. Bonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to **DUDLEY B. FULLER, Agent,**
139 Greenwich street.

New York, October 25, 1848.

Pig and Bloom Iron.THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,**
Vine Street Wharf, Philadelphia.**Railroad Iron, Pig Iron, &c.**600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsbroric.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.,**
No. 4, So. Front St., Philadelphia.**Railroad Iron.**1000 Tons T Rails, weighing about 60 lbs. to the yard, of the latest and most improved pattern, for sale by **BOORMAN, JOHNSTON & CO.,**
January 20, 1849. 6w**Railroad Iron.**THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to **COOPER & HEWITT, Agents,**
17 Burling Slip, New York.

October 30, 1848.

Railroad Iron.THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Mount Savage Iron Works, Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.3000 Tons, about 60 lbs. per lineal yard—deliverable early in the Spring, and of undoubted quality, can be contracted for at a low rate. For sale by **DAVIS, BROOKS & CO.,**
68 Broad street.

New York, September 16, 1848.

Also on hand—1000 tons best quality Rails.

RAILROAD IRON & LOCOMOTIVE TYRESImported to order, and constantly on hand, by **A. & G. RALSTON,**
4 South Front St., Philadelphia.**Railroad Iron.**THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,**
22 South William street,
New York.

February 3, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L. Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,**
91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.**Stickney & Beatty,** South Charles street, Baltimore.
May 6, 1848.**Railroad Spikes and Wrought Iron Fastenings.**

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.**T. & C. Wason,****MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—**Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved *Freight Cars*. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.**SCHENECTADY LOCOMOTIVE WORKS, SCHENECTADY, N. Y.**

THE undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.

E. S. NORRIS.

February 24, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.**COTTON AND WOOLLEN MACHINERY,** Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.**MILL GEARING,**

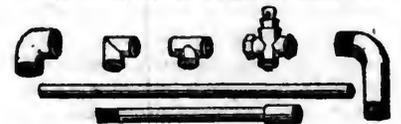
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.**TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.****PASCAL IRON WORKS.****WELDED WROUGHT IRON TUBES**

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Street,
PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.**LOCOMOTIVE FOR SALE.**

(NOW RUNNING.)

A Good Locomotive Engine and Tender in good running order, for sale low. Address

E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.

February 24, 1849.

4t8

**Direct Action Engines
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,**

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may
be built in the United States, under license, which can
be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1½ to 15 inches diame-
ter, and any length not exceeding 17 feet—manufac-
tured by the Caledonian Tube Company, Glasgow, and
for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British
Government, and by the principal Engineers and Steam
Marine and Railway Companies in the Kingdom.

**Norwich Car Factory,
NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and
on the line of the *Norwich & Worcester Railroad*,
established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

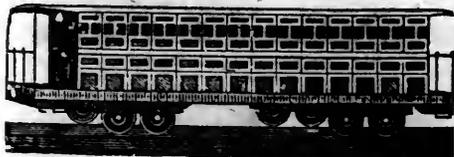
General Agent,

Norwich, Conn.,

Will meet with immediate attention.

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**CAR MANUFACTORY,
CINCINNATI, OHIO.**



KECK & DAVENPORT would respect-
fully call the attention of Railroad Companies in
the West and South to their establishment at Cincin-
nati. Their facilities for manufacturing are extensive,
and the means of transportation to different points
speedy and economical. They are prepared to execute
to order, on short notice, Eight-Wheeled Passenger
Cars of the most superior description. Open and
Covered Freight Cars, Four or Eight-Wheel Crank
and Lever Hand Cars, Trucks, Wheels and Axles, and
Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

**DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF**

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,

SPRINGFIELD, MASS.

1748

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manu-
facture as those so extensively used in England,
Scotland, France and Germany, for Locomotive,
Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the
town of Newcastle, Del., Locomotive and other steam
engines, Jack Screws, Wrought Iron Work and Brass
and Iron Castings, of all kinds connected with Steam-
boats, Railroads, etc.; Mill Gearing of every descrip-
tion; Cast Wheels (chilled) of any pattern and size,
with Axles fitted, also with wrought tires, Springs,
Boxes and bolts for Cars; Driving and other wheels
for Locomotives.

The works being on an extensive scale, all orders
will be executed with promptness and despatch. Com-
munications addressed to Mr. William H. Dobbs, Su-
perintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

**TO RAILROAD COMPANIES AND MANU-
facturers of Railroad Machinery.** The subscri-
bers have for sale American and English Bar Iron, of
all sizes; English Blister, Cast, Shear and Spring
Steel; Juniata Rods; Car Axles, made of double re-
fined iron; Sheet and Boiler Iron, cut to pattern;
Tires for Locomotive Engines, and other railroad car-
riage wheels, made from common and double refined
B. O. Iron; the latter a very superior article. The
Tires are made by Messrs. Baldwin and Whitney, Lo-
comotive Engine Manufacturers of this city. Orders
addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in
the order, a fit to those wheels is guaranteed, saving
to the purchaser the expense of turning them out in-
side.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

**NICOLL'S PATENT SAFETY SWITCH FOR
Railroad Turnouts.** This invention for some time
in successful operation on one of the principal rail-
roads in the country; effectually prevents engines and
their trains from running off the track at a switch, left
wrong by accident or design. It acts independently
of the main track rails; being laid down or removed
without cutting or displacing them.

It is never touched by passing trains, except when
in use, preventing their running off the track. It is
simple in its construction and operation, requiring only
two castings and two rails; the latter, even if much
worn or used, not objectionable.

Working models of the Safety Switch may be seen
at Messrs. Davenport, Bridges & Kirk's Cambridge
Port, Mass., and at the office of the Railroad Journal,
New York.

Plans, Specifications, and all information obtained,
on application to the Subscriber, Inventor and Paten-
tee.

G. A. NICOLLS,

Reading, Pa.

**MACHINE WORKS OF ROGERS KETCHUM
& GROSVENOR, Patterson, N. J.** The un-
dersigned receive orders for the following articles man-
ufactured by them of the most superior description in
every particular. Their works being extensive, and
the number of hands employed being large, they are
enabled to execute both large and small orders with
promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and
Tenders; Driving and other Locomotive Wheels, Axles
Springs and Flange Tyres; Car Wheels of Cast Iron
a variety of patterns and chills; Car Wheels of Cast
Iron with wrought tyres. Axles of best American re-
fined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions
and of the most improved patterns, style and work-
manship.

Mill gearing and millwright work generally, hydrau-
lic and other presses; press screws; callenders; lathes
and tools of all kinds; iron and brass castings of all
descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York,
having at great expense established a manufactory with
every facility of Machinery for Manufacturing Iron
Bridges, Bridge and Roof Bolts, together with all kinds
of the larger sizes of Screw Bolts, Iron Railings, Steam
Boilers, and every description of Wrought Iron Work,
are prepared to furnish to order, on the shortest notice,
any of the above branches, of the very best of Amer-
ican Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several
Iron Bridges for the Erie Canal, Albany Basin, etc.
—and a large amount of Railroad Bridge Bolts, all of
which have given the most perfect satisfaction.

They are permitted to refer to the following gentle-
men:

Charles Cook,
Nelson J. Beach,
Jacob Hinds,

Willard Smith, Esq.,

Messrs. Stone & Harris,

Mr. Wm. Howe,

Mr. S. Whipple,

January 1, 1849.

Canal Commissioners
of the
State of New York.
Engineer of the Bridges for
the Albany Basin.
Railroad Bridge Builders,
Springfield, Mass.
Engineer & Bridge Builder,
Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respect-
fully invited to examine an improved Spark Arrester re-
cently patented by the undersigned.

Our improved Spark Arresters have been extensive-
ly used during the last year on both Passenger and
Freight Engines, and have been brought to such a
state of perfection, that no annoyance from sparks or
dust from the chimney of engines on which they are
used is experienced.

These Arresters are constructed on an entirely dif-
ferent principle from any heretofore offered to the pub-
lic. The form is such that a rotary motion is imparted
to the heated air, smoke and sparks passing through
the chimney, and by the centrifugal force thus acquir-
ed by the sparks and dust, they are separated from the
smoke and steam, and thrown into an outer chamber
of the chimney through openings near its top, from
whence they fall by their own gravity to the bottom of
this chamber; the smoke and steam passing off at the
top of the chimney, through a capacious and unob-
structed passage, thus arresting the sparks without im-
pairing the power of the engine by diminishing the
draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by

ALLEN & NEEDLES,

No. 22 and 23 S. Wharves, near Chestnut St., Philadelphia.

February 24, 1849.

ENGINE AND CAR

WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

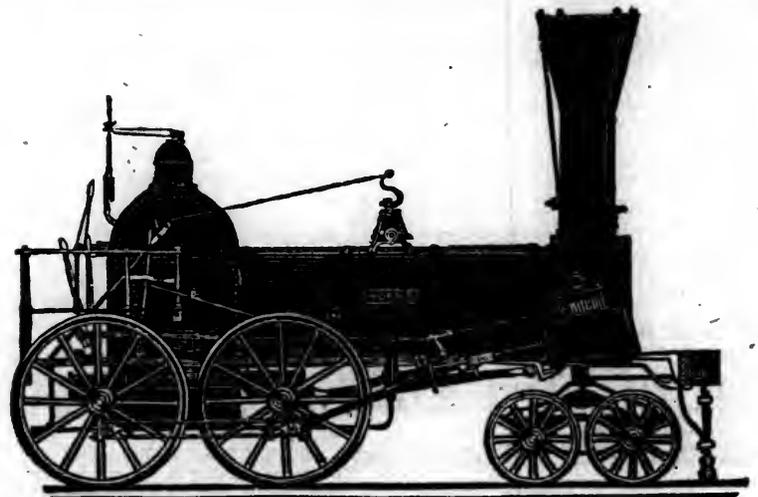
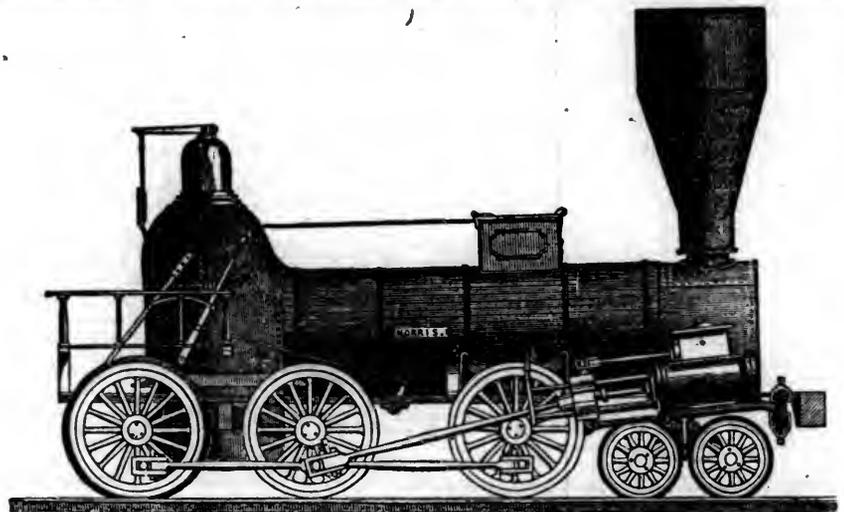
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

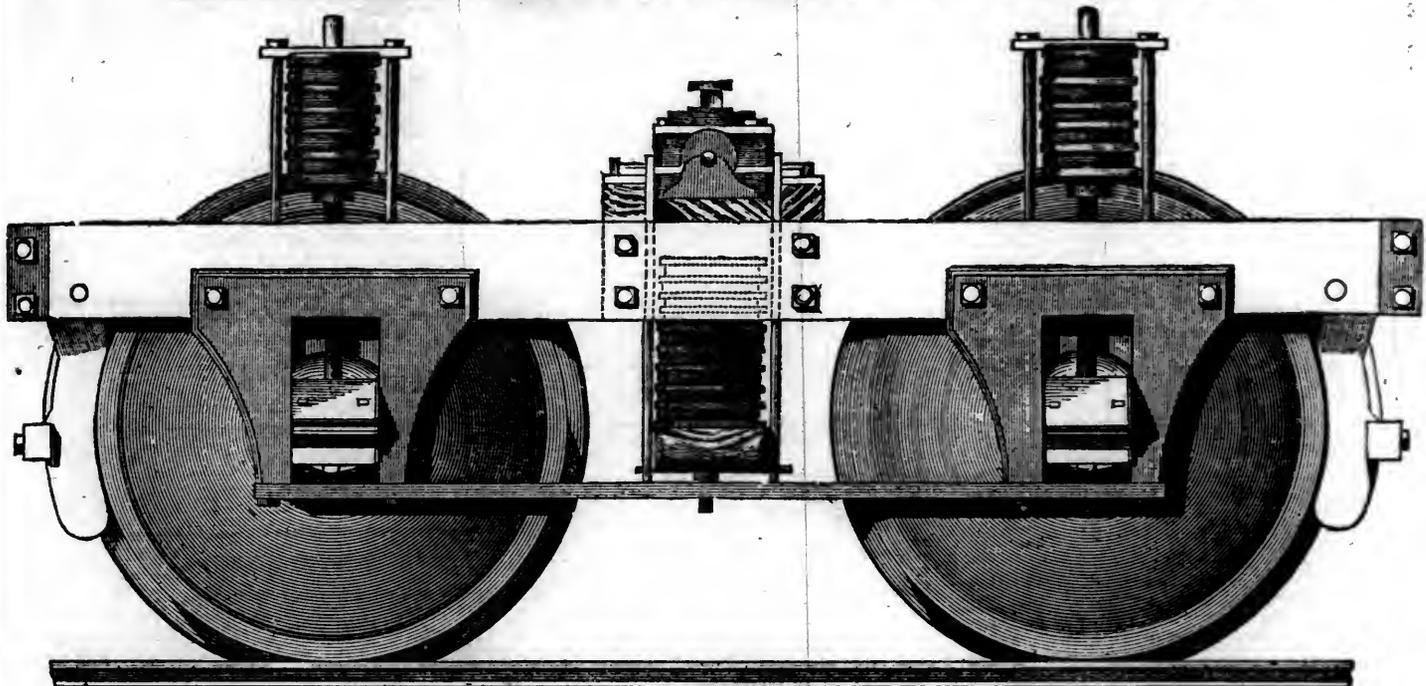
Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise;

NORRIS' BROTHERS.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 1/2.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street,
1710 near Third,
below Walnut,
Philadelphia.

MASONS AND STONECUTTERS WANT.
ED—AT THE U. S. NAVY YARD, NEAR PENSACOLA.—Twenty good Stonecutters can find immediate employment at dressing granite by the superficial foot. The beds and builds of the stone will alone be dressed—the face being left rough. For this work the high price of 25 cents per superficial foot will be allowed on the stone now in the yard, and the tools sharpened.

Those who are Masons as well as Stonecutters, will be preferred; and, more especially, those who are disposed to work, when necessary, in Diving Bells. The works in progress are very extensive, and will, probably, afford constant employment for some years.

To good workmen, of the above description, when employed by the day, the wages will be \$2.50, on the ten hour system; to which, an addition at the rate of one dollar per day will be made for such time as they may be employed in the Diving Bells. Or at the rate of \$3.50 per day.

The Diving Bells, and Machinery, are constructed on the most approved plans, and will be abundantly supplied with air and light, and the water kept low in the Bells, so that no inconvenience will be felt by the workmen, the depth being only from 25 to 30 feet.

Two good MACHINISTS can also find employment in the Navy Yard. Apply in person, to
JAMES HERRON,
Civil Engineer, Navy Yard.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUBSCRIBERS are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO.,
Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, OCTOBER 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm. Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 3½ pm. Leave Providence at 8½ a.m., and 3½ pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10½ pm. Leave Dedham at 7½, 10½, am., 1½, 4½, and 9 pm.

Stoughton Trains—Leave Boston at 11½ am., and 4½ pm. Leave Stoughton at 8½ am., and 2½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.
Winter Arrangement.—1848.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2½ pm. Leave Worcester at 6½ and 10 am., and 4½ pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars.

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 1½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9 1½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m., 3½, p.m.
Gloucester, 9, a.m., 3½, p.m.
Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
Portsmouth, 7, am., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,
From Portland, 7½, am., 3, pm.
Portsmouth, 7, 9½, am., 5½, pm.
Newburyport, 7½, 10½, am., 2, 6, pm.
Gloucester, 7½, am., 3½ pm.
Manchester, 8, am., 3½, pm.,
Salem, 7½, 8½, 9, 10½, 11-40, am., 2½, 3*, 4½, 7*, pm.
Lynn, 7½, 8½, 9½, 10½, 11-55*, am., 2½, 3½*, 4½*, 7½*, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 8½, 10, 11-25, am.
2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, am., 4½, pm.
Salem for Gloucester at 9½, am., 4½, pm.
Trains leave
Gloucester for Salem at 7½, am., 3½ pm.
Manchester for Salem at 8, am., 3½ pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover.
On and after Monday, Oct. 2, 1848,

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9*, am., 3.15*, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am.
2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30*, am., 5*, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Winter Arrangement.
Commencing Nov. 13, 1848

Trains leave Boston as follows, viz.: For Portland at 7 am. and 2½ pm.
Great Falls at 7 am., 2½ and 3½ pm.
Haverhill at 7 and 11½ am., 2½, 3½ and 5 pm.
Lawrence at 7, 9, 11½ am., 2½, 3½, 5, 6 pm.
Reading, 7, 9 & 11½ am., 1½, 3½, 5, 6, 7½ & 10 pm.
Trains leave for Boston as follows, viz.: From Portland at 7½ am., and 3 pm.
Great Falls at 6½ and 9½ am., and 4½ pm.
Haverhill at 7, 8½ and 11 am., 3 and 6½ pm.
Lawrence at 6½, 7½, 8½, 11½, am., 12½, 3½, 6½ pm.
Reading at 6½, 7½, 9½, 11½ am., 1½, 3½, 7½, 9 pm.

MEDFORD BRANCH TRAINS.
From Medford at 6½, 8, 10½ am., 2, 4, 6, 9, pm.
From Boston at 7½, 9½ am., 12½, 2½, 5½, 6½, 10 pm.
The Depot in Boston is on Haymarket Square.

CHAS. MINOT, Super't.
Boston, Nov. 7, 1848.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steambot towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.,

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steambot New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chappaqua, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.03 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dl

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 11.]

SATURDAY, MARCH 17, 1849.

[WHOLE No. 674, VOL. XXII.]

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, March 17, 1849.

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturers's name, and inspected before shipment at the works in Wales. For sale by
DAVIS, BROOKS & CO.,
68 Broad street.
—2m.11

March 18, 1849

☞ We unintentionally omitted crediting the Glasgow Practical Mechanic's Journal with the Life of Stevenson, and the article on the Formation of Coal, copied in our last paper.

Railway Progress.

Continued from page 146.

VIRGINIA.

Since our last issue, in which we spoke of Virginia, and her railway schemes, such events have taken place that we are able, as we are happy to chronicle, in this number, an entire change in the policy of that State. In the earlier proceedings of her present legislature, all railway schemes contemplating aid from the State, were rejected, and we regarded the policy of Virginia as fixed as that of Massachusetts, though in an entirely different direction. An entire change has however taken place, and a system of State policy has been entered upon on a scale of comprehensive liberality, which would do credit to any State in the Union.

The Legislature, which has recently adjourned, has authorised subscriptions on behalf of the

State, to the following roads, viz: to the Alexandria and Gordonville road \$540,000, being three-fifths of its capital; to the Alexandria and Valley road \$1,250,000, being three-fifths of its capital; to the Blue Ridge road, to aid in tunnelling the mountain, \$400,000. This is an extension of the Louisa road. It has also subscribed \$1,800,000 to aid in the construction of the Virginia and Tennessee railroad, extending from the James river, west of the mountains, to the State of Tennessee. It has also chartered a road from Petersburg to the Richmond and Danville road, and extended aid to this work to the amount of \$150,000. The aid thus guaranteed by the State is believed to secure the construction of all these works at an early day. Virginia has thus committed herself to the work of developing her own resources by the construction of a system of railroads, designed to penetrate the most remote portions of the State, and open a market to those sections that have thus far had no suitable outlet to their productions. Independently of this, the action of the other States by which she was surrounded, rendered it necessary that she should take these steps to retain the trade and business of the State within her own limits. Such is the superiority that railways give to those States that have constructed them, that those who have thus far neglected to do so, are compelled to go into this work to maintain their equality and protect themselves. It is this necessity that has given the great impulse which we now witness in N. Carolina and Virginia—States that have been the most backward in these works. Virginia is doubly justified in aiding her public works, as those projected will not only vastly develop her resources, but offer favorable inducements to the investment of capital. For years to come, Virginia will be one of the most active States in the work of railways, which cannot fail to give a large increase of business to those engaged in the manufacture of iron, engines, road furniture, etc.

Atlantic and St. Lawrence Railroad.

GREAT INCREASE.—\$6316 55c were received on the Atlantic and St. Lawrence Railroad, in the month of February, (21 running days) for passengers and freight. Passengers, \$3401 51. Freight, \$2915 04. The tickets sold at the Portland depot on Saturday, amounted to one hundred and ten dollars. The receipts for the present month, we confidently predict, will exceed \$800. Appearances leave no doubt, that this will be one of the best paying roads in the country.

Western and Atlantic Railroad.

We learn from the Chattanooga Gazette of the 14th, that the recent sliding of earth at the Tunnel had been repaired, and the work was progressing well, the contractors being determined to have the work completed by the 1st Oct.

The freight cars, it is stated, will not run up to the Tunnel as soon as was calculated, owing to a part of the iron being lost. There was a large amount of cotton, wheat, flour, &c. at Chattanooga waiting transportation, enough to keep 200 or 300 wagons busy, and the roads were bad.

New London, Worcester and Palmer Railroad.

The Board of Directors of the New London Railroad, at a meeting held the present week in this city, definitely and finally decided upon the location of their road within the limits of this city. The route is along the banks of the Thames, up to the west end of Wharf bridge, passing under the western abutment of the bridge, and so on to the Falls.—*Norwich Courier.*

Mobile and Ohio Railroad.

The *Mobile Herald and Tribune*, of the 17th inst. says:—"Every thing in regard to our railroad enterprise looks cheering. Sidney Smith, Esq., who managed the affairs satisfactorily the first year, has been unanimously re-elected President, and is now giving vigorous attention to the work. The Engineer and surveying parties are pushing forward the surveys, and it is confidently expected that during the coming spring ground at this end will be broke."

☞ The *Journal and Messenger* of 7th inst. says there have been forwarded by the Central road, from the warehouses in Macon, 58,280 bales of cotton, and from the Macon and Western road direct 42,618 bales, making a total of 100,890 bales, or a fraction less than 17,000 bales per month.

The *Macon Journal* says: "Those people who have been so greatly inconvenienced by the difficulty of getting transportation for cotton on the Central road, will no doubt be somewhat relieved to learn that the board of directors have already contracted for sufficient iron to lay anew one hundred miles of the track. It is intended that the superstructure shall be entirely repaired and this iron laid in ample time for the next crop. We are also informed that the rail selected is adapted to the nature of the freights which are to pass over the road—being nearly twice as heavy as that now in use. It ought not to be for-

gotten that the Central road, or at least the first hundred miles of it, was an experiment, and it was not dreamed, even by the most sanguine of its friends, when the iron was ordered, that the business would require any heavier rail than that purchased; nor did the means of the company at that time seem to justify any greater outlay of funds for that purpose.

Important Invention in Railways and Engines.

We had the pleasure a few days since of examining models of proposed improvements in railways, and in the construction of locomotives and cars. We have always been fond of mechanics, and may, without boasting, pretend to have some knowledge of the principles of that science. Unless this pretence is utterly unfounded, we cannot but think that the improvements to which we allude will stand the test of experiment, and answer the purposes for which they were intended. If so, a new and most important period will have arrived in this age of iron and steam.

First, a railroad may be laid down over the ordinary undulations of the earth, like a turnpike road, and engines and cars be so constructed that they can go over it with safety. To accomplish this object, the invention enables the engineer, by mechanical means, to supply any degree of adhesion which may be required at any instant, and to dispense with it the moment he ceases to need it. And to do this, there are no rack-rails, or cog-wheels, or centre rail, nor is there, by this plan, any much resistance to the progress of the train as would be caused by adding weight to the engine, in order to produce the requisite adhesion.

By this invention, it is made an almost impossible matter for the cars to be thrown from the track. It is therefore invaluable, for it admits of light engines for light freights—a great desideratum, certainly, for our southern railroads, extending through sparsely settled districts, while it does not prohibit the use of the most powerful engines, when they are necessary.

The effective power of an engine now, is limited to the adhesion of its wheels. By the plan proposed the adhesion is supplied by the engineer in any required quantity; and consequently the power of the engine is only limited by its capacity to generate and retain steam. Hence it is difficult to say what grade may not readily be surmounted. And when we remember that steam coaches weighing only two or three tons have conveyed at a good speed from twenty to thirty passengers over the common and rough roads of England, readily ascending and descending the steepest hills, we cannot think otherwise than that this invention will multiply in a great degree our means of intercommunication, and bind together more closely our extended confederacy; while the saving in the expense of construction and in the wear and tear of roads and machinery, will be greatly reduced.

We have not attempted to explain the means by which such desirable results are proposed to be accomplished, as it is proper that those who are interested should choose their own time and mode of making them public.—*Washington Union*.

We see that the above has been copied with marks of approbation, into most of our exchange papers. As all our information in relation to this new invention is derived from the above article, we can of course give no opinion as to its value; but we confess that we have little faith in it. The realising any practical results from such an invention involves serious difficulties which are obvious to every person who has paid any attention to these matters, and which we do not see how they can be obviated unless we can get rid of the law of gravity.

On a road that is perfectly level, all that the engine has to overcome is the resistance of the atmosphere and the friction of the machinery. The moment the track ascends an elevation there is an additional resistance to overcome, that of gravity; so that on a grade of 80 feet to the mile, supposing the weight of the engine and train to be 100 tons, and running at the rate of 20 miles an hour, the

engine would have to exert a power equal to raising 100 tons 80 feet in three minutes, in addition to that necessary to overcome friction and the resistance of the air. It is calculated that an engine will draw more than five times as much on a level as it will on a grade of 80 feet. The overcoming of steep grades, therefore, involves a vast increase of power. In the next place the wear and tear of the machinery from the greater friction incident to this increasing power is enormously increased. In the third place it costs much more to keep the road in order where there are steep grades. In the fourth place accidents are much more likely to occur on steep grades; as long, therefore, as the law of gravity remains, these objections to steep grades will exist; and it is found to be much cheaper in the end to reduce the grades as nearly as possible to a level than to attempt to overcome them by a use of greater power. Allowing, therefore, that an engine could be constructed capable of ascending very steep grades, although it might be useful on some road, it could not come into general use, for reasons of economy and safety alone. We hope soon to see a particular description of this invention, of which we will give our readers due notice.

Baltimore and Ohio Railroad.

Dr. W. S. Woodside has resigned the office of General Superintendent of the Baltimore and Ohio Railroad, and Wm. Parker, Esq., late Superintendent of the Boston and Worcester Road been appointed his successor. The Boston Daily Advertiser speaks of him in the following terms:

William Parker, Esq., Superintendent of the Boston and Worcester Railroad has been appointed to the office of General Superintendent of the Baltimore and Ohio Railroad, and has in consequence tendered his resignation of the situation which he holds in the government of the road first named.—The loss of the services of Mr. Parker, in the responsible situation which he has ably and most satisfactorily filled for a period of ten years, will be much regretted by those who have a share in the management of the Boston and Worcester Road, as well as those who have a pecuniary interest in it, or have frequent occasion to travel upon it. The appointment which he has received, to the charge of so important a work as the Baltimore and Ohio Railroad, accompanied with the offer of a liberal rate of compensation, is a satisfactory proof of the high character which he has established, by his successful management, for so long a period, of the similar work with which he has been entrusted.

This testimonial, from the President of the Road with which Mr. Parker has been connected, is the more valuable as coming from one who fully understands railway management, and who has had ample opportunity of witnessing Mr. Parker's qualifications, and will be responded by every railroad man in New England.

Wilmington and Manchester Railroad.

A Commencement made at this end of it.

Thursday last—the 22d of February—was a day of bright anticipations to Wilmington, as well as of grateful remembrances. On this day a beginning was made at this end of the *Wilmington and Manchester Rail Road*; a work in which is involved high hopes of enduring prosperity to our community, with a greatly enlarged circle of business and social relations.

The place selected for striking the first blow was near where the "old brick house" stood, a little west of the Brunswick river, about two miles from town. Thither repaired many hundreds of our population, of both sexes, and of all ages. The steamer Calhoun made two trips to the Brunswick river ferry, going round the north end of Eagle's Island, being at each trip well filled with passengers.

The assembled multitude was addressed by Dr. F. J. Hill, and Messrs. J. G. Wright, and G. J. Me Ree, all of whom portrayed in vivid colors the great

benefits which must accrue to this section from the completion of the road, and exhorted its friends to unflinching perseverance in their noble enterprise. At the conclusion of the remarks of the gentlemen, several persons seized the spades, and "broke ground," amid the loud cheers and huzzars of the assemblage, and the firing of cannon, both there and at Market Dock in town. This ceremony over, all present were invited to partake of a collation provided by the Committee of Arrangements. After this had been dispatched, the company dispersed, well pleased with the day's work.—*Wilmington Chron.*

Improvements in the Manufacture of Iron.

[Specification of a patent granted to Samuel Lees, Park Bridge, Lancaster, iron merchant, for certain improvements in the manufacture of malleable iron.]—*Mechanics' Magazine*.

These improvements refer, 1st, to the piling, and 2d, to the rolling of malleable iron.

1. Instead of piling the flat bars horizontally, as has hitherto been customary, the outside of the fagot is composed of flat bars, dovetailed or overlapped, and placed at right angles to each other. The inside of the fagot is made out of pieces of scrap or other iron, which are arranged vertically, or vertically and horizontally, whereby the bar, when rolled out into shape, will be of greater strength and less liable to laminate than those made after the old method.

2. The improved rolling mill consists of a main shaft, driven from any prime mover, on which is geared a spur wheel, whereby the grooved rollers are driven. The first of the series of grooves in the rollers is open at the side, so as to admit of projection from the frame entering partially into this groove. The bar is first passed through the second groove, and the indentation formed in the side: it is then caused to pass edgewise through the first groove, whereby the bar is reduced to the proper size, while the projection, taken into the indentation, prevents it being compressed out of shape. The bar is then passed through the rest of the grooves and finished. The form of the grooves may be varied so as to give any desired form to the iron, and the bottom roller made to revolve in an opposite direction to the top one. Above the rollers is a frame, which is made to travel backwards and forwards by means of suitable gearing driven from a pulley on the main shaft, and which carries a rod to which is suspended the bar to be rolled.

Claims.—1. The mode of piling or fagoting the flat bars. 2. The rolling mill in which the indentation is maintained by means of the lateral projection. 3. The mode of causing the rollers to revolve in opposite directions. 4. The arrangement of gearing for driving and reversing the frame from which the bar to be rolled is suspended.

The happy and encouraging improvement of the market, in everything that relates to mining and mineral property, is now far too obvious to need any extended comment. This process of improvement and revival has been steadily making head for several months past; and except, perhaps, in the particular instance of copper, and, consequently, in the mines producing that important metal, we doubt if it is really desirable that prices should ascend much higher than their present quotations; notwithstanding, we believe they will go further up yet. They may not for a month or two, as we are disposed to think, reach their culminating point; for, with the demand which a fast rallying commerce is daily sending in upon the market, with wheat at 45s. per quarter, and the three per cent. consols up to 94, it is hardly supposable that so important a class of articles as the home raised metals can continue at their present figures. In the world of commerce, however, as in the physical world, there is between action and re-action an intimate relation and affinity. If prices are forced up rapidly and purposely, the method of their rising will but accelerate their fall. It is true that commerce, like the ocean, has its tides, but the less they are intertered with the less labor will be wasted, and the more fully the two great elements will accomplish their beneficial purposes. We want the markets to be preserved from frequent and artificial fluctuations, and also that mining, in all its branches, should put on the character of a settled business rather than of an irregular speculation. To adventurers and to practical

miners, to all and to each, we may confidently say, "there's a good time coming"—a time when those who have commercially suffered from the operation of the new law, or from the disturbed state of the markets, continental and insular—a time, we repeat it, when their just success and their fair remuneration will be placed on a more permanent footing.—*London Min. Jour.*

The Effects of Railroads upon Real Property.

In estimating the value of projected Railroads and Railroad stocks, few persons look at the inevitable changes produced in the condition and in the value of property through which a Road may pass. The immediate and the eventual results in the simple value of property are such as fully to reimburse a State for the outlay in construction. Massachusetts owes to its Western Railroad the great changes that have taken place throughout the whole line of the Road, and more especially at its terminus, Boston.

This increase is not confined to the mere termini, but to all towns and villages within the range of the Road. The population of Massachusetts, so very sluggish for many years, as regards increase, has received an impetus from its Railroads, which is more than commensurate with the enhanced value of property. Thus in some of the small towns in that State, their census returns show the following rapid changes between 1840 and 1845, (only five years) in their population:

Roxbury 67 per cent.	Lowell 38 per cent.
Brookline 50 "	Worcester 56 "
Cambridge 33 "	Springfield 33 "
Chelsea 128 "	Fall River 59 "

It may be said that every farm, every acre through which a Railroad passes is enhanced in value thereby at least one dollar per acre. The following remarks are extremely pertinent to the subject, and are worthy a careful consideration. Similar remarks might be written for our own latitude, (Maryland.) If the Baltimore and Ohio Railroad were now finished, there is little question that the enhanced value of property throughout the line, would be "three times the cost of the Road"—to say nothing of the increased business that would be derived directly by our Baltimore merchants. In that event, the number of passengers from the Ohio to Baltimore would no doubt average 1000 per day throughout the year, provided the Company adopted the minimum rates of fare. Baltimore itself would derive a much larger revenue from the Road than the Railroad Company itself.—*Baltimore American.*

In connection with the above, the *American* quotes the following extract from a letter written by the President of the Nashville and Chatanooga Road, showing the effect that the contemplated construction of this road has produced in Tennessee.

"There was at the time of making up the subscription to the Nashville and Chatanooga Railroad, much said, and conflicting opinions expressed, with regard to its effect upon the value of real estate, growing out of expected enhanced value of the products of the soil, and increased business in the towns; in consequence of which I have taken some pains to make up something like an average of the present rise above the value two years ago, and find it varies in the country from one dollar per acre in the mountains to as high as fifty nearest Nashville; and that the lots adjoining the city have risen fully three hundred dollars an acre, and many of them more than that, and the lands out from three to ninety miles from Nashville have generally risen and actual sales made at advances varying from five to fifteen dollars an acre. And the valley lands beyond this point in the mountains have risen from three to ten dollars per acre, near the road line. I have then determined that a fair and very low average rise on the lands ten miles each side of the railroad would be five dollars an acre already, which is a gain to the land holders of Tennessee, and on the line of road, of \$64,000 per mile of road, or \$9,728,000 on the whole one hundred and fifty miles, equal to over three times the cost of the road, which will not be as much as \$2,000,000, fully equipped and under way.

The rise in town property has been in as great a proportion, making at least \$1,300,000, which added to the \$9,728,000, would make \$11,028,000.

This may look large to those that have not had their attention called to this subject, but it is so nevertheless. But even if it were only one half, or only one fourth, it would be equal to the whole cost of the road. Thus, when it is recollected that all the money subscribed in Tennessee is laid out again in the State, and circulated and kept at home, the cost of the road and much more is already a gain to the country."

South Carolina Railroad.

We have received from Col. James Gadsden a pamphlet containing the proceedings of the stockholders of the South Carolina Railroad Co., and the Southwestern Railroad Bank, at their annual meeting on the 13th and 14th ult. Under this road is included not only the main trunk line to Hamburg, but the branches to Columbia and Camden. The report of the directors was presented by Col. Gadsden, president of the road, which we place before our readers.

As this is one of the leading roads in the country we devote to it a large space in our columns, as we are desirous of placing its present and prospective condition before the public. The railroads of South Carolina have secured the services of her ablest men, and their management has been such as to promote the interest of the stockholders, and the convenience of the travelling public; and we are glad to see that the services of the directors have been appreciated by their re-election.

To the Stockholders of the S. C. Railroad Company:

GENTLEMEN:—In presenting their Fifth Annual Report, the Board of Directors have the satisfaction to state that the Camden Road has been completed, and has been in operation since November last, as a profitable Branch of South-Carolina Railroad. Accompanied is the Report of the Chief Engineer, affording the details as to survey, management, and modes of construction.

It is not in the power of the Board, from the short period that this Branch has been in operation; to arrive at certain conclusions as to the extent of future profits. The Road was not opened for its entire length to Camden before November; and to the first of January, the business credited to it amounted to \$47,603 67, and the books for the month of January show \$9,524 17.

There has been accommodated on the Road to the first of February, 6,823 passengers, and there has been transported from it 22,972 bales of cotton, with a corresponding amount of up freight. In the original estimate of the probable business to be depended on, 30,000 bales of cotton was assumed as a maximum, nearly 4-5ths of which has already been realized, and probably, not to exceed one half of the crop, has been forwarded from that section of the State. The passengers in number have greatly exceeded all previous calculation. The passenger which makes the connection daily with the Charleston trains, *both up and down*, without any additional expense, but what may be involved in the injury to machinery in performing a few extra miles, extends the accommodation of a day communication, and at considerable profit to the Company, between Camden and Columbia, and the Districts of Kershaw, Sumter and Richland.

The gross receipts for the entire Road for the year 1848, was.....\$655,575 30
The gross expenditures connected with the working of the Road, was.....\$397,604 99
Deduct extraordinary expenses for machinery, motive and car power, and materials on hand,.....94,124 59

\$303,480 40

Earnings for 1847,.....\$352,094 90
Being at the rate of 46 per cent on current, and a fraction less than 61 per cent on the gross expenses, compared to the receipts.

The gross receipts for all the Roads from the legitimate sources of business for 1848, was.....\$800,073 54

The gross expenditures were.....398,802 79
Deduct extraordinary expenses

for new cars and materials on hand, and machinery,.....55,313 95

Leaving for current expenses.....343,488 81

Earnings for 1848,.....\$456,584 13
Being at the rate of 42½ per cent of current, and about 50 per cent of gross expenditures compared to receipts; showing an increase of the business of the Company for the year 1848, of \$144,496 24, or 22 per cent above the year 1847—of \$40,008 excess, or 13 per cent on current expenses, and a surplus net profit of \$104,489 93.

The business of 1848, contrasted with that of the preceding year, shows

An increase in up freight of	8 per cent.
An increase in down freight of	71 do.
An increase in through travel of	13½ do.
A decrease on local travel of	2½ do.
An increase of total earnings, near	30 do.

This statement is encouraging, as showing a healthy increase in every branch of transportation, with the exception of that on local travel, which might probably have been explained by the substitution of family and season tickets, at a low rate, compared with the higher regular fare, if the Central and Georgia Roads, from Savannah and Augusta did not exhibit a greater corresponding reduction on local and way travel in their reports. The decrease is falling off on the South-Carolina Road being very inconsiderable, but 2½ per cent, while the increase on the other three sources of revenue have been 8, 13½ and 71 per cent.

The Stockholders are respectfully referred to the Report of the Auditor for the state and condition of the finances, and as to the application of the revenues of the Company for the last year.

The tabular statements give in detail the business of the Road, and the sources from whence it has been improved. Attention is particularly invited to the "comparative state of income," from 1844 to 1848, both years inclusive, and the appropriations for dividends, within that period, amounting on an average to 5 40-100 per cent per annum and exceeding in rate the dividends of every Bank but two in the city of Charleston. One semi annual dividend, within that period, and ending with the close of the year 1848, has alone been withheld. Its application, however, to the liquidation of the immediate liabilities contracted in the completion of the Camden Branch, and to the payment for the purchase of permanent locations for Depot and Workshops, was promotive of the best interests of this Company; and in carrying out the objects which have been strongly urged on the consideration of the Directors by the Stockholders, a confidence is felt that this prudent and judicious measure must meet with their approbation. Provision has thus been made for the accomplishment of all these objects, and arrangements are now in progress for occupying the Company's domain with more appropriate buildings than those which hitherto, but inadequately afforded the security and accommodation needed.

The Road is in good working condition. The Trains, both freight and passenger, have run for the whole season with unprecedented regularity, and freer from casualties than in any former year. Much credit is due to the zeal and fidelity of the Officers of the Company for the service which the Road and Motive and Car power has been made to perform at a period of uncommon requisitions on all—involving the necessity of often working by night as well as by day.

Restricted as has been the means of the Company contrasted with the demands on its immediate responsibilities and obligations, and deranged as has been, for the last two years, the monetary relations of the world, precluding all possibility of negotiating favorable loans on time, your Direction has not had it in its power to press forward with the contemplated new workshops and depot at the Charleston terminus, as rapidly as was desirable. They have not been able likewise to take any measures, either to improve the working of the Inclined Plane at Aiken, or to examine further into, and decide on a substitute, by *succession of grades*, within the profitable power of locomotives, should that measure, on calculation, be found most recommended. Either, however, will impose additional demands on the Company's Treasury, and for which it has not been prepared to meet the last year. Under the authori-

Cash on hand.....	21,346 78
J. King, Jr., chief engineer, bal. due by agents.....	57,653 58
Postoffice department, due for transp. mails.....	10,065 62
Articles furnished by compa- ny—due by sundry persons	6,669 12
Officers of comp'y—in hands for disbursement.....	13,945 77
Bank of Camden—on deposit	195 25
Construction of Camden br. —expended.....	580,417 43
Mutilated script to be burnt	8,425 50
Palmer, Mackillop, Dent & Co.—to credit of com- pany in London.....	1,043 23
	<hr/>
	754,229 52

Liabilities as above..	3,427,005 25
Assets as above.....	754,229 52

Bal. of indebtedness. \$2,672,775 73

Statement of the Receipts and Expenditures of the S. Carolina Railroad Company, for the year ending 31st December, 1848.

	Dr.	
To amount from freight.....	\$533,594 56	
“ “ passage.....	204,995 47	
“ “ mails.....	39,106 24	
	<hr/>	
	779,696 27	
To am't from through tickets sold by the Georgia railroad and stage lines.....	16,368 12	
Minor Resources, viz:—		
Small package drayage.....	507 29	
Storage.....	1,335 79	
Rent.....	580 00	
Wages company's negroes.....	1,029 65	
Oak wood sold.....	556 42	
	<hr/>	
	4,009 15	

800,073 54

Legitimate Business.

To amount taken from current expenses of last year, and subsequently charged to Camden branch.....	9,407 59
Do. taken from stock, machinery, etc., on hand 31st December, 1847, and charged to Camden branch.....	22,298 70
Construction of cars.....	500 00
Do. sales of slave Joseph.....	3,640 00
Do. sales of scrap iron.....	173 80
Do. sales of damaged corn.....	155 92
Do. sales of old inclined plane rope.....	221 87
Do. profit on sales of bricks.....	73 50
Do. exchange of lots in Orange- burg.....	196 88
Do. over allowance in declaring dividend No. 9.....	3,946 80
Do telegraphic contract.....	40,615 06

840,688 60

By reduction of indebtedness in the past year:

From.....	\$2,790,494 31
To.....	2,672,775 73
	<hr/>
	117,718 58
Interest on sterling bonds.....	108,801 15
Lands.....	4,211 87
Improvements of depots.....	2,879 07
Rail iron, including \$4,945 39 for Con- garee bridge.....	29,548 29
Negro Essex.....	750 00
Lands for new depot, etc., in Charle- ston.....	34,871 23
Dividend No. 9, script, for year ending June 30, 1848.....	143,047 50
Do. extra, not included when No. 9 was declared.....	28 12

441,885 81

Ordinary Current Expenses—
(Exclusive of interest on debt to State,
about being funded, viz: on \$258,
786 54, and \$100,000, \$168,706 28—

making total debt \$527,492 82.)	
In Road Department—	
Superintendence and wages.....	43,672 08
Building materials, including lumber for cars.....	3,534 26
Timber.....	25,234 14
Spikes.....	5,148 88
Provisions for negroes.....	5,696 17
	<hr/>
	83,285 53

In Transportation Department—	
Agents, clerks, laborers, etc.....	90,669 50
Locomotive crews.....	41,874 57
Inclined plane, new rope.....	6,151 46
Provisions for mules and dogs	971 06
Drayage.....	943 55
	<hr/>
	140,610 14

In Machinery Department:	
Machinery bought, including a piling machine, and loco- motive engine Memphis—	\$9,250
Materials.....	12,666 27
Oil.....	4,220 06
Tallow.....	3,952 19
Duck.....	305 42
Coal.....	3,666 22
Wood.....	24,966 08
Charleston Workshops.....	63,225 53
Aiken do.....	1,702 01
	<hr/>
	137,447 12

In contingencies:	
Salaries of officers.....	6,890 00
Exchange.....	593 16
Interest, general.....	18,318 67
Damages, including Gaze's case, \$1090.....	4,800 36
Negro clothing.....	196 00
Office rent, stationery, etc....	6,631 81
	<hr/>
	37,460 00

840,688 60

THOS. WARING, Auditor.

The following gentlemen were chosen Directors for the present year.

James Gadsden, President.	
Wm. Hamptor, Joe! Adams,	
W. C. Dakes, A. H. Boykin,	
John Boyce, S. Mory,	
F. H. Elmore, Alex. Mazyak,	
A. Wallace, Chas. A. Maywood,	
Robert Martin, Dr. D. J. Campbell,	
R. Caldwell, Her Boyce.	

Gold in California, and Other Countries.

At the Society of Arts, on Wednesday evening, Mr. Tennant, G. G. S., read a paper "On the Different Mineral Substances, which may be found with gold in various parts of the world, (including California) but which have been overlooked." At 8 o'clock, Baron Goldsmid took the chair. The secretary, after reading the minutes of the last meeting which were confirmed, alluded to the interesting paper which had been read at the last meeting, by Mr. Highton, "On the Electric Telegraph," and advertising to the fact that the Society had been the first to introduce to the notice of the public that valuable material, gutta percha, stated, he believed the time was not far distant when, through its agency, a submarine communication would be established between England and Ireland, as well as France and England; and produced, for the inspection of the members, a combination of six copper wires, separately insulated by a new process, and twisted together into a rope, by which the insulation of each wire is secured, and the whole rendered exceedingly strong and compact, and in this state it would be placed at the bottom of the sea, thus forming a submarine communication. The specimen was sent by Mr. Francis Whishaw.

Mr. Tennant commenced by observing, that the California gold was similar to that found in the Brazils, but lighter in color; the existence of gold in that country had been known for centuries, the first discoverer of it having been Sir Francis Drake; various substances had likewise been found there, such as mica (which might be seen in the granite in the streets,) copper, and iron pyrites, much resembling gold in color; the disappointment consequent on the discovery of this, had, probably disgusted the first adventurers, who had abandoned it without further attempts to prosecute and explore the sources from

whence it was derived—that probably the gold had been lying there for ages. Such may occur in any new country—for instance, Australia, Borneo, or India. Gold was first discovered in the Brazils in the beds of rivers, by washing the alluvial soil; he had himself seen particles of gold in the Grampian Hills, but he doubted much whether it would pay the expense of working—they might get 14, but it would cost 2l. 10s. Gold was likewise found in Wales in sulphuret of zinc, and in Cornwall among tin. Mr. Tennant here exhibited several specimens of gold; these consisted of—1. Foliated gold with quartz, from Mexico.—2. Crystallized Gold.—3. A round pebble, weighing 9 ozs. 14 dwts., containing over 6 ozs. of gold; both these, from Brazil, had formed part of the Stowe collection.—4. Gold from Cornwall.—5. Gold in sulphuret of zinc, from the Hwnyswn mine, in Merionethshire, besides several specimens of granular gold from the west coast of South America, Africa, and California. According to assay, furnished by Mr. Henry, the gold of California, of 100 parts, was composed of—gold, 88 75; silver, 8 88; copper, 0 35; siliceous residue, 1 40—99 88.

In Brazil, according to Mawe, eight men had, in four hours, obtained 203 ounces of gold from a portion of soil not two tons weight, taken from a deep hole at the bottom of the river. He should not be surprised to hear that diamonds, rubies, emeralds, sapphires, and other precious stones, were to be found intermixed with the gold; and to this, should there be any adventurous parties at present in the Institution, who thought of going to California, he wished particularly to draw their attention, that while they were seeking for gold, probably more valuable substances might be overlooked. The average value of gold was about 3l. 15s. per ounce, that of diamonds in their rough state was about 50l; while if free from defects, flaws, &c., they were of greater value. He had, therefore, taken Jeffres' estimated value of pure diamonds, and this was generally considered the best. Diamonds were in general weighed by the carat, which was a term well known to jewellers, and equivalent to 4 grains. Thus a diamond of—

1 carat was worth £8	10 carats was worth £300
2 " " " " " " " " " "	16 20 " " " " " " " " " "
3 " " " " " " " " " "	72 30 " " " " " " " " " "
4 " " " " " " " " " "	128 50 " " " " " " " " " "
8 " " " " " " " " " "	200 100 " " " " " " " " " "

From this it would be seen that, according to the weight, the value of the diamonds was enhanced most materially—so that the heavier they became they received a considerable increase, and apparently most disproportionate ratio of value. The largest diamonds were at such an enormous cost, that it was impossible for private individuals to purchase, no one being sufficiently wealthy to lay out their capital on precious stones of such a price. The finest private collection of diamonds he believed to be in the bank of England, being the property of the late Mr. Philip Henry Hope; there had been several lawsuits with regard to heirship of these jewels, and the suit is yet pending in our courts. To those who were admirers of diamonds, he would recommend a visit to the Tower, to see the Crown jewels deposited there, and fine specimens might daily be seen in the jeweller's shop windows in London. It might be said that it was extremely difficult to detect the diamond in its true face; but nature had ordained that, in all inorganic substances, there should be some distinguishing mark, such as crystalline form, specific gravity, hardness, fracture. Mawe, in his account of the Brazils, says, when they were first discovered, so little was their value known, that they were used as counters. Quartz, which is a very hard substance, differs from true diamond, inasmuch as it always breaks with a curved fracture, generally termed by mineralogists conchoidal, or like a shell. Topaz occurs in a rhombic prism when perfect; if the edges are destroyed by the friction of a long transport from the mountains where they are discovered, or any other cause, it breaks with a smooth fracture at right angles with the axis of the prism, as if polished by a lapidary. On the contrary, the diamond breaks in four directions; which will yield an octahedron. The usual crystalline form of the diamonds are cubes, octahedrons, and dodecahedrons, occasionally with spheroidal faces, they are never found in rhombic or six-sided prisms, and that is a sure guide

to detect them from the others, when found crystallised. In the collection he had purchased at Stowe, his friend, Mr. Herz, had inspected a prebble with a diamond on it; he (Mr. H.) imagined that the diamond has been fastened on there by gum, or some other resinous matter; on applying boiling water, it was found not to loosen, but by washing the soil away, it was found half as large again; in addition to this two others were discovered, besides a large quantity of gold. This might be the case in California; he was no advocate for going there, but he thought it not all improbable that different precious stones might be discovered there.

But returning to the gold, he would tell them a few simple tests to detect an adulteration of the precious metal. They had heard brass filings had been exported there to mix with the gold-dust; this was much lighter than gold. The specific gravity of gold had been tried by four different trials. The following had been the result:—15, 15 7-10, 16 1/4, 17; so that, as a mean, the specific gravity of gold was 16 times greater than water; while that of copper pyrites was 4.5; iron pyrites, 4.3 mica, 3. The blow-pipe was, likewise, a most useful and simple instrument; this can be used with a penny candle and a half-penny worth of charcoal—so that, for 8d. or 10d., a primitive furnace to commence operations with, can be purchased.

Gold may be cut with a knife like lead, and bent and beat out in thin leaves. Iron pyrites cannot be cut, or even scratched with a knife. Copper pyrites is brittle. Mica, foliated and elastic. The blow-pipe applied to gold, it retains its color; while copper and iron pyrites lose theirs, and the latter becomes magnetic. Gold is also not acted upon by nitre, muriatic, or sulphuric acid singly; when the two former are combined, it is only then soluble. If any of the other three minerals were reduced to powder, either of these acids will readily act on them. These were simple tests, and which any one, without the slightest knowledge of mineralogy, could avail himself of. He had seen a recent work called *Jackson on Minerals*, which he wished to allude to, on account of the erroneous statement contained in it, with regard to diamonds. He should not have adverted to this; but such errors in general, when they appear in print, if not corrected, go down to posterity. He says—"Draw a fine file over the stone; if it does not scratch, it is a good diamond." This was not the fact; a fine file drawn over it might cause serious injury to the stone, by detaching some of the facets in the direction of the cleavage plains. He then states, if very minute, place it between two half-crowns; then place it between the finger and the thumb: if a diamond it stands—this was perfectly useless. Another author said, that a good diamond, placed on an anvil, will remain perfectly whole when struck; but an indentation will be seen in both the hammer and anvil. For his own part, he should not like to have any diamond of his subjected to such a test. The diamonds are very brittle; and a valuable diamond could be broken easier than quartz.

Dr. Mantell required of Mr. Tennant some further explanation of the formation of gold and of the diamond.—Mr. Tennant said, that gold was found in quartzose veins. The rock was argillaceous schist, which readily decomposes. That no doubt electricity had been at work. It was impossible to say how Nature was working in her large laboratory. The lighter particles were washed out, and the great body of the gold remained behind. So much had already been written in the newspapers about the formation of it. With regard to the diamond, a distinguished chemist had devoted several months to its study, and was about to publish on its properties, which, coming from so eminent a man, he had no doubt would throw a great light on the subject—the gentleman alluded to was Mr. Faraday. Mr. Tennant concluded his paper amid the prolonged cheers of his audience.

Dr. Mantell observed that, according to Sir Rodrick Murchison's work, gold had been discovered in diluvial deposits in Siberia; and these were generally the richest. His opinion was, that the Ural Mountains had risen in that convulsion; and that he believed large deposits of gold existed in the rocks, and had been there for ages, at the same period when those large animals, now extinct, and which they knew had existed there from their carcasses having been found imbedded in ice. If he

went to California, he should seek the place where the largest pieces were to be found; and by tracing that, endeavor to come to the fountain head.—The diamond had been considered to be a crystallised gum, or resin, from a plant. It was known to be pure carbon; and when consumed, the residue was like charcoal from a piece of wood. Sir Isaac Newton was of the same opinion of the gem—the refraction of the light being the same as on opal and amber, which were both substances of a vegetable nature.

After a few observations from Mr Percival Johnson, who stated, that as they got deeper in the mines the gold diminished, Baron Goldsmid apologised for addressing the society, and stated, that his only motive in doing so was, to caution those young people who might not only be risking their fortunes, but their lives, in going to California. When the gold mines were first stated here, a company, with which he was connected, had raised 1,000,000*l.* to trace the gold veins. The shares were issued at 10*l.*; and this before a grain of gold had been acquired. The produce of the different companies he had obtained. The Imperial Brazilian, in 25 years, had produced 1,500,000*l.*; Morro Velho in 10 years, 416,000*l.*; and the Cata Branca, in the same period, 240,000*l.* That at this time, after 25 year's work, they had obtained their money back, with 5 per cent. for the last 10 or 12 years; and the mine was now exhausted. The only benefit it had been to science, was the discovery of palladium, which had been applied to telescopes for astronomical purposes.

The thanks of the society were voted to Mr. Tennant for his interesting paper. Several diagrams of the different crystals of diamonds, topaz, and quartz, as well as others, giving their component parts, were exhibited.—*London Mining Journal.*

The Iron Manufacture.
British and American.

We continue the article published last week, in reference to the manufacture of iron.

As compared with 1847, our tables exhibit, in respect to pig iron, an increase in the production of 60,000 tons; in the stock of 10,000 tons: and in the exports to the United States, of 45,242 tons; while the shipments have decreased to British America 2029 tons, and to ports in Europe 25,638 tons. Consequent on the foundry consumption and shipments at this season being on a very high scale, together with the existing large production, the stock of pig iron will in all probability, accumulate for some time to come. It may be worthy of remark that there has lately been a considerable quantity shipped, and is now laying for sale at Runcorn and other points in Lancashire, of which we take no notice in the annexed estimate. In 1847 the quantity used for local malleable iron purposes was 124,800 tons, whereas this year it has been exceeded by 31,200.—The progressive extension of this branch of the Scotch iron trade has exercised an important influence in keeping the stock of pig iron low, while the moderate price of bars has induced large foreign and home orders, which formerly were executed in England and Wales. In 1847 the export of Scotch manufactured iron to foreign ports was 3,520 tons, and in 1848 it amounted to 10,390 tons.

Considering the probable continuance of the American demand for pig iron—the settlement of political affairs on the continent, and the evident symptoms of improvement in the commerce of this country, it does not appear unreasonable to anticipate for this important branch of national industry some participation in the benefit of a revival in trade;—and, it is to be hoped, this may be the effect of legitimate demand, and not the result of speculation.—During the present year, speculation in pig iron has been on an exceedingly limited scale—transactions of the kind having more the character of jobbing, than of speculation. The extreme variation in price throughout the year has been about 12*s.* 6*d.* per ton. Since the 31st inst., there has been a rather extensive business done here in Scotch pig iron; the price has advanced during the interval about 2*s.* to 2*s.* 6*d.* per ton; and the market closes firm with buyers of mixed numbers at 44*s.* 6*d.* per ton net cash free on board. Manufactured iron continues steady—bars at 25 *s.* to 25 15; nail rods at 26 10; plates and sheet 27 10 to 28—4 per ct. discount for cash.

Pig Iron Works and Furnaces in Scotland.			
Works.	Works in Operation.		Total.
	In blast.	Out of blast.	
Gartsherrie.....	16	0	16
Dundyvan.....	9	0	9
Clyde.....	5	2	7
Govan.....	4	2	6
Calder.....	5	3	8
Langhorne.....	6	0	6
Carnbroe.....	4	2	6
Glengarnock.....	7	2	9
Summerlee.....	6	0	6
Mankland.....	9	0	9
Coltness.....	5	1	6
Omoa.....	3	1	4
Shotts.....	3	1	4
Castlehill.....	0	3	3
Blair.....	0	5	5
Muirkirk.....	2	2	4
Garscube.....	0	2	2
Carron.....	2	3	5
Devon.....	1	2	3
Forth.....	4	1	5
Kinniel.....	4	0	4
Lugar.....	3	1	4
Eglington.....	2	2	4
Lochgelly.....	2	0	2
Dalmellington.....	1	1	2
Total.....	103	36	139
Works now erecting and nearly ready.			
Portland.....	0	0	2
Nithsdale.....	0	0	3
Total furnaces.....	103	36	144

Shipped foreign in 1848.		
From Scotland—tons.....	95,690	
Ireland.....	2,883	
England.....	63,578	162,151
Coastwise.....		227,833
Total tons.....		389,984

Comparative view of Exports, Stocks, Production and Prices, 1846-7-8.			
	1848.	1847.	1846.
Exports.			
France..... tons.	5,859	24,836	35,567
Jersey and Guernsey.....	329	95	268
Germany.....	41,417	50,857	48,766
Denmark, Sweden & Norw.....	7,054	9,416	2,580
Russia.....	1,220	962	.....
Turkey and Egypt.....	911	531	260
Italy and Austria.....	4,642	6,226	5,481
Spain.....	1,444	1,703	2,703
Portugal.....	535	283	435
South America.....	1,989	1,343	538
West Indies.....	161	215	170
New South Wales.....	641	1,458	607
British America.....	4,198	6,327	7,307
United States.....	90,235	44,993	13,918
China.....	575	175	.....
East Indies.....	950	.....	.....
Total.....	162,151	143,460	119,100

Stocks and Production.		
	Stock.	Production.
Dec. 31st, 1846..... tons.	145,000	580,000
" 1847.....	90,000	540,000
Decrease in 1847.....	55,000	40,000
Dec. 31st, 1848.....	100,000	600,000
" 1847.....	90,000	540,000
Increase in 1848.....	10,000	60,000

PRICE.			
	1846.	1847.	1848.
January.....	£4 0 0	£3 13 4	£2 8 4
February.....	3 17 6	3 13 4	2 10 0
March.....	3 10 0	3 1 1	2 4 4
April.....	3 6 0	3 10 8	2 1 9
May.....	3 10 0	3 5 3	2 2 3
June.....	3 8 0	3 5 0	2 3 0
July.....	3 10 0	3 8 1	2 5 6
August.....	3 15 0	3 7 9	2 5 3
September.....	3 13 6	3 6 0	2 5 3
October.....	3 9 6	2 19 10	2 3 0
November.....	3 9 0	2 11 0	2 2 0
December.....	3 19 6	2 7 6	2 2 4

1815.	AVERAGES.			
3 16 0	3 11 8	3 5 0	2 4 5	
Malleable iron produced in Scotland:—				
Tons,.....	1845. 35,000	1846. 45,000	1847. 60,000	1848. 90,000
STOCK.				
Stock on hand 31st Dec., 1847.....	tons, 90,000			
Stock this date in stores and maker's hand..	100,000			
Increase in 1848.....	10,000			
Furnaces in blast:				
1st June, 93; 1st August, 101; 31st December, 103				
Production in 1848.....	tons, 600,000			
Add stock 31st December, 1847.....	90,000			
	690,000			
Exports as above.....	389,984			
Stock this date.....	100,000			
Consumed for malleable iron purposes				
in 1848.....	156,000			
	645,984			
Leaving for local foundry, and inland consumption in 1848..... 44,016				
P. & A. FERUSON & RHIND.				
Glasgow, Dec. 30, 1848.				
The imports of Scotch pig iron into the United States in 1848, were thus distributed:				
New York.....	55,373 tons.			
Boston.....	23,930			
Providence.....	400			
Philadelphia.....	6,967			
Baltimore.....	1,216			
New Orleans.....	1,763			
Mobile.....	160			
Savannah.....	250			
Charleston.....	176			
	90,235			

Improvements in Working Railways.

[Specification of patent granted to Thomas Thornton, of Birmingham, merchant, and James Edward McConnell, of Wolverton, Buckinghamshire, engineer, for improvements in steam engines, and in the means of retarding engines and carriages on railways, and in connecting railway carriages or wagons together; also improvements in effecting a communication between one part of a railway train and another, by signals or otherwise.]

These improvements consist, in the first place, in forming the piston of packet rings, having conical interior surfaces, and causing the surfaces of other rings—also made conical, but in a reverse direction—to act against them. Elastic metallic discs rest upon ledges, made at the inner sides of the same—spiral springs being interposed between such discs, and pressing them outwards; thus the conical surfaces of the second named rings press against the interior conical surfaces of the first named or packing rings, and close contact with the sides of the cylinder is thereby maintained.

These improvements consist also in a novel arrangement of steam engine chimneys and blast pipes. To increase the draft in the chimney, without adding to its height, it is proposed to form in the chimney of the locomotive engine several shafts, and to have the like number of blast pipes in the exhaust pipe, so that there shall be provided, a blast pipe for each shaft of the chimney.

These improvements further consist in a novel arrangement of the eduction passages, effected by forming an additional opening in each passage, with a valve fitting such opening, each end of such valve being fixed on the spindle of the steam valve; immediately opposite the additional openings, at the other side of the valve chamber, are other orifices, which, upon the alternate uncovering of such additional openings, allow the steam to pass from the cylinder to the chimney—thus facilitating its escape and effecting the reduction of back pressure on the piston.

These improvements further consist in attaching the buffers to the axles, instead of attaching them in the usual manner, or they be suspended in a frame connected to the axles—thus bringing all the buffers into the same horizontal right line; and such buffers are to be formed hollow, containing a chain that extends from the engine to the carriage, where the

guard is seated. Upon a pulley, keyed on the axle of a friction wheel, each end of this chain is wound; and, upon bringing down such friction wheel upon the periphery of the running wheel, the same will make a revolution with the pulley, whereon the chain will be wound, and a signal communicated to the guard—thus affording a complete plan of signalling between that functionary and the engine driver; and, further, the said chain, being caused to act upon the brakes through the medium of toothed gearing, the retarding of the progress of the train will be effected simultaneously with the operation of signalling.

These improvements likewise consist in a novel mode of coupling, which will allow the carriages of a train to be coupled together from the side of a carriage; this is effected by having a rod passed thro' the centre of the coupling hook, such rod having a handle at each end, and there is keyed upon this rod a coupling loop, with the hook between its ends, and by this means it can be attached to, or detached from, the front, or binder carriage, as may be necessary. The rod for bringing back the buffers is worked by mitre and bevel wheels, driven from the side of the carriages. By the adoption of this mode of coupling, the necessity of the railway attendant going in between the railway carriages, in order to couple them together, is done away with, thus preventing the occurrence of any of those horrible accidents that have ere now occurred to railway attendants, while thus employed. The patent right is claimed for the invention substantially as above described.—*London Mining Journal.*

From the Detroit Free Press.

Lake Superior Country and Mines.

We extract the following from a letter written by Gen. E. J. Roberts, U. S. Mineral Agent, received by the last mail, and dated Lake Superior, Jan. 1st, 1849.

We are at present working at the Ontonagon, the Minnesota, the Ohio Trap Rock, and the Ontonagon Companies; and on Point Keewainona, the Cliff, North American Copper Falls, and Lac La Belle Companies. In the Iron District, the Jackson Company. To give you a more definite idea of what is going on, I had, perhaps, better speak of them separately.

The Minnesota Company.—S. O. Knapp, Esq., Agent, has just finished the erection of building, and commenced mining with great vigor and much success—working from 30 to 40 men, and raising native copper in the mass and in the Rock. This is on the lease known as 78, and the discoveries thus far prove very rich.

The Ohio Trap Rock Company.—Wm. Stephens, Agent, is working from 20 to 30 men, and making good returns of native copper in the Rock.

The Ontonagon Company.—Colonel Cushman, Agent, has several men driving on a new vein, but raising no copper as yet. Col. Cushman himself has been obliged to go East on account of his health.

The North American.—Judge Bacon, Agent, is driving his work with increased energy, and greatly improved prospects. Is working 43 men, including 22 miners. The main shaft is down 155 feet, and he is sinking it 60 feet deeper. Also, an air shaft and winze is down 155 feet. Opened on the lode at the 96 foot level, a drift 220 feet; and on the lode at the 155 foot level, a drift 135 feet. Vein grows richer as he goes deeper. Will erect his engine and put his stamps in motion during the winter and spring, and haul copper to the landing for shipping.

Copper Falls.—Joshua Childs, Esq., Agent. This company have a force of 45 men, including 26 miners; and their prospects perhaps were never more flattering than at this time, there having been a decided improvement in the appearance of the mine within the last few weeks. With the force now employed, they will probably be able in the course of the winter, to arrive at some definite conclusion as to the ultimate value of the mine. At a depth of about 85 feet from the surface, at the upper or most southern shaft, they have met with a belt of sandstone which will not vary much from fifty feet in thickness, below which it was thought by some professedly learned in Geology and Mineralogy, that the vein would not extend. Up to this time the sandstone has been penetrated to a depth of about fifteen feet, through which the vein has continued uninterrupted, carrying small sheets of copper, thus

proving almost conclusively that the vein will extend into the trap formation below.

Lac La Belle Mining Company.—S. Mandlebam, Esq., Agent. This company is progressing with its work, but we await the arrival of the Agent from the East before we shall visit it. He was unfortunately detained by the close of the navigation.

The Cliff Mine.—Levi Hanna, Esq., Agent. This giant of mines will be better understood by mining men by entering into a some what minute account. The length of this drill No. 1 shaft north is 53 fathoms—no work doing on it. No. 2 drift from No. 1 shaft north, 59 fathoms—no work doing. These two drifts are both driven north of the cross course which separates in the Amygdaloidal and greenstone trap, a short distance, but no copper found. No. 3 drift south of No. 1 shaft, 9 fathoms—no work, and north of No. 1 shaft, 64 fathoms, being in all 73 fathoms long. North of No. 3 shaft in this drift, six men are at work cutting copper. There are about 50 tons at this point averaging 18 inches in width of masses. Six men are stopping north of this. The lode being 18 inches wide, consisting of stamps and barrel work—and four men are driving north, the lode 18 inches wide, principally stamp work. No. 4 drift, south of No. 1 shaft, 26 fathoms, and north of No. 1 shaft, 45 fathoms—in all 71 fathoms long. Twenty-five fathoms south of No. 1 shaft, in this drift, four men are sinking a winze down to No. 5 drift. The lode in the winze at present, 8 feet down, is in a disordered state. North of No. 1 shaft, is this drift, 54 men are stopping. The lode is 15 inches wide, principally barrel and stamp work. North of this between No. 2 and No. 3 shafts, fourteen men are stopping. The lode on an average is two feet wide, consisting of masses, barrel and stamp work. There are about six tons of copper lying here ready to be cut up. North of No. 3 shaft 4 fathoms, four men are driving north. The lode is 18 inches wide, principally stamp work, in a disordered state. They are about sinking No. 2 shaft down to No. 5 drift. No. 5 drift, south of No. 1 shaft, 3 fathoms, the lode is two feet wide in masses barrel and stamp work. There appears to be a splice here dipping north and downward, a very strong appearance. North of this shaft, 4 fathoms, the lode is in a disordered state though there is a strong lode overhead, which they think will make into the drift. At three fathoms distance there is rather more stamp work coming out at present in the masses, but they cannot tell how long this will remain, as the ground is changeable. The mine looks well at present, but we cannot see far into it nor comprehend its value. They have now at the Lake shore about 200 tons of copper ready to ship, and are taking down from 15 to 20 tons per week, and are stamping about 6 tons per week, of from 8 to 10 per cent ore. They work, in all about 150 men.

The Jackson Mining Company.—Iron District—are operating with great success, and are daily sending teams with iron to the Lake for shipment. As a general calculation all the companies working are more than realising their estimated success.

In relation to the adoptedness of this section for farming, the letter says:

No where is the soil more rich or better adapted to yield its fruits in abundance, than we have here, on the Ontonagon, at L'Ance, Portage Lake, and in various other sections. On Point Keewainona, even are whole townships of the handsomest farming land in the world, timbered with sugar maple, interspersed here and there with splendid pines and broad oak, and lying within a few miles of the Cliff, North American, Albion, Copper Falls, Lac La Belle and other copper mines. And here grow richer and sweeter, and yield in greater abundance to the acre than in the Lower Peninsula or in Western New York, potatoes, ruta-bagas, turnips, cabbages, beans, parsnips, and all sorts of roots; and we have seen wheat grown on the bluffs, in the neighborhood most bleak and barren, surrounding the Cliff Mines, heads nine inches in length, filled with the plump-est berry. Oats, also, turned out a remarkable yield on the location of the Suffolk Company, the last season, and there is no reasonable argument why all sorts of grain, excepting perhaps corn, should not succeed as well, if not better, in this country than in any other. Cattle, too, turned out in the spring fat sooner than elsewhere; and we have eat of mutton fattened on the commons, in the neighbor-

hood of Agate Harbor, equal to any served up in any portion of the world we have ever visited. It is true that we have long winters and deep snows, but then we have neither frosts in the fall or spring seasons, and luxurious growing weather, for the balance of the year. At several of the mining Companies, where they have made sufficient advance to raise more potatoes and other roots than they have occasion for, during the winter, they leave them in the ground until spring, when, on raising them from their hills or beds, they are found sweeter and every way improved. But miners are neither farmers nor horticulturists.

AMERICAN RAILROAD JOURNAL.

Saturday, March 17, 1849.

Explosion of Locomotive Engines.

Some four or five years ago, an explosion of the Locomotive Engine, *Richmond*, took place on the Reading Railroad, which excited the liveliest interest among all persons connected in any way with railroads, and led to a careful inquiry by scientific men as to the cause of the catastrophe.

Dr. Lardner, at the request of the builders of the *Richmond*, gave an elaborate report on the subject, which was published in pamphlet form, and extensively circulated. The explosion, in that instance, took place in the time of a terrific storm. The violence of the explosion was such as to scatter all its working parts, bending them into every variety of form, and throwing a portion of the engine, weighing ten tons, more than eighty yards distant.

Dr. Lardner came to the conclusion, from such facts as could be ascertained, that the catastrophe was produced by the "combined agency of atmospheric electricity and steam." The cylinders being in full operation, and the safety valves free, it could only be caused, he said, "by an almost instantaneous solution of a great volume of highly elastic fluid in the boiler—so great a volume, that, compared with it, the steam escaping through the cylinders and valves would be as nothing," and he supposed that this increased volume of steam was caused by the additional heat communicated by the lightning.

This report of Dr. Lardner did not give general satisfaction to the minds of practical men, who regarded the effect as produced by the ordinary action of steam when the boilers are over heated. The Franklin Institute subsequently took up the inquiry. A committee of the Institute made an elaborate report, reviewing carefully all the facts ascertained, and came to the conclusion that the explosion was caused by an insufficient supply of water in the boiler. That one of the pumps being out of order, the water in the boiler was exhausted—so that it became overheated, and the engine driver then threw in suddenly such a mass of water from the other pump, as to cause a sudden rise of it over the overheated crown plate of the fire box, which caused an instantaneous explosion.

On the first day of February last a similar explosion took place upon the Boston and Providence railroad, by which the engine driver was instantly killed, a brief account of which was published in this Journal under date of February 3.

Great anxiety was again felt to ascertain the cause of this terrific accident, by every man who had any knowledge upon the subject of railways. In this case, the train was going at the rate of 30 miles an hour. As in the case of the *Richmond*, the explosion took place during the night time, and the only person who could give any satisfactory account of the condition of the boiler was killed, and the testimony of the fireman by no means intelligent or satisfactory.

Under these circumstances a committee of exper-

rienced engine builders in New England was called upon to enquire into, and report upon the facts of the case. Their report is as follows:

EXAMINATION INTO THE RECENT EXPLOSION ON THE PROVIDENCE RAILROAD.

The subscribers having been requested to make examination of the Locomotive boiler recently exploded on the Boston and Providence Railroad, with a view to the statement of the facts in the case, for the satisfaction of the public, and having made examination accordingly, offer the following report as the result of their examination and inquiries on the subject.

The explosion took place on the Viaduct in Canton on the 1st inst. at about 5½ o'clock A. M.; it being dark and stormy at the time.

From all we were able to learn of Mr. Cummings who was running the Engine at the time of the accident, and who lost his life thereby, the subscribers judge him to have been entitled to be called a good Engineer.

Mr. Griggs who has the chief superintendence of all the machinery on the Providence Road, we know personally, and regard him as being a very excellent man for the place which he occupies.

The construction of the boiler was substantially that which is common to other locomotive boilers; and its material, workmanship, and proportions were all sufficiently good. And it was provided with two safety valves, two and a half inches diameter each; but the fire box was not provided with a fusible safety plug; and it is understood that means of safety is not much used.

The pressure upon the safety valves at the time of the explosion we had no means of ascertaining with certainty, but were informed that they were set at ninety pounds per square inch, a pressure which was probably not equal to one fourth of the strength of the boiler. The part which was thrown off was rent into several fragments, and consisted of the whole of the cylindrical part immediately over the fire box; it being torn off by a rent through the solid iron all around where it joined the waist, and the end plate of the boiler, and also across the sides somewhat lower down than the top of the fire box.

George Lingham, Fireman, informed us that he was very near to the Engineer when the explosion took place; but was in a stooping position, a circumstance which probably saved his life. Lingham also informed us that, about two or three minutes before the explosion took place, Cummings ordered him to shut off the pump, which he did; that Cummings then took down the lantern; tried his upper gauge-cock, and drew water from it, that at the time being running down a descending grade, they were working no steam through the cylinders; that he is not sure that the steam was blowing off at the safety valves at the moment of the explosion, but knows that it was blowing off about two minutes before; that when he recovered the use of his senses, after the explosion, he found that much water had been thrown upon him, though he was not scalded excepting on one side of the face, which was somewhat scalded or burned.

Thus it appears from Lingham's statement, that Cummings used the ordinary means for ascertaining whether, or not, there was sufficient water in the boiler at the time, and that he had the ordinary evidence that there was, viz: the issuing of water from the gauge-cock.

This circumstance, together with that of Lingham's having his clothes wet, constitute all the evidence that we could obtain of there having been water in the boiler at the time of the explosion. With regard to the trial at the gauge-cock, it may be remarked—1st. that the trial might have been too short in duration; 2d. that the heat among the tubes might have been such as to keep most too small a quantity of water among them, by an extremely rapid generation of steam, while it was high enough to reach the gauge-cocks in other parts of the boiler; and 3d. that a small quantity of water might have filled the boiler with foam. It was possible for Mr. Cummings to have been deceived in either of these ways, and therefore the evidence to be drawn from the trial of the gauge-cock, as stated, can have but little weight against the more certain evidence to be drawn from the appearance of the boiler.

As to the wetting of the fireman, it seems quite clear, that, if the water which saturated his outside

coat had come from the boiler, he would have been scalded in other parts of the body besides his face.—It is most reasonable, therefore, to conclude that the water which wet him came from another source; probably from the tender, from which it might have been ejected by the great concussion which must have taken place in consequence of the explosion.—The subscribers are of opinion that the fireman was not scalded but burned. The evidence going to show that there was very little, if any unconverted water in the boiler at the time of the explosion, consists of the following, viz:—

1st. The tubes, and nearly the whole extent of both of the tube plates, are somewhat sealed, an effect never to be observed on the surface of boilers except after an exposure to nearly a red heat.

2d. The wooden casing is much charred, and burned entirely around the boiler; underneath even, as well as on the top and sides. These effects, required a temperature far above what could have been produced, under the circumstances, with unconverted water in the boiler. The subscribers, therefore, deeming the evidence in the case to be clear that, there was very little, if any, water in the boiler at the moment of the accident, give it as their mature opinion that the explosion took place from over heating the boiler in consequence of a want of water.

Isaac Adams, Holmes Hinkley, Gardner P. Drury, Jabez Coney, Lewis Kirk, Wilson Eddy, John B Winslow, Seth Adams.

The facts elicited in the case as stated in the report of this committee, throw much light upon the case of the *Richmond*. They leave no doubt upon our mind that the cause of the explosion in both the cases was the same, and that the conclusions of toe committee will be regarded as entirely satisfactory.

The impression which has to some extent prevailed among the builders of locomotives, that steam could not be generated so as to cause an explosion when the action of the cylinders was free, and the valves open, seems now to be erroneous, and that *steam safety plugs* should in all cases be inserted. In fact it would appear that the cause of the explosion of locomotive boilers is as easily explained as the burning out of a chimney, notwithstanding the apparent mystery thrown over the affair whenever such a catastrophe occurs.

We commend this subject to the careful consideration of Railroad Directors, Engineers and Superintendents. The rapid increase of new projects for railroads—the haste in opening new lines—the urgent demands upon the builders of locomotives, all conspire toward the introduction of imperfect and unsuitable equipment upon our railroads. The demand, too, for high speed in running ordinary trains, is altogether beyond the capacity of our railroads to bear. The very best finished engines are for this cause liable to be constantly thrown out of adjustment, and serious casualties to occur. We shall resume this subject at our earliest leisure.

Central (Ga.) Railroad and Banking Co.

The adjourned meeting of stockholders, for considering the question of aid to the Nashville and Chattanooga railroad, will be held at Savannah on the first Tuesday of April next, in obedience to a resolution of the stockholders at the last annual meeting.

The annexed resolutions are published in conformity to a vote of the Directors on this day.

R. R. CUYLER, President.

Savannah, March 3, 1849.

Whereas no reply has been received by the President to his letter to Mr. Stephenson, President of the Nashville and Chattanooga railroad, and as the time prescribed by vote of the stockholders anterior to the call of the adjourned meeting, is about to expire.

Resolved, That the President do cause to be published a notice of the meeting of stockholders, to be held on the first Tuesday in April, stating that the meeting is for considering the question of aid to the Nashville and Chattanooga road.

Resolved, That considering the recent heavy engagements of this company for iron, it is deemed inexpedient at this time to grant the aid referred to, and that the letter of the President of this company to the President of the Nashville road on the subject be published.

Central Railroad and Banking Co., }
Savannah, February 12, 1849. }

V. K. STEVENSON, Esq., President, Nashville.

Dear Sir: I feel it my duty to inform you of what is most evident in this quarter—a determination on the part of a great majority of our stockholders to decline extending the aid which the board of directors first thought they would give. Many warm friends of your enterprise when you were here, have been to me to say, that the engagements of the company—extending to the purchase of over 5,000 tons of rails—utterly preclude all aid to you for the present. I am satisfied that if your application is presented in April, the majority against it will be very large. I ask you under these circumstances to withdraw the application. Perhaps at a future day circumstances may occur, which might induce the aid now withheld from necessity, and not from any want of interest in your road.

I believe all persons here sincerely desire your success.

With esteem, dear sir, your obedient servant,

R. R. CUYLER, President.

Railroad Matters in Maine.

Portland, Maine, with a population of 16,000 only, four years ago, went boldly at work to construct a railway to Montreal, and after raising one million of dollars, and putting about 50 miles of the distance under contract, took the lead in pushing a line of railway (embranching from her main stem, 27 miles from Portland) in the direction of Bangor, 135 miles from Portland. Both of these enterprises are now in successful progress, are over 40 miles in actual operation, and over 100 miles, taking both directions, will be finished during the present year.

The effect of these movements upon the business of Portland, has been immensely great—almost extraordinary. Her foreign commerce in 1848 was more than double the amount of 1847, her population is now increased to more than 20,000, and the business of the past winter has far surpassed the most sanguine anticipations of the friends of the Railroad.

We see by the Portland papers that the business upon the Railroad going east of the city, is far greater than that going west, in the direction of Boston. The Railroad is attracting to the city of Portland the business of the interior of Maine, which has heretofore been divided between several towns on the Kennebec and the Penobscot waters.

This fact is arousing the enterprising people of Bangor to similar exertions; and without a railway to the Kennebec, Bangor (now containing a population of 15,000) cannot retain her position, or her present population.

A very intelligent citizen of Bangor is presenting the matter to the consideration of her people, and we give below a portion of an article from his pen, taken from the Portland Enquirer:

BANGOR—ITS POSITION, INTERESTS, PROSPECTS AND DANGERS.

As preliminary to the subject of manufactures and improved agriculture, we now devote a number or two to the subject of a Railroad from Bangor to Waterville. We have already given a skeleton

view of its importance. Since we wrote those articles—only a few weeks ago—the evidence of the truth of those views has been more strangely forced upon us. It would seem that a Railroad from Portland to Lewiston—hardly within hearing of us—has struck a heavy blow to our important interior trade. The country produce has almost deserted our market. Prices are high, and the demand great; but the supply has reversed its ordinary channels. It comes to us, indeed, but it comes from commission merchants abroad, not from the people in the country. And yet we have hardly begun to feel the effects of that road. It will soon be completed to Waterville, and strike the vitals of our country trade. We learned from the best authority, several years ago, that the trade of Dexter, one of the most important inland towns in the State, was inclining towards Waterville, to which place, for a few months in the year, small steamers reach. The moment the Railroad touches Waterville we lose Dexter and all the section beyond, and above. Somerset county has afforded us a large winter trade—that to goes. Franklin used to reach us—that is already gone.

The reason is plain. For higher prices are no temptations when the higher price, and a large part of the value of the commodity, is sunk in the expense of transportation. A man has a half ton of pork to market. In Bangor, we will suppose, he can get \$8 per cwt.—at Waterville, or any other depot along the line, he gets \$7. Will he make a speculation to run his pork to Bangor for the additional \$10? But a large portion of the raisers of pork do not calculate on marketing over from 300 to 500 lbs. per year. To them the difference is greater. We take this as an estimate; the same is true of butter, cheese, apples, corn, wheat, oats—to say nothing of potatoes and hay, which from their weight or bulk of carriage have been ever beyond the range of our market from the western interior, but which would be at our command with a railroad.

These articles we want—and pay such prices for, as will secure them to us if our facilities of transportation are equal to those which reach other markets. Are we ready to surrender them? Can we do it without reducing ourselves to humiliating dependence on other markets? Shall we send out our lumber merely to purchase supplies, expending our profits on commission to Portland and Boston Wholesale Grocers?

Manufacture, indeed! under such circumstances! Who comes to exchange pork for clothes or shoes? Are we to compete with Lowell, Manchester, Lynn, &c., in the trade of the world, while we leave our own State to seek its supplies from the west? Or are we to send out pedlar wagons to pick up trade, while our supplies and stock are to be sought where commissions are to be paid? Manufactories are not thus to be raised up.

We know it is said Lowell was started while no railroad reached it. Yes—but where was competition then? Railroads were nowhere—and comparatively, cotton manufactures were not in this country. But is any one green enough to suppose that the Lawrences would now think of starting a Lowell without a railroad?

Five years ago to have started manufactories here without a Railroad would have been sane. But to start them now, without that facility for interior communication, while a Railroad opens such an amount of water power so near as to rob us of our interior trade, would be a madness for which 1835 furnished no precedent.

We have said already, and repeat it, that with a Railroad hence to Waterville, no water power in the State stands in the way of ours. From causes which will not soon lose their force, prices here will continue to secure us the interior trade, facilities for that trade being equal on our part. So far from disparaging the importance of manufactures, we urge upon our citizens most earnestly to secure the advantages, on this behalf which God and nature have given us, by aiding those advantages to a healthful development through the improvements of art and science in our power, and which are brought into competition with our natural advantages by our fellow citizens in the western part of the State.—Will we surrender?—or will we show them that it takes an early riser to catch us napping?

Under similar impressions the towns on the Kennebec are pushing on, with all vigor, their line of

Railway from North Yarmouth to Bath and Augusta.

Architectural Improvements.

Several unsightly buildings, lying south of Hart's Hotel in Burlington, are in progress of removal to make room for the erection of a splendid and commodious Railway Depot for the Burlington and Rutland Railroad Company. The Board of Direction have very judiciously secured the services of *Ammi B. Young, Esq.*, of Boston, the eminent Architect, who left Burlington on the morning of the 2d inst., after making preparations for the immediate execution of designs for depots in Burlington, Rutland and Bellows Falls, and for depots and station-houses on the line of the road.

The Board of Direction undoubtedly feel it to be their bounden duty to erect tasteful, as well as convenient, buildings for the benefit of their company. Besides, the public has always a right to demand that the exterior of all buildings, public or private, and the exterior and interior of public edifices shall be in good taste. Thereby the people have, constantly before their vision, lasting memorials of architectural beauty, and are induced to imitate, when occasions occur, the various excellencies and conveniences which, after years of study and labor, the architect has planned and perfected.

Throughout New England, a very great improvement in the style of private residences and public buildings has been visible during the last fifteen years. It is perceptible in Burlington, Montpelier, and in fact every where; and this advancement in architectural taste is chiefly owing to the services of Mr. Young, who designed the State House in Montpelier, the splendid Custom House in Boston, and the capacious depot in Northfield, as well as numerous other edifices of rare architectural beauty which it is now unnecessary to enumerate.

The influence, the moral influence, of such monuments of good taste is more powerful and lasting than can be imagined. We take pleasure in chronicling the truth that Vermont is making great advancement in this particular, and with the aid of the several Railroad Companies in the State, will, from time to time, exhibit evidences of good taste, which must reflect credit upon the architect as well as upon those who are benefitted by his services.—*Burlington (Vt.) Free Press, March 2, 1849.*

The foregoing suggestions, and the facts therein stated, are full of interest and importance. While we would decry all needless expense in the way of ornament for Railway depots, station-houses, workshops, or other structures, we know of no branch of mechanics where taste and good judgment are so requisite. The Railway is no longer an experiment, but an established truth—an ultimate fact. It can never be superseded by any other agency whatever. With this fact before them, Railroad Directors & Engineers should aim at once at permanence and perfection. Symmetry of proportion, and strength of finish, should be the aim in the execution of everything connected with a Railroad.

We are most happy to be able to bear testimony to the truth of the remarks of the accomplished editor of the *Free Press*, in regard to the elegant and capacious depot and workshops at Northfield, erected by the Central Railroad Company. They seem in good taste with the splendid attractions afforded to the traveller in the shifting and varied scenery witnessed in passing from the Connecticut Valley across the summit of the Green Mountain Ridge. We never enjoyed any ride more.

We hope, before the present year shall close, to be able to witness the fact, that the lines of railway in Vermont are so connected, that the man of business can follow the Connecticut valley by railway, from this city, to the mouth of the White River, thence across to Burlington, in the valley of the latter stream, and the Winooski, to Lake Champlain—thence in the valley of Otter Creek, to Rutland, and thence to Whitehall and Saratoga, between which and New York the lines are already connected.

ENGINEERS.

Arms, F. C.,
Georgia Railroad, Augusta, Ga.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Crocker, Wm. B.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. P.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

Minot, Charles,
Boston and Maine Railroad, Boston, Mass.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Nicolls, G. A.,
Philadelphia and Reading Railroad, Reading, Pa.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Robinson, James P.,
Aandroscgin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Railroad Iron.
THE NEW JERSEY IRON CO'S WORKS AT
Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street.
New York, October 25, 1848.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1848.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 $\frac{1}{2}$ by $\frac{1}{4}$ Flat Bars.
25 Tons of 2 $\frac{1}{2}$ by 9-16 Flat Bars.
100 Tons No. 1 Garthrorrie.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.**
No. 4 So. Front St., Philadelphia.

Railroad Iron.
THE TRENTON IRON COMPANY ARE NOW
turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Mount Savage Iron Works, Troy, N. Y.
ERASTUS CORNING, Albany:
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

RAILROAD IRON & LOCOMOTIVE TYRES
imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY,
exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.
Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.
All orders addressed to the Agent at the Factory will receive immediate attention.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF
Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.
Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.
N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SCHENECTADY LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.
THE undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.
E. S. NORRIS.

February 24, 1849.

Mattewan Machine Works.
THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENOISE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.
COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes" L Blister Steel.
Best English Blister Steel, etc., etc.
All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

LOCOMOTIVE FOR SALE.
(NOW RUNNING.)
A Good Locomotive Engine and Tender in good running order, for sale low. Address
E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.
February 24, 1849. 4t3

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
23 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1½ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

**Norwich Car Factory,
NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

General Agent,

Norwich, Conn.,

Will meet with immediate attention.

178

**CAR MANUFACTORY,
CINCINNATI, OHIO.**



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

**DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF**

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,

ELIJAH PACKARD,

ISAAC MILLS,

SPRINGFIELD, MASS.

1748

**LAP — WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,

Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, *Patterson, N. J.* The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,
Nelson J. Beach,
Jacob Hinds,

Willard Smith, Esq.,

Messrs. Stone & Harris,

Mr. Wm. Howe,

Mr. S. Whipple,

January 1, 1849.

Canal Commissioners
of the
State of New York.
Engineer of the Bridges for
the Albany Basin.
Railroad Bridge Builders,
Springfield, Mass.
Engineer & Bridge Builder,
Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Stiers, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

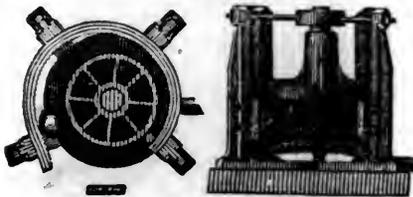
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devian's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

ALSO,

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by

ALLEN & NEEDLES,

No. 22 and 23 S. Wharves, near Chestnut St., Philadelphia.

February 24, 1840.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

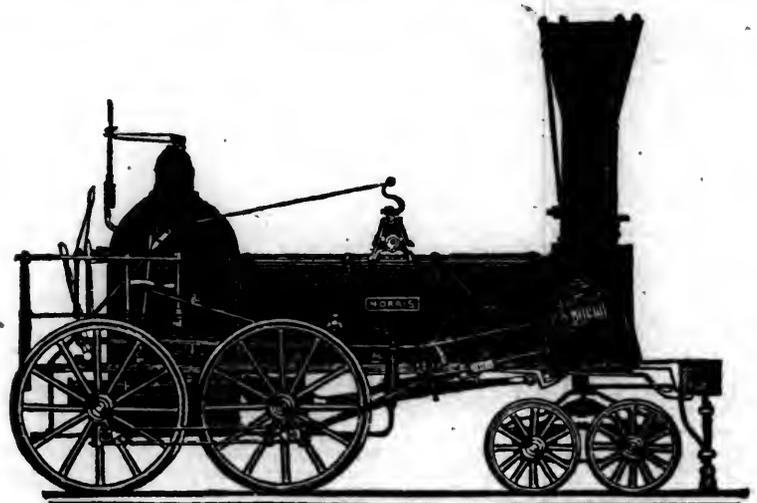
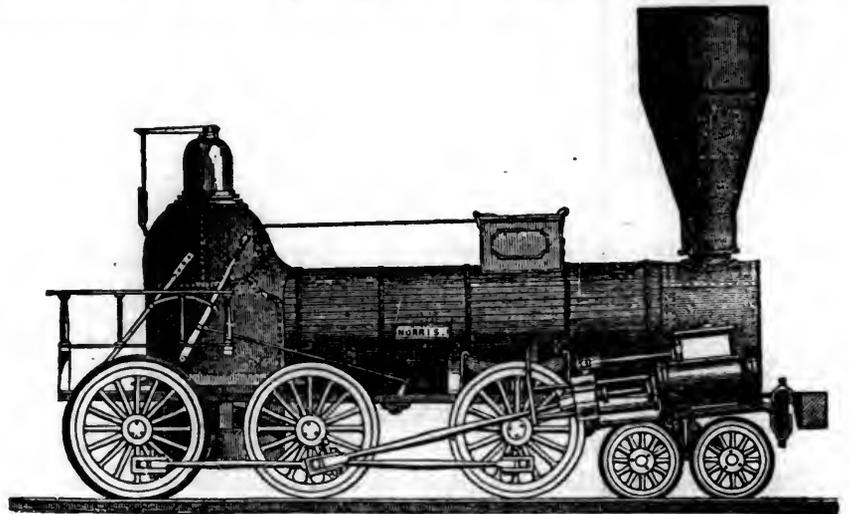
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

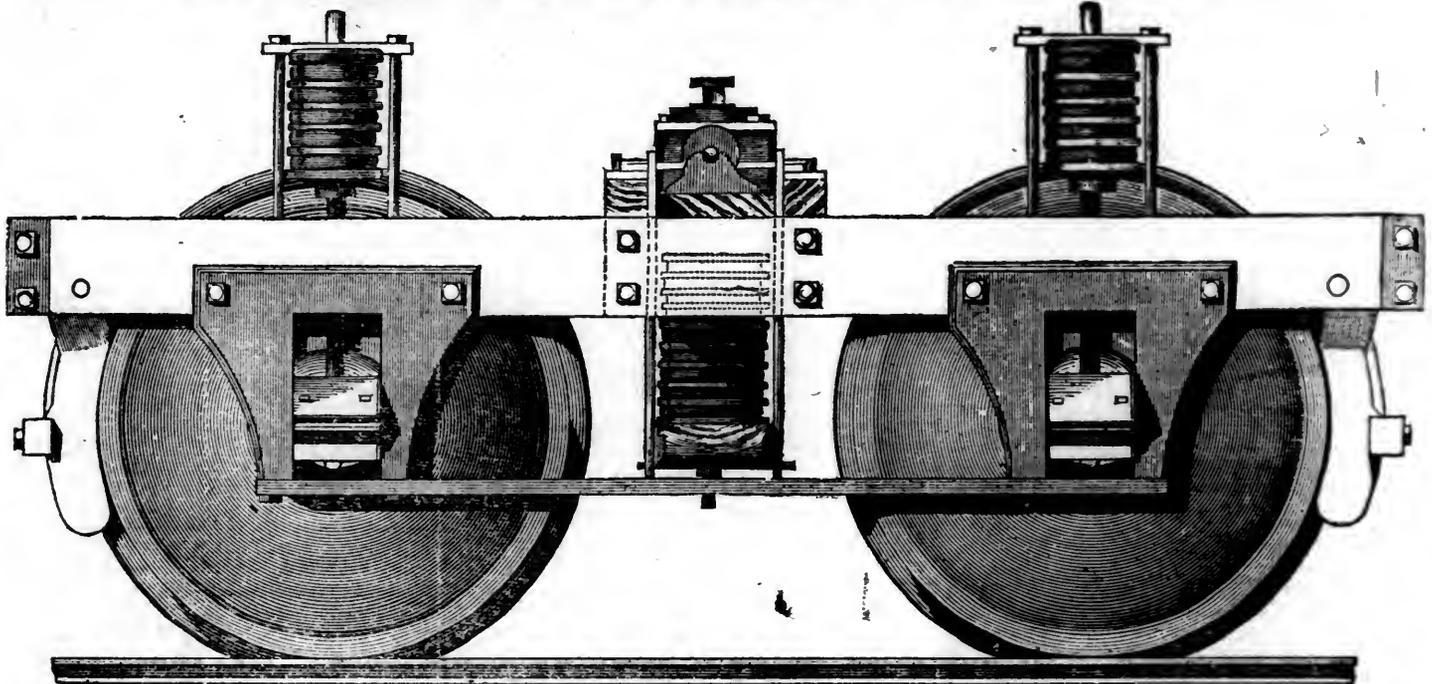
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 ly.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.



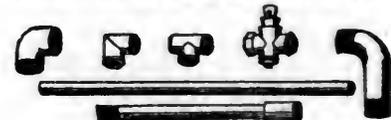
No 23 Pear street,
ly 10 near Third, below Walnut,
Philadelphia.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 feet in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Street,
PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UN-dersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UN-dersigned, the *Original Inventor of the Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUB-scribers are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO.,
Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, OCTOBER 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 3 1/2 pm. Leave Providence at 8 1/2 a.m., and 3 1/2 pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10 1/2 pm. Leave Dedham at 7 1/2, 10 1/2, 4 1/2, and 9 pm.

Stoughton Trains—Leave Boston at 11 1/2 am., and 4 1/2 pm. Leave Stoughton at 8 1/2 am., and 2 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.
Winter Arrangement.—1848.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 1/2 pm. Leave Worcester at 6 1/2 and 10 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars.

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Salem, 7, 9, 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Manchester, 9, a.m., 3 1/2, p.m.
Gloucester, 9, a.m., 3 1/2, p.m.
Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m.
Portsmouth, 7, am., 2 1/2, 4 1/2, pm.
Portland, Me., 7, am., 2 1/2, pm.

And for Boston,
From Portland, 7 1/2, am., 3, pm.
Portsmouth, 7, 9 1/2, am., 5 1/2, pm.
Newburyport, 7 1/2, 10 1/2, am., 2, 6, pm.
Gloucester, 7 1/2, am., 3 1/2 pm.
Manchester, 8, am., 3 1/2, pm.,
Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40, am., 2 1/2, 3, 4 1/2, 7, pm.
Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, am., 2 1/2, 3 1/2, 4 1/2, 7 1/2, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am.
2, 4 1/2, 6 1/2, pm.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9 1/2, am., 4 1/2, pm.
Salem for Gloucester at 9 1/2, am., 4 1/2, pm.
Trains leave
Gloucester for Salem at 7 1/2, am., 3 1/2 pm.
Manchester for Salem at 8, am., 3 1/2 pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover.
On and after Monday, Oct. 2, 1848,

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9, am., 3.15, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am., 2, 4.5, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30, am., 5, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Winter Arrangement.
Commencing Nov. 13, 1848

Trains leave Boston as follows, viz.: For
Portland at 7 am. and 2 1/2 pm.
Great Falls at 7 am., 2 1/2 and 3 1/2 pm.
Haverhill at 7 and 11 1/2 am., 2 1/2, 3 1/2 and 5 pm.
Lawrence at 7, 9, 11 1/2 am., 2 1/2, 3 1/2, 5, 6 pm.
Reading 7, 9 & 11 1/2 am., 1 1/2, 3 1/2, 5, 6, 7 & 10 pm.
Trains leave for Boston as follows, viz.: From
Portland at 7 1/2 am., and 3 pm.
Great Falls at 6 1/2 and 9 1/2 am., and 4 1/2 pm.
Haverhill at 7, 8 1/2 and 11 am., 3 and 6 1/2 pm.
Lawrence at 6 1/2, 7 1/2, 8 1/2, 11 1/2, am., 12 1/2, 3 1/2, 6 1/2 pm.
Reading at 6 1/2, 7, 7 1/2, 9 1/2, 11 1/2 am., 1 1/2, 3 1/2, 7 1/2, 9 pm.

MEDFORD BRANCH TRAINS.

From Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 6, 9, pm.
From Boston at 7 1/2, 9 1/2 am., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 10 pm.
The Depot in Boston is on Haymarket Square.

CHAS. MINOT, Super't.
Boston, Nov. 7, 1848.

NEW YORK AND ERIE RAILROAD.
WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Eric. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.
WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.
Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dl

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3½ pm.
Arrives at	9 am. and 6½ pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12½ pm. & 8 pm.
Leaves York for Columbia at	1½ pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare:

York	\$1 50
Wrightsville	2 00
Columbia	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
 Or via Lancaster by railroad - 10
 Through tickets to Harrisburg or Gettysburg - 3
 In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at - 5½ pm.
 Returning, leaves Owning's Mills at - 7 am.

D. C. H. BORDLEY, Supt.
 Ticket Office, 63 North st.
 31 ly

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.
AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton.	Between Charleston and Dalton.
	271 miles.	408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 23
2d class Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Gingseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hoghead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.
 Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.
 F. C. ARMS,
 44½ ly Supt of Transportation.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.
 From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.
 On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
 This is the most expeditious route from the east to any of these places.
 CHAS. F. M. GARNETT,
 Chief Engineer.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.
 Change of Hours.
 On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
 Returning, leaves Springfield, at 2½ o'clock, and 9½ o'clock, am.
 Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.
 Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:
 A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.
 The 2½ pm., Train from Cincinnati, and 2½ am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.
 The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.—1848.
 Winter Arrangement.
 December 4th.—Fare \$4.
 Leave Philadelphia 8 am., and 4 pm.
 Leave Baltimore 9 am, and 8 pm.
 Sunday—Philadelphia only at 4 pm.
 " Baltimore only at 8 pm.
 Trains stop at way stations. A second class car run with morning line only.
 Charleston, S. C.
 Through tickets Philadelphia to Charleston, \$20. Connecting lines to Charleston leave Philadelphia, at 4 pm. daily—leave Baltimore at 11½ pm. daily.
 Pittsburg and Wheeling.
 Through ticket, Philadelphia to Pittsburg, \$12.
 " " Wheeling, 13.
 All through tickets only sold at office Philad.
 Wilmington Accommodation.
 Leaves Philadelphia at 1½ and 4 pm.
 Leaves Wilmington at 8 am., and 4 pm.
 N.B.—Extra baggage charged for.
 I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.
 Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
 The Train from Philadelphia arrives at Reading at 12 18 m.
 The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	58	2.25	and 1.90
" " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. 6½.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON. Distance 190 miles.
 This Road is open for the transportation of Passengers & Freight

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50 cts.	per hundred
On measurement goods	13 cts.	per cubic ft.
On brls. wet (except molasses and oil)	1 50	per barrel.
On brls. dry (except lime)	80 cts.	per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts.	per hundred
On hhd. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.
 THOMAS PURSE,
 Gen'l Supt Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.
 Fare through from Charleston to Montgomery daily - \$26 50
 Fare through from Charleston to Huntsville, Decatur and Tuscumbia - 22 00
 The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
 JOHN KING, Jr., Agent.

PATENT MACHINE MADE HORSE-SHOES.
 The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.
 Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
 P. A. BURDEN, Agent,
 Troy Iron and Nail Factory, Troy, N. Y.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and whenever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
 JOHN F. WINSLOW, Agent.
 Albany Iron and Nail Works, Troy, N. Y.
 The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, N. York; J. H. Whitney, do.; E. J. Etting, Philadelphia; William E. Coffin & Co., Boston.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, March 24, 1849.



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
 J. D. BRONDEEST,
 Secretary U. C. M. C.
 Hamilton, 24th February, 1849. 12tf

Col. C. F. M. Garnett has resigned the office of Chief Engineer of the Nashville and Chattanooga railroad.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section st. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 28 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections between those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed from the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 28th of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the contract. The most energetic prosecution of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
 Baltimore, March 14, 1849 5t.12

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuykill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
 45 North Water St., Philadelphia.
 March 15, 1849.

George Stark, Esq., is the Chief Engineer of Boston, Concord and Montreal railroad, instead of Wm. B. Crocker, as stated in the advertising columns of our last number.

This road which has always been a favorite enterprise of New Hampshire, has recently been extended to Meredith Villag, 38 miles from Concord.

Steam Navigation.

The new steam ship *Tennessee* took her place in the *New York and Savannah Line*, (S. L. Mitchell, agent,) and sailed from this port on Wednesday last, with some forty cabin passengers, and a full freight list. The hull was built by *W. H. Webb*, and the engines by *Stillman, Allen & Co.*, of the Novelty Works. On Friday last in company with several gentlemen, we took a trip in her down the harbor, made for the purpose of testing the working of her machinery.

The *Tennessee* is about the same capacity and finish as her companion, the *Cherokee*, which has, so far, proved to be the most fortunate vessel of her class, that has been upon our waters, having run to Savannah in fifty-six hours from this port. Something over one-half of the capital of the company owning these boats was taken in this city; the balance in the State of Georgia, and the enterprising people of that State evince the liveliest interest in the success of this new enterprise.

Fortunately for the success of the undertaking, the builders of the boat, both hull and engine, were not limited or restrained by any restrictions tending to cripple or defeat their plans. This boat, therefore, we regard as a fair specimen of the skill and taste of the builders. In both respects they may feel cause of gratulation. The success of the *Tennessee* we have no hesitation in saying, will confirm all that we have said, and far more.

At the time of the trip on Friday, the steamer had on board 200 tons of coal, or sufficient to perform the voyage to Savannah and return, using as she does, about 25 tons per day. While on board, we were kindly furnished with some details of her capacity, as follows, viz:

Length of main deck.....	210 feet.
Breadth of beam.....	35 "
Depth of hold.....	22 "
Tons burthen.....	1250
Berths for passengers in forward and after cabins.....	200
Freight room capable of carrying one thousand bales of cotton.	

Engine 239 nominal* horse power or, as measured by the Indicator, on her trial trip, 600 horse power. The cylinder is 75 inches diameter by 8 feet stroke,

* *Nominal* horse power is entirely a different thing from *actual* horse power.—The former expresses the power of an engine with an *assumed* velocity of piston and limited pressure of steam.

framed of wrought iron, and finely finished; wheels of wrought iron 31 feet diameter, 8½ feet face; two boilers 30 feet long, 11 feet front; shell in rear of furnaces 9 feet diameter and double riveted throughout; engine room well supplied with pumps, including also one of Wirthington's patent steam pumps, for supplying the boilers with water, and for throwing water in case of fire, for washing decks &c; the coal bunkers are of iron and calculated for 400 tons capacity.

In point of finish her engine certainly surpasses any one in the Cunard steamers which we have seen; and in running in the harbor on Friday, against a strong and a rough sea, not the least jar of the machinery, or tremble of the boat could be perceived. No one can appreciate the contrast between these new ocean steamers and our ordinary river and sound boats, unless they have tried them or been upon the Cambria, and the more recent steam ships of the Cunard Line. The great annoyance in steamboat travelling is here entirely removed and forgotten.

This class of steam ships is already affecting freights in ordinary sailing vessels, and they are destined entirely to change the course of the freighting business. The Tennessee, though having a single engine, might safely cross the Atlantic, or run as a regular packet to Bahia and Rio Janeiro. England will soon find us following her ocean steamers in every quarter of the globe, and within the next quarter of a century. The centre of the monetary movements of the world will be transferred from London to New York. To this country, and to the city of New York in particular, these recent movements towards ocean steam navigation surpass in commercial importance any thing that has before been attempted.

We learn that Alfred Kelly, Esq., the President of the Cleveland and Columbus Railroad, has completed a contract for 3,000 tons of iron, sufficient to lay the track of the first twenty-five miles.

Middletown and Berlin Railroad.

The capital stock of the Middletown and Berlin (Conn.) Railroad, \$150,000, has been subscribed, and the following gentlemen elected Directors; Ebenezer Jackson, Charles R. Alsop, T. G. Mather, W. Jarvis and Charles Woodward.

Ohio and Mississippi Railroad.

The City Council of Cincinnati, after an elaborate examination and discussion of the whole subject, agreed, a few days since, upon the draft of an act now pending before the Legislature of that state, authorising the City of Cincinnati to contribute five hundred thousand dollars towards the construction of the above road. It is to be advanced to the Company in four equal annual instalments of one hundred and twenty-five thousand dollars each, which it is proposed to raise on the bonds of the city. We have also assurances from a private source entitled to the utmost confidence, that another half million will be raised by private subscription of citizens of Cincinnati and the vicinity to the stock of this Company. Thus, it will be seen, that notwithstanding the temporary disappointment growing out of the action of the Senate of the Illinois Legislature, the Company are progressing with this work so far as securing the necessary subscription of stock for its construction.—*St. Louis New Era.*

Lowell Railroad.

The receipts of the Lowell and Boston Railroad, for the year 1848, were \$461,339 35, as follows:

Passengers.....	\$201,218 63
Freight.....	225,609 35
Mails, &c.....	7,511 36
	<hr/>
	\$461,339 35
Running expenses, repairs, &c.....	266,515 73
	<hr/>
Net income.....	\$194,823 62

The capital of this road is now \$1,800,000—the whole cost of construction, with double track, (including the Woburn Branch, \$46,643,) has been \$2,013,687. There is a funded and floating debt of \$59,000. The cost, therefore, is \$154,647 more than the capital and debt together. The income and expense account shows a surplus of \$179,196, which is principally invested in the road itself. The gross receipts of the road have increased from \$105,124 in 1836, gradually, to \$461,339 in 1848; the expenses, from \$75,326 in 1837, to \$268,707 in 1848; and the net profits, from \$45,829 in 1836, to \$192,631 in 1848. The dividends were 2 per cent. in 1836; 7 per cent. in 1837 and 1838, and 8 per cent. every year since. The passenger fare, reduced last June, is now 50 cts. to Lowell, 26 miles. The miles run by passenger cars last year were 174,660; number of passengers carried, 525,764; tons of merchandise, 304,570. Four fatal accidents have occurred.

Items.

A curious and melancholy fact connected with the electric light has been just communicated to us. A gentleman near Waltham Abbey, experimenting with the electric light a few days ago, having an incised wound on his left hand, touched the conductor—a copper wire, and shortly afterwards experienced an irritation, which immediately spread in inflammation to the arm. The arm became immensely swollen, and large tumors appeared all over the body and limbs. Eminent surgeons from London have been in attendance; some of the tumors were opened, and every means resorted to for the purpose of checking the poison, but without avail. We learn that the unfortunate patient lies without the least hope of recovery.—*London Mining Journal.*

War Steamers for Germany.—The steam-ships *Acadia* and *Britannia*, so celebrated in the British and North American Company's Mail service between Liverpool and the United States, have recently been purchased from that company by one of the German Governments. They are now in the Coburg Dock, Liverpool, undergoing the necessary alterations to their being converted into efficient war steamers. The passengers' saloon, on the main deck, has been cleared off, so that they will be flush fore and aft. Their armament will be of the heaviest description.—*Ibid.*

Most Wonderful Discovery.—A German zoologist, named Brandt, has published some microscopical observations upon the remains of food found by him in the cavities of the teeth of an antediluvian rhinoceros, of which the Museum of St. Petersburg possesses an entire cranium, covered with the skin. From these researches it would appear that these animals fed upon the leaves and fruits of fir trees, and that they had never lived in a tropical climate.—*Ibid.*

The Coal Trade for 1849.

As the season is rapidly approaching when the trade will open for 1849, a few remarks on the subject will not be deemed out of place.

It is generally conceded that there will be no overstock on the first of April, of any consequence in the market, probably not more than 50 or 75,000 tons, while on the first of April of the previous year the overstock was not less than 275,000 tons. The whole supply last year sent to market, was 3,089,000 tons, to which add 200,000 tons overstock from the former year, and it makes the consumption for the year ending, April 1, 1849, in round numbers, 3,289,000—add to this an increase of 150,000 tons, (which is very moderate,) and the supply required for the ensuing year will be 3,439,000 tons. Of this quantity

The Lehigh can furnish not more than	750,000
Delaware and Hudson Co. do	470,000
Pinegrove, Shamokin & Wilkesbarre, do	360,000

increase over 1848, 145,000 tons	1,530,000
Leaving for the Schuylkill Region to furnish	1,259,000
	<hr/>
	3,439,000

Being an increase of about 206,000 tons over the supply furnished last year.

So far the supply this year falls short of the quantity sent to same period last year, about 25,000 tons—and when we take into consideration the disastrous state of the trade last year, which not only

checked all new improvements in the Coal Regions, but nearly all preparation during the winter, for this year's business—and the fact that the Railroad Company have not added any increased facilities to their establishment for carrying Coal to market this year, we have every reason to believe that it will keep our Collieries busy to mine, and the Railroad and Canal (with the present facilities) fully employed to carry the necessary quantity required to market.

The above is a fair and candid statement of the trade, which we commend to the attention of our Operators, before they offer their Coal for less than fair remunerating prices, not only to themselves, but to the labor of the Region also, on which the whole community is dependant for the necessities of life. All that is required is to refuse to sell at less than fair prices, and they can be obtained—there is no necessity for cutting under each other this season—all the Coal that can be mined and carried to market will be.

At the present rates of freight and toll, Red Ash Coal ought not to be sold on board at Richmond for less than \$4 per ton, and White Ash at \$3 75. This would give the operator here about \$2 12 for Red ash, and \$1 87 for White Ash, which in all conscience is low enough.—*Miners' Journal.*

Indianapolis and Bellefontaine Railroad

We have had the pleasure of receiving the first annual report of the President of this road, Hon. O. H. Smith, to the Directors. It is designed to connect the capital of Indiana with the Sandusky and Cincinnati Road, at Bellefontaine. The distance between these two points is 140 miles; 83 of which is in Indiana. The character of the work, the estimated cost of the road, and its business prospects, may be seen from the following extracts from the report.

The highest grade required at any point per mile may be only thirty feet. The average grade of the whole line will be about 13½ feet per mile. The whole bridging of the line is estimated at \$18,689. The graduation and bridging of the whole line will cost per mile \$2,026. The superstructure of the line prepared for the flat bar will cost \$1,856 per mile, prepared for the T rail it will cost \$1,674 per mile. The whole line ready for the T rail will cost \$307,100. Ready for the flat bar it will cost \$328,116. The cost of the T rail on the road per mile, at present prices of \$45.00 per long ton at New Orleans, allowing the weight to be sixty pounds to the yard, will be \$500. The cost of the flat bar at the same prices per mile, will be \$2,000. The whole cost of the eight-three miles with the T rail ready for the cars, will be about \$722,100, or \$8,700 per mile, and the whole cost of the line with the flat bar will be about \$494,084, or \$5,953 per mile.

The first section of the road, from Indianapolis to the Falls of Fall Creek, about twenty-six miles, has been run on a straight line for about twenty-four miles, with easy curves at each end, and has been finally located by the Board, except the link of about one mile next to Indianapolis, which was reserved until the Depot grounds should be selected, and the Depot finally located. The link has since been run.

With the stock already taken, and the means upon which we can reasonably rely, we have no doubt but that we shall, in the coming season, come fully up to the amount necessary to prepare the whole line for the iron rails. We propose to let the graduation of the first section about the first of next month, to be completed in six months from the first of May, the time the present contracts will expire, and to let the balance of the line, so soon as it can be prepared by the engineer, finally located, and the special stock in the counties which it runs shall be taken, sufficient to meet the contracts; as the general stock must, under the charter be applied to the first section until that section shall be in use.

As before stated, it is only about a year since our work was spoken of by some as among the "Stuff that dreams are made of," while other kindred works had obtained a large share of the public confidence. It is not, by any thing that may be said, designed to disparage other works in our State; we should wish them all constructed, and to prove profitable

to the stockholders; we should feel no spirit of rivalry, or unkindness towards any of them, but we should rather be disposed to aid them all, as mutually beneficial, and while we yield a hearty assent to the position, that each and every part of our great thoroughfare must prove highly beneficial to the country, and profitable to the stockholders, we feel warranted in saying, that our link from Indianapolis to the Ohio line, must always compare favorably with any other link, in this, or any other railway. Our link in the great chain will largely combine the two essential elements of prosperity, freight and passengers, without which combination, few, if any railroads anywhere, not connecting large cities at short distances have ever proved profitable, and with which any well managed railroad in the United States, must prove a good investment to the stockholders. Our road will at no distant day, intersect and receive the travel and business of the Ohio line, (our eastern terminus,) passing west, of the lines from Boston and New York, through Sandusky and Cleveland; the line from Philadelphia through Pittsburgh, the line from Baltimore through Wheeling and Columbus, and the line from Cincinnati through the Miami Valley and Greenville. At Indianapolis it will at once connect with the Madison and Indianapolis Railroad, now in complete and successful operation, and ultimately unite with the lines from Louisville, Jeffersonville, New Albany, Evansville, Lafayette, Crawfordsville, Peru, and St. Louis, through Terre Haute, while the travel and business of several intermediate connections will be thrown upon our line, but this is not all, our road will pass through one of the most fertile agricultural, and especially pork and wheat regions of country in the west, from one end to the other, embracing the Fall Creek, White River and Mississinawa valleys, and broad table lands stretching out without a hill, to the Wabash river. It must also draw to it a large amount of the business and travel of the Wabash Valley at all times, and especially so, when the canal shall not be in use, thus securing to us an immense local transporting business, and as we are not limited in our dividends by our charter, the ultimate value of stocks may be anticipated by the fact that the construction of our road will not cost over one half as much per mile as other roads have cost, that are dividing annually, from six to ten per cent. on their stock. Such is my confidence in the ultimate value of our stock, that had I the means I would willingly construct the road on private account as a safe and profitable investment of capital. I have, in this report, given some of the many reasons for this confidence and submit them to the stockholders and the public.

Canadian Affairs.

The present liberal ministry of Canada seem earnestly devoted to the cause of public improvements, and to be ever ready to give their countenance and support to all individual efforts engaged in this direction. The angry debates in the Lower House, on the question of repaying the rebellion losses, may have the effect to alienate parties so far, as to defeat for the present session any attempts to extend the aid of the colony towards the railway projects now in progress.

The ministry have called the attention of the home government to the railway schemes of Canada, as connected with immigration—the great safety valve of British agitation.

Lord Elgin, on the 20th of December last, presented to Earl Grey, Colonial Secretary, a memorandum "on Immigration, and on Public Works as connected therewith," as agreed upon in Executive Council, which, with the reply of Earl Grey, have recently been laid before Parliament. We give below portions of this correspondence, sufficient to explain the position of this portion of Canadian affairs.

Government House, Montreal, }
December 20, 1848. }

My Lord—I have the honor to transmit herewith a copy of an approved Minute of Council (20th of December) with a memorandum of the Inspector General, on Immigration, and Public Works con-

nected therewith, in which various suggestions are made, as to the best mode of promoting colonization and the settlement of immigrants from Great Britain and Ireland within this province. Considerable efforts, as your lordship will observe, have been made by the government and the municipal bodies, as well as by enterprising associations and individuals, to develop the resources of the province, and extend the area for the employment of British labor. These efforts are, however, hampered by the shock which has been given to colonial credit, chiefly through the withdrawal of the protection which colonial produce formerly enjoyed in the British markets.—It will be for your lordship to consider whether means may not be taken, by the intervention of the Imperial government or otherwise, to encourage the introduction of capital into the province, for the execution of those great works, which afford the only practicable means of absorbing a large pauper immigration, and which in a country so rapidly advancing in wealth and population, cannot fail to prove remunerative, when a reasonable degree of prudence is exhibited in selecting them, and in carrying them out. I have, etc.,

(Signed.) ELGIN & KINCARDINE.

To the Right Honorable,
The Earl Grey,
&c., &c., &c.

(Copy.)

Extract from a Report of a Committee of the Honorable the Executive Council, on matters of State, dated 20th December, 1848, approved by His Excellency the Governor General in Council on the same day:

On a memorandum of the Honorable the Inspector General, dated 20th December, instant, on the subject of Immigration, and on Public Works connected therewith—

The committee of the executive council have had under consideration, on your excellency's reference, a memorandum from the Honorable the Inspector General, on Immigration and on Public Works connected therewith—in which various suggestions are made as to the best mode of promoting colonization. The committee of council concur in the opinion expressed by the inspector general, that loans might safely be made, on certain conditions, to commissioners incorporated under the authority of the Provincial parliament, for the construction of the public works referred to in the memorandum. The committee of council are further of opinion, that in case the imperial government should see fit to obtain the money required for the completion of these works, it would be expedient to recommend to parliament, the special appropriation of the proceeds of the sales of public lands, to the redemption of the debt so created, and the committee of council entertain no doubt that the public lands would afford ample security for such a loan.

Certified, J. JOSEPH, C. E. C.
Major Campbell,
The Governor General's Secretary.

Memorandum on Public Works, and on Immigration as connected therewith.

This memorandum is based on the following assumptions—

1. That the mother country contains a redundant population, which it is her interest to have removed to a country where, under a system of free commercial intercourse, the products of the soil will be exchanged for British manufactures.
2. That the British province of Canada, containing as it does, immense tracts of waste land, susceptible of profitable cultivation, is deeply interested in facilitating, by every means in its power, the immigration of an industrious population.
3. That it is possible to procure English capital to promote colonization through the instrumentality either of the imperial government, or of associations of individuals in England.

After speaking of the importance of immigration to the mother country, and the landed proprietors, and the indifference of the people of England as to the place where the immigrant should find a home, the Inspector General points out the cause why, for many years past, the tide of immigration has so strongly set toward the United States, viz: "a homogene-

ous people," "good wages," a "salubrious climate" and "good land at cheap prices."

To ensure the same result in Canada, a spirit of enterprise similar to that of our people is required. This is to be fostered and built up by a judicious system of public works. He then proceeds to say:

I proceed now to consider the mode of providing for the construction of works of a more general and important character, such as railroads and canals. I have explained, I trust, with sufficient clearness, that however willing the provincial legislature may be to facilitate the construction of such works, it would not be justified, under existing circumstances, in pledging the revenue to any further extent. That revenue will not for some years, at all events, be more than adequate to meet the necessary annual expenditure, and the interest of the debt, and to provide for the sinking fund, which has been specially appropriated to the redemption of that portion of the debt guaranteed by the imperial parliament. (Section 28.)

But though for the reasons just stated, the province may be compelled to confine its efforts to the completion of the great line of ship canals, in the success of which it is so deeply interested, several works of great importance have been projected, for some of which acts of incorporation have been obtained, under which operations have been commenced. The only Canadian railroad that has yet been fairly tested, is that which connects the St. Lawrence with Lake Champlain, and it is gratifying to be able to state, it has been most successful, the dividend having been equal to those generally paid in the United States. The railroad between Montreal and Lachine has also been completed, but the shortness of the line, nine miles, and the heavy expense to which the company was subjected for property at the terminus, has been against it. Its profits, however, during the first year were, I have been given to understand, equal to about three per cent on the expenditure.

The Montreal and Portland railroad has been commenced, and has been completed as far as St. Hyacinthe, a distance of about 30 miles. This is a work of the greatest provincial importance, as it will open an extensive market for western produce, all of which will pay toll on the canals. In connection with this work may be mentioned the branch line from Quebec to Sherbrooke, which, should the railroad between Halifax and Quebec be constructed, would be almost indispensable. The improvement of the Quebec harbor is the next work to which I shall direct attention. The opening of the St. Lawrence canals is likely to cause a considerable increase of trade in Quebec, and docks and wharves are much required. The harbor of Montreal was improved some years ago by means of a loan raised through commissioners appointed by government for the purpose, and it is satisfactory to be able to state that the revenues have been amply sufficient to meet the interest. Quebec would be one of the most important points at which public works could be undertaken. Immigrants would be able to find immediate employment on landing, and would soon earn sufficient to enable them to proceed westward, if so inclined. A canal has been projected to connect the St. Lawrence with Lake Champlain, the locks to be of the same dimensions as those of the St. Lawrence canals. It is confidently asserted that this work will be undertaken by a company, under an act of incorporation. Its importance would be very great. Like the Portland railroad, it would open an immense market for western produce, all of which would pass through the provincial canals.—It is proposed to continue the railroad now terminating at Lachine to Greenville on the Ottawa. This also would be a work of very considerable importance, connecting, as it would, the capital of the province with the extensive territory of the Ottawa, which is being settled with great rapidity.

The works to which I have referred are those which have been commenced or projected in Lower Canada. I have not mentioned the Halifax and Quebec Railroad, looking on that as a great national work which must be considered separately, and not in the light of a mercantile speculation. In Upper Canada the work of the most considerable importance is the Great Western Railroad, which is intended to connect the Great Eastern and Western

Railroads in the States of New York and Michigan at the Suspension Bridge near the Falls of Niagara. This railroad would pass through one of the most fertile regions in North America, and there can be no responsible doubt but that it would be very productive. A Company has likewise been incorporated to construct a Railroad between Toronto and Lake Huron, which would connect the old Capitol of Upper Canada, now a city with nearly 25,000 inhabitants, with Lake Huron.

The cost of these works may be estimated at the round sum of £3,500,000, sterling. Great expectations are entertained with regard to their productiveness, and there can be no doubt but that the construction of all or any of them would lead to the employment of a considerable amount of immigrant labor. It is believed that, with reasonable encouragement, several of these works might be completed. The question for consideration is, how loans might be made with perfect security to the capitalist. I think that if parties in England, who are friendly to emigration, would make exertions to obtain the required capital, it might with perfect safety be lent at six per cent. to Companies incorporated by the Legislature for the construction of any of the works to which I have referred, provided such Companies should have raised and expended on the respective works one-half of the amount required to complete them. The interest on the debentures of such Companies being a preferential claim, the capitalists would be secure of receiving 6 per cent. if the profit of the capital expended should be three per cent. The profits on the American lines and on the St. Lawrence and Champlain Railroad in Canada, have been from seven to ten per cent. It appears clear, therefore, that the furtherance of an extensive scheme of Colonization may safely be combined with the profitable investment of capital. The money to be expended on the works being double the amount of the proposed loan, the employment of labor would be very considerable; and the rates of wages in Canada being high, the laborers would be able to save a sufficient sum during the progress of the works to enable them to become settlers of the land.

He then proposes the Crown Lands should be held as security, and concludes by saying:

I have not ventured to suggest in this Memorandum any plan of promoting immigration which would involve the Imperial Government, in expense. I have pointed out first, a mode by which the Province is able, through means of its waste lands, to provide for the employment of a great amount of labor. Second, I have shown that the contemplated measures of next Session, for improving the Municipal Institutions, and the system of assessing property in Upper Canada, will have the effect of stimulating the local Corporations to effect improvements either from their own resources or by obtaining loans on the security of taxes, the payment of which will be enforced by the laws of the Province. Third, I have suggested that, to facilitate the construction of certain large and important works of Provincial importance, loans might be made by English capitalists, with perfect safety, to such Companies as should have expended from their own resources one-half the amounts required to complete the respective works; and finally, I have suggested that Her Majesty's Government might be induced to promote the construction of these works, in order to facilitate the employment of immigrant labor, in which case, in addition to the security of the works themselves, the proceeds of the Public Lands of the Province might be specially appropriated to form a Sinking Fund for the redemption of the debt.

All of which is humbly submitted for the consideration of His Excellency the Governor General.

(Signed,)

F. HINCKS,

Inspector General,

Inspector General's Office, }
Montreal, Dec. 20, 1848. }

DOWNING STREET, January 24, 1849.

MY LORD:—I have the honor to acknowledge Your Lordship's Despatch, No. 151, of the 20th December, accompanied by an approved Minute Council, and a memorandum of the Inspector General, upon Immigration and Public Works.

2. I have read this able document with much interest, and you will assure the Members of your

Executive Council of the earnest desire of Her Majesty's Government to promote the success of any measures which may be adopted for the improvement of Canada, and the development of its grand national resources.

3. It is at the same time to be observed that the measures to be adopted with this view are chiefly, if not exclusively, such as the local Government and Legislature have alone the authority to carry into effect. I am ready, indeed, to believe that capital might safely be invested in the various works proposed, and in the manner suggested by the Inspector General; but it has not, I think, occupied his attention, that such advances ought rather to be made by private capitalists than by the Imperial Parliament.

4. The different measures which the Executive Council have in contemplation with the view of encouraging the investment of private capital, seem to me to be founded on sound reasons, and likely to be successful.

(Signed,)

I am, &c.,

GREY.

To the Right Honorable,

The Earl of Elgin,

&c. &c. &c.

We have seen nothing in the way of encouragement to the Montreal and Portland Railway, so important as the foregoing. An endorsement on the part of the Colonial Secretary of this great international thoroughfare, will bring its claims very fully to the view of the capitalists of Europe and this country, and the intimation that the grant of aid is a matter within the discretion of the local government, will relieve the Parliament of Canada of any apprehensions of want of authority in the premises.

The Despatch of Earl Grey must however put a damper on the prospects of the Quebec and Halifax railway scheme.—It is a plain intimation that aid from the Imperial Parliament, towards colonial projects, is out of the question. The political relations between the North American Colonies and the British Government are nearly nominal.

The recognition of the doctrine of "responsible government" takes from the Governor General all the prerogatives of authority, and leaves to the people of the different colonies the entire control of every thing but the choice of their Executive head.

American Patents.

For an *Improvement in Spark Arresters*; John S. Lafitte, Baltimore, Maryland, February 1.

Claim.—"What I claim as constituting my invention, and for which I ask letters patent, is the combining with an open stack of chimney, into which an exhaust pipe projects, in the manner described, the circular flue and its partition forming the receptacle into which the sparks are driven by centrifugal action; the arrangement and construction of the parts being made in the manner and upon the principles set forth."

For an *Improvement in Car Wheels*; W. V. Many, Albany, New York, February 1.

Claim.—"What I claim as my invention, and desire to secure by letters patent, is the method of making cast and wrought iron wheels for railroad cars with chilled rims, by casting the hub or rim, or both, on the highly heated wrought iron connections as set forth, that these (the connections between the hub and rim) may contract in cooling with the cast iron as set forth."

For an *Improvement in the Railway Car Wheel*;—Frederick Harbach, Pittsfield, Berkshire county, Mass., Nov. 6.

The patentee says: "My improvement consists in the employment of a third circular plate, which I arrange between the circular plates, and which I cause to extend from a solid hub to the rim, and be connected to, or cast with or to, said hub and rim, in the same manner as are the other plates."

Claim.—"What I claim as my invention, and desire to secure by letters patent, is the combination of the middle plate with the two outer plates, and

hub and rim, in the manner and for the purposes set forth.

For an *Improvement in Car Wheels*; Frederick Harbach, Pittsfield, Berkshire county, Massachusetts, Nov. 6.

The patentee says:—"The nature of my improvement consists in the manner in which I make the hub, viz: with a contractible chamber, whereby I can cast or found it, and not only obtain all the advantages of a solid or cylindrical hub, extending from one of the side plates to the other, but all those of a divided hub, without any of the disadvantages of the latter."

Claim.—"I claim the improved mode of making that part of the hub which is between the two side plates of the wheel, viz: with a lateral expansion and chamber, and in other respects substantially in the manner and for the purpose specified."

For an *Improvement in Machinery for Rolling and Twisting Iron*; Horatio Ames, Salisbury, Litchfield, Connecticut, Oct. 9; English patent dated 29th July, 1847.

Claim.—"What I claim as my invention, and desire to secure by letters patent is, 1st, the method herein described, of heating iron to increase its toughness or durability for certain purposes, such as railroad bars and ties, etc., by subjecting it, while in a highly heated state, to the compound operation of drawing and twisting, substantially as herein described.

"And I also claim in the machinery described, giving to one set of rollers a rotary motion on their axis, and a rotary motion at right angles thereto, on the axis of the bar of iron, when this is combined with another pair of rollers which have simply a rotary motion on their axes, substantially as described, whereby the bar of iron, in a highly heated state is drawn and twisted as described."

For an *Improvement in Jointed Pipes for Steam, &c.*: Lewis Kirk, Reading, Berks county, Pennsylvania, Oct. 9.

The nature of this invention consists in making the pipe, which is in two parts, one sliding on the other, with the outer extremity of each part provided with two curved branches, connected by means of packed turning joints, with a vertical pipe having a closed journal at the upper end, and an open packed journal at the other, which forms the connection in one of them, with the steam chamber of the boiler, and in the other, with the steam chest of the engine; in this way the sliding of the two parts on one another, will admit of the vibration of the two carriages, towards and from one another; the packed joints of the branch pipes, with the vertical pipe, will admit of a free vibration vertically, and the turning of the short vertical pipes on the two journals, will admit of the free vibration of the two carriages, horizontally, while the union of the three will admit of vibrations in any direction; the curved branches of each part of the jointed pipe, which form connections with the vertical pipes, effectually preventing any tendency to break or strain the joints in these parts, while the connection of the two vertical pipes with the steam chamber and chest, by the two journals, effectually protect them against all tendency to break or strain.

Claim.—"What I claim as my invention, and desire to secure by letters patent, is connecting the main pipe at each end, by means of two branches on opposite sides, when this is combined with the sliding joint in the main pipe, substantially as described, whereby the connections of the main pipe with the vertical pipes, and the vertical pipes with the boiler and engine, or other vessels to be connected, are sustained against any tendency to strain or break, and the openings or passages are retained of the same required size at all times, while the two bodies thus connected are free to vibrate in all directions."

For an *Improvement in Furnaces for Manufacturing Steel*; Simon Broadmeadow, city of New York, October 9.

The patentee says:—"My improvement in the structure consists in closing up the side flues, at the top of the coffer, and not allowing the flame to pass through them into the arch, but conducting it up each end of the coffer (through temporary flues made when building up the ends after charging the

oven) into and along the arch to the centre, over which is the stack, having a damper at the top, thus allowing the flame a greater opportunity of extending itself, and diffusing the heat more generally than by the old plan. When the fuel used in firing has partially spent itself, I nearly close the damper, by which means the heat is forced into the side or dead flues, and enables me to obtain a greater amount of heat from the same fuel, which would otherwise escape through the chimney.

Claim.—“What I claim as new, and desire to secure by letters patent, is the closing of the side flues at the top, and passing the smoke and flame through flues at each end of the oven, into and along the arch, to the centre, and thus into the chimney.”

For an *Improvement in Lubricating Compounds*.—Lewis Kirk and John Dodsworth, Reading, Berks county, Pa., October 16.

The nature of this invention consists in mixing together, under a high degree of temperature, (say 500 deg. Fahrenheit's scale) whale or other oil, lard, or other like or equivalent substance, with coal tar or asphaltum, or with both.

Claim.—“What we therefore claim as our invention, and desire to secure by letters patent, is combining together, under a high degree of heat, whale or other oil, or lard, or other like or equivalent substance, with asphaltum, or with coal tar, or with both together, substantially as described, and thereby producing a compound for lubricating machinery which we find by experience, to prevent friction and heating better than any other substance or substances known to us.”

For an *Improvement in Disconnecting Railway trains*.—Richard Hemming, Boston, Massachusetts, November 6.

The patentee says.—“The object of this invention is to enable the brakeman or conductor of a train, to disconnect one or more cars from a train, or the whole train from the engine, at will and instantaneously, without incurring the risk or inconvenience attendant upon the present system of coupling.

Claim.—“What I claim as my invention, and desire to secure by letters patent, is an apparatus for disconnecting railroad cars, by the use of the movable jaw, the lever, and the bolts, operating in connexion with the lever and the springs, in the manner set forth.”

The Central Railway Station, Newcastle-upon-Tyne.

JOHN DOBSON, Esq., Architect.

Railway buildings ought to do much for architecture: being quite a new class of structures, erected for purposes unknown until the present age, or, we may say, the present generation, they suggest, or ought to suggest, a character of their own, and fresh combinations in design; and being generally upon an extensive scale, they afford opportunities that have hitherto been of rare occurrence. They are, moreover, especially public works—structures constantly seen by thousands and tens of thousands of persons; and might, therefore, do much towards improving the taste of the public. That they have done so, or have been calculated, to do so, cannot, we fear, be asserted of them generally. In more than one instance, expression has been falsified or forfeited, by the adoption of some style intended to be reminiscent of mediævalism—of times whose spirit and whose institutions contrast very strongly with the present railway age, in which it is either our good luck or our misfortune to live. All the various modes of Gothic are very ill adapted to buildings totally different in purpose, and therefore requiring to be differently constructed from those in which such modes are exemplified. Either violence—or what is likely to be thought such—must be done to the style itself, by deviating greatly from its traditional physiognomy, or mediæval physiognomy will be in contradiction to modern purposes. The character aimed at may be well kept up; but in proportion that it is so, it will be foreign from the express occasion—for what class of mediæval structures are there that have aught in common with railway stations and termini? Is it the castellated with its feudal fortresses?—or the ecclesiastical with its churches and conventual buildings, its priories and abbeys?—or the palatial, or the collegiate, or the domestic? Is there any one of those

styles or classes which supplies what is required for railway structures as a specific class, that ought to carry with them a distinct and appropriate character of their own? The Gothic style does not readily provide open external halls or ambulatories, which, if not indispensably demanded, are highly desirable adjuncts to every principle railway station where there is a great confluence of passengers. It is only in the form of the cloister, that Gothic examples supply any accommodation of that kind; and besides that the cloister or arcade was hardly ever made an external feature, it is only one that carries with it associations that, unless it were to be greatly modified, rather unfit than all recommend it.

It will be in the recollection of our readers, that at Newcastle the great eastern trunk line of railway from London to Edinburgh is intersected by a main line of railway extending across the island, from sea to sea; that is to say, from Mayport, on the Irish Channel, to Tynemouth, on the German Ocean. The traffic of this cross line has lately been added to that of the original line from York to Berwick, by the leasing of the Newcastle and Carlisle, and Carlisle and Mayport Railways, to the York, Newcastle, and Berwick Company; and the local traffic of the great northern mining district gives employment to branches from Newcastle to North Shields and Tynemouth, to South Shields, and to Sunderland. Thus, with the despatch of the through trains, at least 130 arrivals and departures of passenger trains will take place daily at the central station; and it is to provide for this immense accumulation of traffic that the present building is required. It will readily be imagined, therefore, that the sheds and erections must necessarily be upon a scale of no ordinary magnitude. In the infancy of the railway system, no one could have ventured to predict the extent to which the inland traffic has increased; and we have, therefore, seen the great expense which has been incurred by the London and North Western and other railway companies, to obtain additional room for their principal stations, and the great sacrifice of valuable property which has in consequence taken place. The York, Newcastle, and Berwick Railway Company, however, having had the benefit of the experience of later years, have taken great pains to select a site where the necessary extent of ground can be obtained, and the most ready access to the centre of the town; and they have been fortunate enough to find a spot which, at a very reasonable cost, and with the destruction of a very few buildings, combines both of these advantages. The manner in which the junction of the northern and southern with the eastern and western lines has been effected,—and the great works required to complete the union of the whole, by means of the high level bridge over the Tyne viaduct, through Newcastle and Gateshead, from the designs of Mr. Robert Stephenson, and under the able management of Mr. Thomas Harrison, form too extensive a subject to be treated of here, and will probably be the object of a separate notice.

The identity of the central points of the great railway system of this period with the central points of the military occupation of the country by the Normans, has been in many instances, strikingly exemplified; and in none more so than York, Newcastle, and Berwick, in each of which towns the railway station closely adjoins the Castle. The station at Newcastle extends from Westmoreland-place, the ancient town house of the illustrious family of the Nevilles, Earls of Westmoreland, situate in Westgate street; takes in the site of the convent and garden of the Carmelites or White Friars, known as the Spital, for many years occupied as the Royal Free Grammar School, the *alma mater* of Lord Stowell, Lord Eldon, and Lord Collingwood; crosses the town wall and ditch at west Spital Tower, and terminates at the Forth, an open piece of ground, formerly in the outskirts of the town, and which was bequeathed by some worthy of former days to the burgesses of Newcastle, “to walk abroad and recreate themselves,” a circumstance which has hitherto prevented its being built upon. *

The exterior front of the portico is composed of seven arches, each 14 feet in width by 32 feet in height, divided by coupled insulated Doric columns, 29 feet in height, elevated on a basement of 7½ feet, and supporting a broken entablature and attic of the same style. The arcades on each side are for-

med of arches, of the same width as the portico, divided by coupled inserted columns. These columns, with the key-stones of the arches, support a continued unbroken entablature, without an attic. The ends of the arcades terminate in front in a niche, having coupled insulated columns on each side, supporting an entablature and low attic. The entrance to the end of each arcade is by an arch 25 feet in width, and the arcades will be covered with groined ceilings of stone, with a circular light at each intersection.

The front of the station-house facing the platform is concave, forming the segment of a circle of 600 feet radius. This form was rendered necessary by the junction of the various lines of railway at this point; and the elevation is of rubble stone, from Prudham Quarry, of a plain and bold Roman character, the doors and windows having arched heads, with moulded imposts and archivolts; and the long continued line of these circular arches, with their deep reveals, produce a striking effect.

The shed is 156 yards long, and 61 yards wide, covering an area of 14,426 yards, or about three acres. The roof is composed of iron, divided into three compartments, and supported by columns 33 feet apart, and 23 feet high from the platform to the springing of the roof. The various offices, waiting-rooms, and refreshment-rooms, front the platform, with the exception of the booking-office and parcel-offices, which extend the full width of the building.

The entrance to the shed is, from the centre of the portico, 40 feet wide, with a stone vaulted ceiling, supported by two rows of columns, which leads direct to the centre of the platform, about 120 feet square. On the right hand is the booking-office, 70 feet long by 36 feet wide; adjoining which are the two parcel-offices, the telegraph-office, lamp-room, and other rooms and offices extending westward, for the engineers, guards, porters, and other officers of the company. A house for the station-master concludes the front range of buildings to the west.

On the left of the entrance is the station-master's office, first, second, and third class waiting-rooms, (containing separate apartments for ladies and gentlemen,) washing-rooms, attendants' rooms, and other requisites. Adjoining this suite of rooms is the first-class refreshment room, 66 feet long by 33 feet wide. At one end is a distinct refreshment-room for ladies, and at the other end a corresponding room for the bar, each 15 feet by 33 feet, divided from the large refreshment-room by columns only, and forming with it one large apartment, 96 feet in length. Adjoining the bar is the second-class refreshment room, which terminates on the east the range of buildings facing the platform. The kitchens form the eastern end of the front building, immediately behind the refreshment-rooms, and adjoining the hotel; and are provided with larders, store-rooms, and servants' rooms, on the same floor, with sleeping apartments above.

In addition to the above extensive range of building, it is proposed to erect a hotel, communicating with the station, forming a separate range 190 feet in length by 66 feet in depth; to contain 70 bedrooms, with a proportionate number of other apartments; and in the basement story, tap-rooms and refreshment-rooms for servants and other persons.

The construction of this building entirely of stone, would, in any other locality, be attended with enormous expense; but the county of Northumberland affords such an abundant supply of the finest freestone, that this material becomes there not only by far the most durable, but really the least expensive. —*Civil Engineer and Architect's Journal.*

Meeting of Coal Operators.

A full meeting of the coal operators of this region, held at the American House, Pottsville, on Friday last, was organised by the appointment of Martin Weaver, Esq., as chairman, and J. G. Lawton and C. M. Hill, secretaries.

Joseph S. Silver, Esq., being called upon, stated, in a clear and satisfactory manner, the purpose for which the meeting was called—whereupon, on motion, a committee was appointed to make a report of the state of the coal trade, for the consideration of the meeting, which was read, adopted, and ordered to be printed in the papers of the borough, and in pamphlet form.—*Pottsville Emporium.*

SUBSTANCE OF THE REPORT.

The people of Schuylkill Co. have been brought to the verge of bankruptcy by a bold and novel system that was practised last year, and is again introduced this spring.

Some speculative persons entered the eastern markets in advance of miners, and by offering our coal (which they have not yet bought) at prices below what it costs us to produce it, they secure all the orders for immediate delivery.

The nature of mining requires that the daily product shall have an uninterrupted sale and removal from the mines.

Having thus all the orders in their hands, these forestallers avail themselves of this peculiarity in our business, and of our want of union for common protection against such a scheme, to alarm our smaller colliers, and thus to break down our market to suit their purpose.

In this way a barrier is created between the producers of coal and the consumers, keeping them effectually apart, which must in the end, if tolerated, be equally injurious to the interests of both parties.

To put a stop at once to this unjust system, the colliers of Schuylkill county are earnestly urged to form an efficient organization without delay.

The only legitimate regulator of prices is the relation between demand and supply, with some reference also, of course, to the cost of production.

The average cost of every ton of first quality red ash coal, delivered in boat or car at Mount Carbon (coal rent and expenses fully paid, and 20 per cent. being taken as the lowest allowance that will renew machinery, mining shafts, etc.) is not less than \$2! Our heavy miners make it higher. White ash coal of equal quantity, contingencies being smaller, costs on the average 25 cents less. It is only what it brings beyond these figures that constitutes the profit of the miner.

A careful survey of the market in every direction enables us to say with confidence, that all the coal which will be forwarded from the different regions in 1849, will be required for consumption—so that none need envy his neighbor's market, nor suffer any one's blindness or necessities to regulate him in the matter of prices.

We start this spring with a market unusually bare of stock. Every department of trade and manufacture is being revived, and money is correspondingly abundant. The established order of things must be reversed, if the coal trade, upon which all others have more or less dependence, shall be the only branch of industry that is to remain depressed.

In 1848	Tons.
The Schuylkill coal mines produced.....	1,714,365
Lehigh.....	680,746
Delaware and Hudson.....	437,500
Wyoming and Shamokin.....	256,627

Total product of 1848.....	3,089,238
There was an overstock from 1847, over the amount usually allowed for permanently dormant stock, which was consumed in '48, in addition to the above of not less than.....	210,762

The consumption in 1848 was over.....3,300,000

The capacity of the same regions to produce coal for 1849, counting their means of sending it to tide water, may be confidently stated as follows:

The Schuylkill, (by railroad, 1,300,000, canal 550,000. The canal estimates itself 50,000 tons higher.....)	1,850,000
Lehigh.....	800,000
Delaware and Hudson.....	480,000
Wyoming and Shamokin.....	257,000

3,387,000

It will be seen that this tonnage will furnish for the wants of this year, only about as much as was actually consumed last year. The return of vigor to general business, warrants us in expecting that the usual annual increase, which was interrupted last year, will resume its regular progression now. This regular increase in the consumption of our coal, has been 25 per cent. for several years previous to 1848, when it fell to 13 1/2 per cent. Taking this lowest possible standard, there will be required nearly 400,000 tons over the largest quantity that

can be delivered to market, by the carrying machinery known to us, from all sources, in 1849. If the regular increase be wanted, then there will be over 700,000 tons short.

This is the true state of the market and its prospects; and its correctness is so clear that miners must at once perceive that the market is in their hands.

We invite especial scrutiny to every detail of these estimates for we are not mistaken in any important particular.

We may mention another fact that we can vouch for, and that we think should be known to the market.

From causes well understood, the red ash collieries now in working condition cannot yield as much as last year, and taking into account the lowest supposable increase of demand for that variety of coal, the supply must fall at least 130,000 tons below the demand.

Red ash mined in 1848.....	620,000
Overstock in spring of 1848.....	50,000
Increase demand for 1849, say only.....	50,000

Required for consumption in 1849.....720,000

The production of red ash coal this year will probably not exceed.....590,000

The smallest deficiency will be.....130,000

720,000

Now we may allow the greatest latitude of construction with our figures, which differences of opinion ever permit in a market so easy of judgment as that of coal, and still the certainty remains that the demand for our coal will before a month exhibit great activity, and keep at least full and animated pace with our means of supply throughout the entire season; and no miner understanding this will sacrifice his coal at this time.

Jos. S. SILVER.
Geo. H. POTTS.
Jos. G. LAWTON.

On motion of Mr. Geo. H. Potts, it was resolved that a committee be appointed by the chair to devise ways and means to prevent a repetition of the evils of last season, and to report at an adjourned meeting to be held on Wednesday, the 14th inst, at 1 1/2 o'clock P. M. Whereupon the chair appointed George H. Potts, J. Cockill, M. Heilner, J. G. Hews and G. Bast—and on motion, Jos. S. Silver was added to the committee.

On motion of Mr. Geo. H. Potts, the following resolutions were unanimously adopted:

Resolved, That in our opinion \$2 25 per ton for red ash coal, and \$2 per ton for white ash prepared, and lump coal, at Mt. Carbon, should be the prices fixed at the opening of the season.

Resolved, That it is hereby earnestly recommended to all coal operators in our region, to unite with us in this measure, because "United we stand: Divided we fall."

Resolved, That this meeting adjourn to meet again on Wednesday next, at 1 1/2 o'clock, P. M., to receive the report of the above named committee.

M. WEAVER, Chairman.

Jos. G. LAWTON, } Secretaries.
C. M. HILL, }

On the Analysis of Some Specimens of Hot and Cold Blast Iron.

BY F. C. WRIGHTSON, ESQ.

The specimens of iron, of which the following are analyses, were kindly furnished by Richard Smith, Esq., agent to Lord Ward, from the Coneygre iron furnaces, near Dudley. The object of the analysis was to show how far the quality agrees with what might be predicated from the composition, and also the difference produced in the composition of the iron by the cold, warm and hot blasts respectively, when smelted from the same, or nearly the same materials. The materials manufactured by the hot blast only differed in having a small proportion of an ore richer in iron added to the others; and it is probable that the essential difference in the per centage of silica contained in two, and of the phosphorus in all, is due to the effect of the hot blast. The phosphoric acid, for example, requiring a very high temperature for its retraction. Of Nos. 2 and 4, (see table below) the hot blast iron is considered much inferior, being more brittle than the others,

and requiring much longer working in the puddling furnace. No. 8 (hot blast) is also considered a very inferior iron, for, although it contains but little silica, a larger proportion of its phosphorus enters into its composition. This, however, as well as the warm and cold blast of the same number, is liked by the workmen (puddlers) on account of the yield, they being paid by the quantity produced; and this, as will readily be seen, must be greater than from the lower numbers.—*Jour. Franklin Inst.*

Analysis of 12 specimens of "Cast Iron from the Furnace;" three kinds, "Cold," "Warm," and "Hot Blast;" four qualities of each, 2, 4, 6, 8.

	COLD BLAST.			
	2.	4.	6.	8.
Silica.....	3-51	3-45	1-79	1-37
Iron.....	91-98	90-61	93-53	95-67
Manganese.....	0-49	0-91	0-95	0-35
Sulphur.....	0-99	0-30	0-39	0-36
Phosphorus.....	0-47	0-41	0-31	0-20
Nitrogen.....	.....	.....	.....	.....
Carbon.....	2-31	2-19	2-04	1-79
	100-75	97-87	99-26	99-74
	WARM BLAST.			
	3-09	2-89	1-33	1-57
Silica.....	3-09	2-89	1-33	1-57
Iron.....	92-45	91-82	94-20	95-08
Manganese.....	0-54	0-91	0-50	0-79
Sulphur.....	0-57	0-26	0-20	0-45
Phosphorus.....	0-40	lost.	0-54	0-38
Nitrogen.....	.....	.....	.....	.....
Carbon.....	1-96	2-76	2-11	2-28
	99-01	98-64	98-88	100-55
	HOT BLAST.			
	5-14	5-06	1-57	1-34
Silica.....	5-14	5-06	1-57	1-34
Iron.....	90-76	91-30	94-31	95-64
Manganese.....	0-79	0-69	0-79	0-39
Sulphur.....	1-07	0-28	0-20	0-33
Phosphorus.....	0-51	0-55	0-50	0-71
Nitrogen.....	trace.	.....	.....	0-10
Carbon.....	2-87	2-09	1-82	1-59
	101-14	99-97	99-19	100-0

Steamboat Wheels and Paddles.

The late numbers of the Journal of the Franklin Institute contains a record of a series of interesting experiments by Prof. Ewbank, for the purpose of ascertaining the best form for paddles of boats. These experiments showed conclusively that the form now in use is less adapted than many others to give speed to the boat; that the number should be such as to allow only one paddle in each wheel to be completely submerged at the same time, and that they should be as thin as possible, consistent with the requisite amount of strength. These two last conclusions, will, we think, be apparent to any person who will give the matter a moment's attention. Suppose, for instance, that the wheel used was a perfect cylinder—the rotary motion of this cylinder the water would offer but little resistance, and would communicate but a slight impulse to the boat. If then we cut out of this cylinder sections of one inch in thickness, we then have a wheel with floats, within one inch of each other. In this case the water would offer more resistance, although it would still be very slight. This resistance would increase just as the spaces between the floats should be enlarged. Of this fact we think there can be no question, consequently the thinner the paddles, or what amounts to the same thing, the greater the distance between them, provided there be a sufficient number to allow one of them to be submerged, the greater the power obtained.

It is also evident that that form of paddle which creates the greatest amount of friction in passing through the water, communicates the greatest impulse to the boat. If a paddle two feet wide and twelve feet long should be attached endwise to the wheel, it is very evident that the same speed would communicate a much greater impulse to the boat.

than it receives from the paddle as at present attached. The deeper the paddle extends into the water, the greater the power obtained. If an inch be taken off from the upper part of the paddle that is barely submerged, its effective power is reduced but in a slight degree. If the same is taken from the lower or outside of the paddle, its effective power is materially diminished. We regret that we have not room for the whole article from the Journal of the Franklin Institute upon this subject, a part of which is given below.

The last two experiments demonstrate, that the less water a paddle displaces by its volume, the more efficient it is; that all accumulation of material behind its acting face, beyond what is absolutely necessary to strengthen it, is injurious, and ought to be avoided. But how does this accord with the current practice? Oak planks are universally employed, and I have heard more than one engineer assert, that the thicker they are the better! Because, said they, if their propelling property be not enhanced, it is not diminished, and their additional weight is a positive advantage, since the heavier the wheels are, the easier they work—the more uniform are their movements.*

The "Gorgon," an English steamer, had "large wheels and little power," so she used oak or pine scantlings, 5 inches by 6, or 6 by 8 for paddles. Had her managers been aware of the true effect of thick blades, they never would have adopted them with the view of economising power.

Paddle planks vary in thickness from 1½ to three inches. No sea steamers have them less than 2 inches. In the English vessels they are 2½; in others, as the *Franklin*, they are 2½; in some of the largest class they are three. The *Atlantic* and *Pacific*, each of 300 tons, now building for the Collins' Line, are each of them 3 inches. The former is to have 28 blades; hence, united, they will form a solid mass, seven feet thick, in each wheel—just one-fifth of its diameter! They are to be 12½ feet long, by 3½ inches; those of both wheels will, therefore, contain nearly 500 cubic feet of timber, and must displace that enormous volume of water at every revolution, by their submersion alone!—and as we have seen, not only uselessly, but with a serious retardation of the vessel's headway, and waste of her motive power.

The wheels of the *Pacific* are to be 36 feet in diameter; each will have 30 blades, 11½ feet by 3 feet; the solid contents of her paddles will, therefore, equal 517 cubic feet. Her loss from the same source will, therefore, be greater. In every revolution of each wheel, her paddles will lose 7½ feet of effective stroke, and those of the *Atlantic* 7 feet! Those of the ocean steamer *United States* are 2½ or 2½ inches thick; they are 36 in number, but they are "split," and attached on both sides of the arms, there are really 72. They certainly diminish the effective strokes of her blades, from 10 to 15 feet, in every turn of her wheels, startling as the assertion is.

Has the attention of engineers ever been turned this way? Or have they forgotten, that a volume of water equal to that of the boat's paddles, and every inch of material submerged with them, is neutralised as a resisting medium, as often as it is displaced by their immersion;—that water is to them what steam is to pistons—the more space the latter occupy in cylinders, the shorter becomes their stroke because metal then takes the place of steam; if the object is to be moved crowds out the mover. Thick-

* As a further indication that the value of thinness of blades, and of their disincumbrance from every pound of material extraneous to their functions as propellers, has not hitherto been appreciated, it may be remarked, that the same language was repeated in my hearing thus:—"A few tons of wood in the buckets do no harm, if they do no good; they add weight to the wheel, which is desirable, and their only disadvantage is, the additional load on the boat." I believe this is the general, if not the universal, opinion of engineers. But the experiments just referred to, teach us that, if a wheel require loading, the load should be attached to those parts of the arms that revolve above the surface. They cannot enter the water without becoming drags on the blades.

en the piston till it fills its cylinder, and the motive agent being wholly kept out, all motion ceases.

It is much the same with the paddles of a wheel. Let them fill up 1-10, 1-8, or 1-2 of the circles they describe, and in those proportions they lose their virtue, because in the same proportion they displace or push aside the fluid agent on which their worth depends.

The *Atlantic* will lose seven feet stroke in every turn of her wheels. I leave to mathematicians to determine, how many more miles an hour she would make, if the loss were reduced to seven inches, by using ¼-inch iron in place of 3-inch plank.

There are several interesting questions about paddles that yet require solutions, but as respects their thickness, there is no mean to seek; the thinnest is the best under all circumstances—thin were it possible, as a lamina of mica. The only question is, What material will supply the thinnest sheets to resist the pressure they are to oppose? Plates of steel I opine, will yet be adopted.

To one remark, an examination of some steamers' wheels adds force. The accumulation of bolts, nuts, clamps, straps, stays, and other things, &c. and about the backs and faces of paddles—sometimes even to bolting a new plank, or part of one, over an old one—show that those who heap on matters of the kind are not aware how much the efficacy of blades are thereby diminished. They forget that they should be thin and smooth as plates of glass, and that every inch of matter introduced between them is an evil. It is impossible to view the disjointed, broken, patched up slabs of some vessels, without exclaiming, "What a saving of power, and increase of useful effect, would not the substitution of a suitable sheet of metal for each accomplish!"

Number of paddles.—The experiments of each day convinced us that, so far as propulsion is concerned, the fewer the paddles, the faster went the boat, so long as one at each wheel, or an area equal to the face of one, was kept in full play. A greater number in the water merely cuts it into slices, throws them into commotion and diminishes the resistance they should oppose to the blades. As a further elucidation of this fact, we tried, at the suggestion of Mr. B., four blades, 7 x 14, against the eight test ones, 7 x 7. The smaller number had a decided advantage over the greater, and the cause was visible: they had a full sweep, through an unbroken, undisturbed mass of fluid, and consequently produced, unabridged, their legitimate effects; while those on the other wheel—unusually small, (½ or ¼) as their number was, compared to those on the wheels of steamers—following so quickly in the wake of one another, threw it into an uproar, causing eddies, whirlpools, and counter currents, and thus interfering with each other, necessarily produced inferior results.

We thought 8 of fig. 4 would be equally valuable as 24 of fig. 3, but the construction of our wheels prevented us from instituting a series of similar comparisons.

The number of paddles now employed is generally greater than formerly. For large vessels, 28 are usual; some have 24 and others 32. The English rule, said to be a good one, is adhered to by many American engineers, except when circumstances require a deviation. By it, there is a paddle for every foot of a wheel's diameter, which makes them stand three feet apart; there are boats in which they occur every two feet.

One object of their multiplication is to equalise the jar of their striking the water, by increasing the number of blows. With the same view, they are often split through the middle, lengthwise, and the inner half—that next the shaft—removed to the opposite side of the arm. All the British steamers have their blades thus arranged. The *Hermann's* 28 were thus made into 56; their efficacy was found to be reduced about 9 per cent. The value of the upper or inner has been ascertained to be about the same, for, when wholly removed, the lower portions have proved within 10 per cent. as effective as before. The blades of the *United States* are split, and disposed as in the figure. Had the attention of engineers been led to it in the early days of steaming, the popular plan of avoiding the evil at the expense of a greater, would not have been sanctioned so long.

I observed the blades of the last named steamer, a week after her recent return from Europe. Seven

were submerged, or fourteen, if those on both sides of the arms be counted. She sailed on the 4th inst., for New Orleans, with eight (or sixteen) under water. The *Cherokee* left on the 1st inst., for Savannah, with six of her undivided blades below the surface. The *Washington* came on the 6th inst., from Bremen, with five similar ones fully immersed on each side—four full ones, and the halves of two others. The largest of our Sound and River boats have equal, if not greater numbers under. The *Vanderbill*, 1250 tons has five or ten halves immersed in each wheel when lying at her dock, and without passengers on board. The *Isaac Newton*, 1200 tons, has similar wheels, and the same number of blades under water at once.

Arms of Wheels.—The practice of making the arms of paddle wheels of uniform, or nearly uniform, dimensions throughout, is also wrong. They may, without diminution of strength, be reduced towards their extremities, and ought to be, since every inch of surplus material submerged in them, detracts from the work done by the blades. They should taper outwards, as Nature tapers the radial ribs in her propellers.

Coating Paddles with Materials that Repel Water.—If any substance can be found, durably to prevent paddles from being wetted, they would then carry over less water with them. We coated one set with grease, suet, and while the water streamed uniformly over the faces of others, it adhered only in narrow streaks to these.

The lessons which the foregoing experiments teach us are:—

That, to render paddles of steamers more effectual, they ought to be fashioned, as far as circumstances sanction, after models furnished by Nature, so as to conform to her general practice of contracting surface when resistance is of little avail, and extending it when the latter is greatest—to give the largest portions of blades the longest strokes.

That the fewer the paddles on a wheel the better, provided one be always kept in full play;—and hence, that it would be more advantageous to point, or fork them, as proposed, to evade the jar of their striking on the surface, than so perniciously to split and multiply them, as is the popular practice.

That smooth and thin metallic plates should be substituted for the usual massive water-soaked planks. (At present, perhaps, nothing better than boiler plates, galvanised, could be adopted.) That bolt-heads, nuts, cleats, straps, and every other projection, upon or about them, should be provided against. That the arms of wheels ought to be reduced to their outer extremities, and the immersion of all superfluous material carefully avoided. That, when wheels require balancing, or their momentum to be increased, the weights should be attached to the arms above the surface of the water.

To coat paddles, and parts that plunge with them, with varnish or other substance that repels water, that the fluid, instead of being dragged up in volumes by them, may roll from them, as from the backs of diving birds.

Note.—Since the above paper was written, I have seen in the Journal of the Franklin Institute, for February, 1842, (3d series, vol. 3, p. 102,) an extract from the Civil Engineers and Architects' Journal, for October, 1841, by which it appears that Mr. Rennie was led, by his experiments, to substitute the diamond-shaped paddle for that of the ordinary form. It is there stated, that "after a great variety of experiments, he found that the paddle wheel of one-half the width and weight, and with trapezium floats, was as effective in propelling a vessel, as a wheel of double the width and weight, with the ordinary rectangular floats." This agrees very well with our own results. Mr. Rennie states that the Admiralty had permitted him to fit H. M. ship *African* with these wheels, and he had perfect confidence in the success of the experiment; but I have not been able to find any account of the results of this trial upon a large scale.

Measures have been taken to secure by patent, the improvements developed by the preceding experiments.

Such seem to be the correct theoretical views upon this subject, as to the mode of obtaining the greatest amount of power. How far they are to be modified and controlled in their application can only be determined by actual experiment. In this

as in all cases of application of power, respect must be paid to antagonistical laws or principles, and the correct result or practice is only obtained when all these principles exert their legitimate influence. Speed is very desirable, but it may be purchased at too great costs.

AMERICAN RAILROAD JOURNAL.

Saturday, March 24, 1849.

Railroad Iron.

Manufacture in the United States.

From January 1st, 1848, to March 1st, 1849, 967 miles of new railway were opened for public travel in the United States. The average weight of rails used, including the necessary turnouts, and side tracks, may be safely put down at 100 tons per mile. Much of this iron was contracted for during the period of high prices in 1847, and the prices paid will average at least \$65 per ton, including all charges, or the contract prices of August and September, '47, for ordinary English rails. Contract prices for rails of American manufacture, deliverable in the early part of 1848, were somewhat above that sum at the time. According to this estimate, the cost of railway bars alone for this 967 miles of new road is equal to \$6,285,500.

In addition to this expenditure for rails, several roads have been re-laid with a new rail, of greater weight and more approved pattern, probably requiring a further outlay of more than \$1,000,000, after deducting the value of the old rails taken up.—There have also been extensive shipments of rails into the country during the past year, now on hand and ready for use, but not laid down. The prices paid for this iron will average as high as \$60 per ton, though we have heard of contracts made as low as \$52 and \$47 for small portions of it—and we may safely estimate the expense of the railroad iron used, or imported into the country in 1848, as representing an amount of money equal to eight millions of dollars.

The price of iron declined so rapidly in England from August, 1847, to the close of the year 1848, that contracts were made with responsible English houses for rails, in December and January last, at \$42 50 per ton, deliverable free of charge at our own ports. Since then, there has been a rapid advance in iron, more especially in the price of rails—so much so, that orders are very sparingly taken by English manufacturers at the present time.

A large portion of the roads opened in 1848 were undertaken at the time of the high prices of 1845 and 1846, when contracts were freely made at prices as high as \$80 per ton. The estimates for iron for these new roads generally in 1845 and 1846 and the early part of 1847, were as high as \$75 per ton.—The companies who have purchased and laid down their rails, during the time that prices have so rapidly receded, have been enabled to complete their roads at sums considerably below their estimates, though many of them would gladly have waited to take advantage of this depreciation, could they have foreseen the result. All history, and all experience, however, concur in showing, that the period of the lowest point of depression in the price of railroad iron is far from being the most favorable time in which to construct railroads. A remunerating price to the manufacturer is desirable, if not essential, to the general prosperity of the country, and this state of things is rarely found, when any one important branch of business is seriously depressed.

The duty upon iron since the railroads of this country were commenced has been as follows:

1832-3.....	\$30 per ton.
1834-5.....	27 "
1836-7.....	24 "
1838-9.....	21 "
1840-1.....	18 "
1842 (6 months).....	14 "
1842 (July and August)	7 25 "
1842 to Dec. 1, 1846...	25 "
1846 to present time...	30 per cent. <i>ad valorem</i> .

Under the present tariff, the duty has been changed from *specific* to *ad valorem*.

Under the tariff of 1832, or from 1832 to 1842, the duty on railroad bars was remitted by the United States, after the same were laid down and put into actual use for a certain period of time. This was generally acceptable to the iron interest of this country at the time, as the capital of this country requisite to the rolling of rails, was not thought to be equal to the undertaking. At the time of framing the tariff bill of 1842, an attempt was made to insert a similar provision for the remittal of the duty on railroad iron. This was successfully resisted by the iron interest, and under the tariff of 1842 the manufacture of rails was commenced with good assurances of success. The high duty checked importation into this country, and in 1842 and 1843 iron declined in England to the lowest point ever known in the history of trade. With the revival of business, railway schemes, both in Europe and the U. States, were rapidly developed—prices of iron advanced in 1845 more than 100 per cent. above the prices of 1843. In 1844 the business of rolling rails was commenced by the *Montour* company, at Danville, Pa., upon an extensive scale. This should be regarded as the commencement of the manufacture of railroad iron in the United States, as an established branch of industry—though rails had been made to a moderate extent by the *Tredegor* works at Richmond, Va., as early as 1837, during a period of high prices in England: and railroad iron was also made by the *Great Western Iron Company*, on the Alleghany river, in the year 1842. Still the manufacture of rails could not be said to have been fairly established till after the passage of the tariff act of 1842.

Before the close of the year 1847, the following establishments had become engaged in the manufacture of rails principally—new works got up with this view, and chiefly for this purpose, viz:

Pembroke Iron Co.....	Pembroke, Maine.
South Boston Iron Co....	Boston, Mass.
Massachusetts Mill.....	" "
Tremont Mill.....	Wareham, Mass.
New England Co.....	Providence, R. I.
Troy Rolling Mill.....	Troy, N. Y.
Trenton Iron Co.....	Trenton, N. J.
New Jersey Iron Co.....	Boonton, N. J.
Mount Savage Co.....	Allegheny Co., Md.
Ellicotts Mills.....	Baltimore, Md.
Montour Co.....	Danville, Va.
Phoenix Mill.....	Phoenixville, Pa.
Wyoming.....	Wilkesbarre, Pa.
Moore & Hoover.....	Norristown, Pa.
Lackawana.....	Luzerne Co., Pa.
Safe Harbor.....	Lancaster Co., Pa.
Great Western Iron Co..	Pittsburgh, Pa.
Seibert & Wainright....	Philadelphia, Pa.
Hunt's Mill.....	" "
Tredegor Co.....	Richmond, Va.

Some of these mills could produce, when in full blast, from 600 to 800 tons per month, and would average probably in the aggregate an amount equal

to 500 tons per month, or 100,000 tons per year, sufficient to lay 1000 miles of road. The capital embarked in these works was at least \$6,000,000, employing directly more than 4000 laborers, beside the numerous class of other persons dependent upon them, in some form or other, for employment. The competition, which was just coming into full play, would have brought the price of American railroad iron to as low a point as \$55 per ton, before the close of the year 1848, independent of any operating causes from abroad. The lowest price at which contracts of any considerable amount for American rails were taken, was \$60 per ton, made by Messrs. Reeves & Buck, of Philadelphia, for the Pennsylvania (Central) railroad.

The Trenton Mill, belonging to Peter Cooper, Esq., of this city, and the New Jersey Iron Co., at Boonton, N. J., have just finished up their contracts for rails for the Hudson River railroad, at \$67 50 per ton. With these exceptions, we believe, the manufacture of rails was suspended in this country, at any rate, in all cases except where previous contracts were required to be filled.

Several of the companies failed outright, and their concerns were closed by a sale of the property.

Had the duty of 1842 remained, or a *specific* duty imposed, equal to 30 per cent. *ad valorem*, at the time the tariff bill of 1846 was passed, most, if not all, these works would have been in successful business at the present time. The fluctuating scale of the *ad valorem* system, and the substitution of fictitious prices in foreign invoices, has involved the entire manufacturing industry of this country in the consequences resulting from the overthrow and ruin of credit abroad during the past year.

Could these consequences have been foreseen, the tariff of 1846 could not have been passed.

We believe all parties now agree in saying that our tariff should be so framed as to protect our own industry and capital against the fluctuations of foreign markets. Without some assurance of this, no enterprise is for one moment safe against the ruinous effects of foreign importations forced upon our markets from the disturbed and distracted condition of the affairs of Europe.

Some symptoms of a revival of the business of the manufacture of rails in this country, are beginning to appear. The railroad companies, or some of them, are just finding out that the importations of rails the past year, has given them iron of a quality inferior to that of our own manufacture. It is only the lowest grade of iron that has filled the contracts at the cheap prices of the past year. A preference is now given to rails of American manufacture varying from \$5 to \$7 per ton.

The importation of rails into the United States during the year 1848, will probably be found to exceed 80,000 tons, and the orders now outstanding to be of an equal amount, to arrive in 1849.

Baltimore and Ohio Railroad.

Our readers will see by an advertisement in another part of our Journal, that after a long pause, this road has commenced a new movement, which is to carry it forward to the waters of the Ohio, thus ensuring the completion of this great work, so important to the State of Maryland, the city of Baltimore, and to the commercial interests of the whole country. Baltimore is especially interested in the completion of this work, as it is undeniable that she occupies a very favorable position among the Atlantic cities, to command a large portion of the trade of the west. But although she may reap the greatest advantage from the opening of this line of com-

munication between the Atlantic and the western waters, all parts of the country will be benefited by the increased facility and cheapness with which the products of different sections can be forwarded to their consumers. The manufacturers of New England, and the merchants of New York and Philadelphia have an interest in this work similar to that of the merchant or manufacturer of Baltimore, only in a less degree; and the completion of the great trunk lines of railway from the Atlantic cities to the western navigable waters, will open a new era in the internal commerce of this country, as marked as that which followed the opening of the New York and Erie canal.

The bill granting aid to the Alexandria and Valley road was defeated in the Senate of Virginia. The Legislature authorised the transfer to the town of Petersburg of its stock in the Petersburg and Roanoke road of \$323,500 to aid in connecting Petersburg with the Richmond and Danville road, and is to receive the same amount of the stock in this new road. In the above particulars our article in the last week's paper, upon Virginia Railroads, is to be corrected.

Advantages of Railways.

A contemporary remarks that travelling on railroads in Massachusetts has become as familiar as riding in omnibusses, and people arrive in Boston from places at considerable distances, transact business, and depart homeward, with no more concern than one would bestow upon a walk from one part of the city to the other. One instance of this is to be noted in the fact, that in the list of members of the Legislature, fifteen Senators and ninety-two Assemblymen are set down as boarding "at home."

Vermont and Massachusetts Railroad.

The Barre Patriot, in speaking of the Vermont and Mass. Railroad between South Gardner and Orange, says:—

The whole distance is crowded with curves and arches which give perpetual delight to the eye, and present every varying scenes to the traveller as the thundering train bears him onward through the echoing hills, along whose rugged and winding bases he wonders that the construction of any other than a bridle road was ever attempted.

Between Orange and Irving a distance of only five miles, the Railroad crosses the river five times, and in two places the river has been cut off from its native channel, and now flows through new channels cut out for it through the adjoining hills.

In the same distance, the Railroad crosses the common travelled way eight times, and on the same grade, so that the traveller along the public highway has constantly to keep 'looking out for the cars while the bell rings.'

York and Cumberland Railroad.

The Harrisburgh Intelligence has the following remarks in reference to this important enterprise:

We learn with pleasure from the President of this Company, that it is now a certainty that it will be built during the coming season. Holding, as we do, the liberal, and as we believe, the truly patriotic doctrine of opening all channels for trade as the most beneficial for the country, we must say we have always looked upon this improvement as an important one for Pennsylvania, giving an additional market to the vast valley of the Susquehanna, and creating a new demand for the products of agriculture, the mine and the forest.

The coal region above Harrisburgh will find, through this improvement, a new facility given it to supply the southern market with Anthracite. We think it will not be long before numerous cotton mills will be established in the south on the

field of production; and having there no water power, steam must be used, and the fuel brought from the north. In such event, what point can compete with the valley of the Susquehanna, to which this road will every year add greater importance.

Boston, March 14, 1849.

The Railroad Committee, on Monday, reported on the several petitions of C. C. P. Hastings, Otis Pettee and others, in relation to the proposed Railroads in Norfolk County, which have occupied so much time for several years past. The Courier of Tuesday gives the following as the substance of the Reports:

"After a patient and laborious investigation, the Committee decided to report three bills, which, if accepted by the Legislature, they hope may settle this long contested question to the satisfaction of the greater part of persons interested. One bill incorporates Otis Pettee, Edgar K. Whittaker, and others, as the Charles River Branch Railroad Company, with a capital of \$300,000, to run from the Worcester Railroad at Angler's Corner, in Newton, or from the Brookline Branch, through Newton and East Needham, to Dover, passing near Newton Centre and Upper Falls. Another bill to incorporate Samuel Frothingham and others, as the Medway Branch Railroad Company, with a capital of \$75,000, to run from the Norfolk County Railroad in North Wrenham, through East Medway, to Medway Factory Village, with liberty to use the Norfolk County and Providence Railroad tracks, and to transfer their franchise to the Norfolk County Railroad corporation. The third bill authorises the Norfolk County road to build a branch from Bellingham towards Woonsocket, R. I.

The different routes have for several years been subjects of fierce contest before the Legislature, and of much expense to all concerned, without producing any efficient end. About all the contestants, it is said, are satisfied with the decision of the present committee, and if the Legislature coincides therewith, an end will be placed to a long and unprofitable litigation."

Montreal and Boston Railroad.

We have been favored with a copy of Mr. N. H. Baird's report of his survey—in conjunction with Mr. Gilbert, the Chief Engineer, on the Rutland and Burlington road, of the country on the frontier, with the view to determining the most favorable point of junction for the Vermont and Canadian sections of the proposed Montreal and Boston Railroad. The result of Messrs. Baird and Gilbert's labors would appear to have been highly satisfactory; they having, by taking a short detour at the frontier line, discovered a route for the road, by which every difficulty will be easily and cheaply surmounted. From the undulating nature of the land, on the Vermont frontier, considerable difficulties have had been anticipated, but by adopting the valley of Rock River, near Swanton, very easy ascending and descending grades have been obtained, not greater at any place than 20 feet to a mile. The practicability of this route is, therefore, fully established.

The Boston and Burlington Railroad, via Bellows Falls and Rutland, with which, it is proposed to unite, is now in an advanced state of progress, and it is confidently anticipated will be completed to Burlington during the present year. A charter from the Vermont Legislature has, we understand, been already obtained to extend the line (42 miles) to the Canadian Frontier, from whence it is only 25 miles, over an almost level country, to St. Johns, where it might unite with the St. Lawrence and Champlain road. The proprietors of the last named road have, however, obtained power from the Provincial Legislature, to extend their line up the north bank of the Richelieu, to Rouse's Point, there to connect with the Ogdensburgh and Boston line; while, on the other hand, an application for a charter is now before our Legislature, for the construction of a new line from opposite Montreal to Philipsburgh. We are now in a position to judge of the relative merits of the two schemes; but, *prima facie*, we should think it very desirable that the two projects should be joined, and that the present Lake Champlain road should be extended to the Vermont

frontier at Philipsburgh, rather than by the line contemplated; for, notwithstanding the action of the New York State Assembly, it is still doubtful whether the bridging of Lake Champlain will be permitted, and unless it is, the interruption to the line at Rouse's Point, must prove a great impediment to its utility.—*Montreal Herald*.

Virginia.

We have received a speech of James M. Laidley, Esq., of Kanawha County, Virginia, in the House of Delegates of that State, in behalf of a bill providing for the construction of a railroad from Covington, on the James River, to the head of the steam navigation on the Kanawha. This bill provided that the state should subscribe to the road, and failed by one majority. We regret it, because we believe this road to be fully as important as some of those to which aid was extended. Another year will, we think, ensure them success, and perhaps it is best for the State in the present state of the money market to postpone aid to further projects till some of the numerous ones she now has in hand are in a process of completion. The speech referred to contains much valuable information in relation to the proposed schemes of internal improvements in that State, and we quote from it the following in relation to the proposed road:

"The James river and Kanawha company in 1838 caused an accurate survey to be made of the route proposed to be occupied by the railroad now under consideration, when it was ascertained that it presented fewer obstacles than any other route, for a connection by railroad between the east and west. The engineer says, 'The result is, that upon the whole line of 138 miles, from west to east, being the direction of the heavy trade, there will be no grade exceeding the maximum of 40 feet to the mile and only 34 miles rising to that amount; and out of the residue only 11-20 of a mile as high as three feet, and all the balance not exceeding 20 feet to the mile; whilst from east to west, being in the direction of the light trade, there will be 44 miles of grades, ascending at the rate of 75 feet to the mile; 22-10 miles at the rate of 50 feet, and all the residue at a rate no where exceeding 40 feet per mile. From the description here given of the character of the route proposed for the railroad, it must be apparent to all that with but a single dividing ridge to overcome, and that by means of such moderate grades, and with such inconsiderable curves, it might not only challenge a comparison with, but might justly claim pre-eminence over all other lines of railroad communication, whether executed or projected, between the valley of the Ohio and the Atlantic border.' The estimated cost of the road by this survey, from Covington to Loup Creek shoals, on the Kenawha river, some 17 miles above the head of steamboat navigation, is less than \$2,500,000, a sum now more than sufficient to complete the work to the town of Charleston, if we may judge of the cost of similar works now in progress in Virginia."

Mississippi and Ohio Railroad.

The act of the Legislature of this State authorising the city of St. Louis, in her corporate capacity, to subscribe half a million of dollars to the stock of this company having been received by the Common Council, his Honor the Mayor has, by virtue of one of its provisions, issued his proclamation, designating Monday, the 2d day of April next, as the time at which the vote tax-payers of this city will be taken whether the same shall become a law. Unless a majority thus vote the bill does not become a law; and the Common Council cannot subscribe the stock. There can scarcely be two opinions, not only to the propriety, but the stern necessity that exists of this act being ratified by the unanimous vote of the citizens if possible. It will secure the construction of the road. We can assure our citizens that a strong and decided expression at the ballot box on the 2d of April next in favor of the law to which we allude will go very far towards securing the right of way for the above road through our sister State at the next session of the Legislature.

ENGINEERS.

Arms, F. C.,
Georgia Railroad, Augusta, Ga.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Nicolls, G. A.,
Philadelphia and Reading Railroad, Reading, Pa.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Aandroeggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Railroad Iron.
THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street.
New York, October 25, 1848.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1848.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsrhorie.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.**
No. 4 So. Front St., Philadelphia.

Railroad Iron.
THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

RAILROAD IRON & LOCOMOTIVE TYRES
imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.
Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.
All orders addressed to the Agent at the Factory will receive immediate attention.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

T. & C. Wason,
MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.
Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.
N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SCHENECTADY LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.
THE undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.
E. S. NORRIS.
February 24, 1849.

Mattewan Machine Works.
THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.
COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc.
All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

LOCOMOTIVE FOR SALE.
(NOW RUNNING.)
A Good Locomotive Engine and Tender in good running order, for sale low. Address
E. S. NORRIS,
Schenectady Locomotive Works,
Schenectady, N. Y.
February 24, 1849. 468

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.

23 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

**Norwich Car Factory,
NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

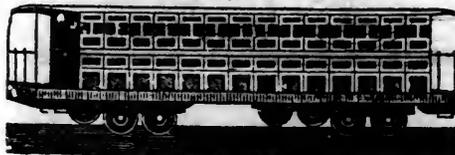
General Agent,

Norwich, Conn.,

Will meet with immediate attention.

176

**CAR MANUFACTORY,
CINCINNATI, OHIO.**



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,

ELIJAH PACKARD,

ISAAC MILLS,

SPRINGFIELD, MASS.

1743

**LAP-WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbe, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,

Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,
Nelson J. Beach,
Jacob Hinds,

Willard Smith, Esq.,

Messrs. Stone & Harria,

Mr. Wm. Howe,

Mr. S. Whipple,

January 1, 1849.

Canal Commissioners of the State of New York. Engineer of the Bridges for the Albany Basin. Railroad Bridge Builders, Springfield, Mass. Engineer & Bridge Builder, Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

ALSO,

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by ALLEN & NEEDLES, No. 22 and 26 S. Wharves, near Chestnut St., Philadelphia.

February 24, 1844.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

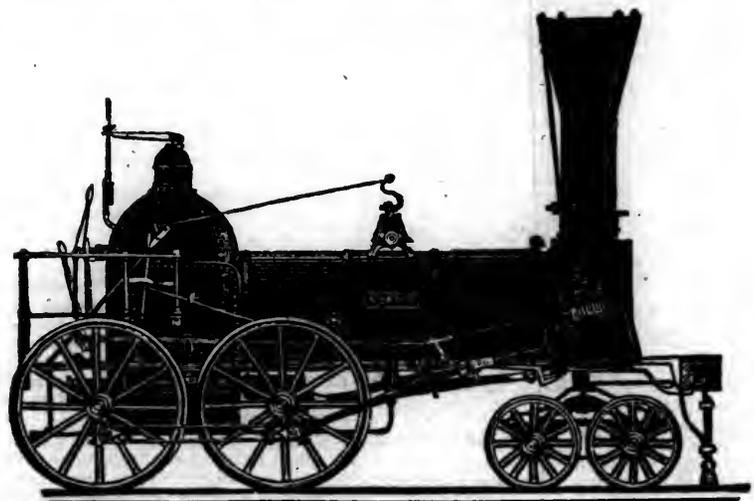
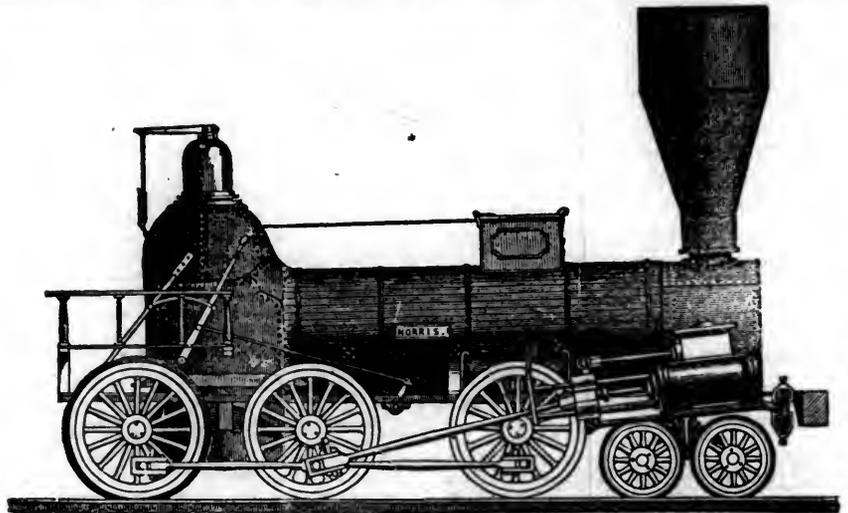
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

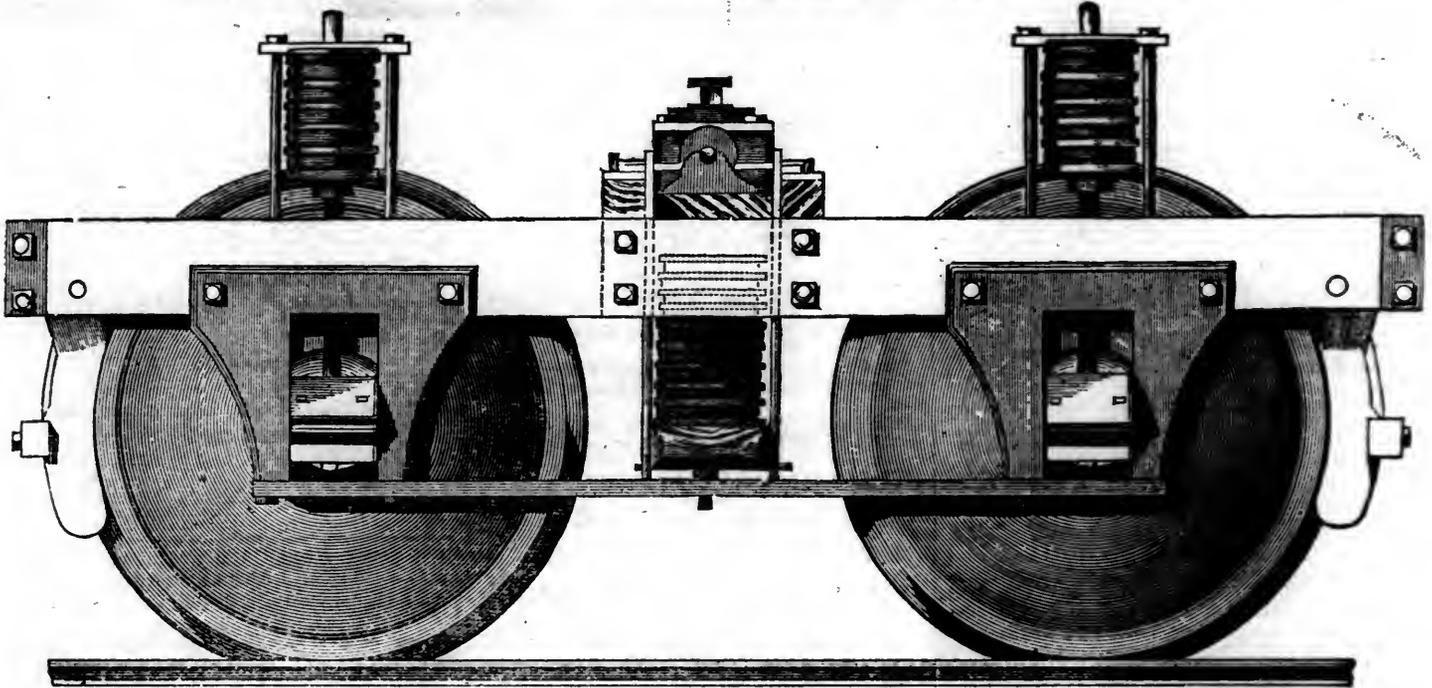
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.

Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.

June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,

Supt. Car Building B. & W. R. R.

Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.

Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1/2

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of STANCLIFFE & DRAPER.



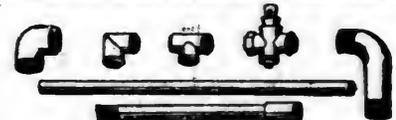
No 23 Pear street, below Walnut, Philadelphia. No 10 near Third,

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER Flues.



Manufactured and for sale by

MORRIS, TASKER & MORRIS. Warehouse S. E. Corner of Third & Walnut Streets, PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON, Willow St., below 13th, Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS, Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., } March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUBSCRIBERS are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO., Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, OCTOBER 2d, the



Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 3 1/2 pm. Leave Providence at 8 1/2 a.m., and 3 1/2 pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10 1/2 pm. Leave Dedham at 7 1/2, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

Stoughton Trains—Leave Boston at 11 1/2 am., and 4 1/2 pm. Leave Stoughton at 8 1/2 am., and 2 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.



Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 1/2 pm. Leave Worcester at 6 1/2 and 10 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. H. S. H. P. LEE, Jr., Sup't. 32 ly.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Salem, 7, 9, 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Manchester, 9, a.m., 3 1/2, p.m. Gloucester, 9, a.m., 3 1/2, p.m. Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m. Portsmouth, 7, a.m., 2 1/2, 4 1/2, p.m. Portland, Me., 7, a.m., 2 1/2, p.m.

And for Boston, From Portland, 7 1/2, a.m., 3, p.m. Portsmouth, 7, 9 1/2, a.m., 5 1/2, p.m. Newburyport, 7 1/2, 10 1/2, a.m., 2, 6, p.m. Gloucester, 7 1/2, a.m., 3 1/2, p.m. Manchester, 8, a.m., 3 1/2, p.m. Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40, a.m., 2 1/2, 3, 4 1/2, 7, p.m. Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, a.m., 2 1/2, 3 1/2, 4 1/2, 7 1/2, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am. 2, 4 1/2, 6 1/2, pm. Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9 1/2, am., 4 1/2, pm. Salem for Gloucester at 9 1/2, am., 4 1/2, pm. Trains leave Gloucester for Salem at 7 1/2, am., 3 1/2, pm. Manchester for Salem at 8 am., 3 1/2 pm. Freight Trains each way daily. Office 1 Merchants' Row, Boston. Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily, (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9 am., 12.45, 3.15, 6.45, pm. Salem for North Danvers at 7.45, 9 am., 12.45, 3.15, pm. Salem for Lawrence, 9, am., 3.15, pm. Danvers " 9.10, am., 3.15, pm. North Danvers " 9.20, am., 3.35, pm. Middleton " 9.30, am., 3.45, pm. North Andover " 10, am., 4.20, pm. South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.55, pm.

North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm. Middleton " 11, am., 4.30, pm. North Andover " 10.35, am., 5.05, pm. Lawrence " 10.30, am., 5, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent. Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6 1/2 am. and 2 1/2 pm. For Rochester at 6 1/2 am., 2 1/2 pm. For Great Falls at 6 1/2 am., 2 1/2, 4 1/2 pm. For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2, 6 pm. For Lawrence at 6 1/2, 9 am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm. For Reading 6 1/2, 9 am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2 pm.

Inward trains for Boston From Portland at 7 1/2 am., 3 pm. From Rochester at 9 am., 4 1/2 pm. From Great Falls at 6 1/2, 9 am., 4 1/2 pm. From Haverhill at 7 1/2, 11 am., 3, 6 1/2 pm. From Lawrence at 6, 7 1/2, 8 1/2, 11 1/2, am., 1 1/2, 3 1/2, 7 pm. From Reading at 6 1/2, 9 am., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9 1/2, am., 12, 2 1/2, 5 1/2, 6 1/2, 9 1/2 pm. Leave Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 5 1/2, 6 1/2, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later. CHAS. MINOT, Super't. Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent. January 1st, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chappaqua, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm. Underhill's Road at 8.10 am., 3.08 pm. Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm. Hart's Corners at 7.55 am., 2.52 pm.

White Pl ains at 7.45, 9.10 am., 2.45, 4.40 pm. Davis' Brook at 9 am., 2.35, 4.30 pm. Pleasantville at 8.49 am., 2.20, 4.19 pm. Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm. Mechanicsville at 8.15 am., 1.45, 3.45 pm. Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm. The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

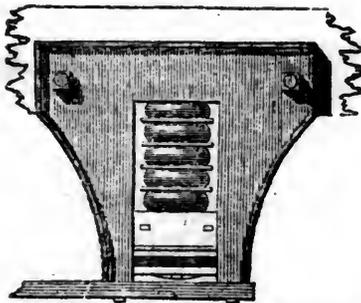
THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

Agents, } FAIRBANKS & Co., 91 Water st., N. York.
 } A. B. NORRIS, 196 Market st., Philadelphia.
 April 22, 1848. ly*17

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

This spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.
 Principal office, No. 78 Broad st., New York.
 Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester

ter Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 17th June].
 INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

MANUFACTURE OF PATENT WIRE ROPE
 and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
 JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- Eastern Railroad.
- Providence Railroad.
- Western Railroad.
- Old Colony Railroad.
- Schenectady Railroad.
- Balt. and Ohio Railroad.
- Phila. & Reading Road.
- Central (Ga.) Railroad.
- Boston & Maine Railroad.
- Providence and Wor. Road.
- Concord Railroad.
- Fitchburg Railroad.
- Syracuse and Utica Road.
- Baltimore and Susq. Road.
- Schuylkill Valley Road.
- Macon and Western Road.
- New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 91 Water st., N. York.
 } A. B. NORRIS, 196 Market st., Philadelphia.
 April 22, 1848. ly*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of Twenty years has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,

Factory, 9th st., near Coates, cor. of Melon st.

Office, No. 3, North 5th street,

Philadelphia, Pa., ly25

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturers's name, and inspected before shipment at the works in Wales. For sale by
 DAVIS, BROOKS & CO.,
 68 Broad street.

March 18, 1849

2m.11

AMERICAN RAILROAD JOURNAL.
 PUBLISHED BY J. H. SCHULTZ & CO.
 NOS. 9 & 10 PRIME'S BUILDINGS,
 (THIRD FLOOR.)
 54 WALL STREET,
 NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,

HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 13] SATURDAY, MARCH 31, 1849. [WHOLE No. 676, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, March 31, 1849.

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, etc.
Sandusky City, Ohio, March 15, 1849. 2m.13

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.

41 Broad street.

March 29, 1849.

3m.13

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8½ a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3½ p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10½ a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5½ p.m.

THOMAS STEERS, Secretary.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section st. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 25 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections between those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed from the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 23rd of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the contract. The most energetic prosecution of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
Baltimore, March 14, 1849 5t.12

In our paper of March 10th, we copied a most valuable article from the Philadelphia Commercial List upon the "Iron Manufacture," but were compelled to postpone the publication of a portion of it till our issue of the 17th, in which number the proper credit might not appear to those who had not read the previous number. We feel more than ordinary pleasure in alluding to this matter, from the opportunity it furnishes of calling attention to the merit of that paper. C. G. CHILDS, Esq., the accomplished Editor of the Commercial List, presents his readers every week a greater amount of valuable statistical information touching the business and commerce of the country,—more especially Pennsylvania,—than can be found any where else in the same space. The great industrial interests of the country have no abler or more faithful advocate. We wish Mr. Ewing could induce Colonel Childs to take a leading place in the Home Department.



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONGEEST,
Secretary U. C. M. C.

Hamilton, 24th February, 1849.

12t

Price of Railroad Iron.

The quotation price of merchant bar iron in Liverpool, December 22, 1848, was £4 15s. per ton, and a small quantity of rails were sold for this market at that time at £5 per ton, free on board at Cardiff. The ordinary range of freights was then about 20s. per ton, so that ordinary railway bars at that time could be contracted for at a trifle less than \$40 per ton, including all charges, deliverable in New York.

At the time of the sailing of the Canada, March 10th, rails were quoted at £6 to £6 5s. in Wales, cash. Orders given this week with cash in hand, or its equivalent, on delivery of the iron, are taken for limited amounts by responsible parties at £6 15s. free on board at Wales. At these prices rails can be laid down in New York for \$50 per ton, in quantities of 2,000 tons or less; large contracts are declined at this time. Orders requiring time to mature, are taken sparingly, scarcely exceeding in any case more than 2,000 tons; and a further price is required for any terms other than cash in hand.

We learn that the rails for the Richmond & Danville R. R., Va., are being made at Richmond, under a contract made some months since, at \$55 per ton, which is the lowest price at which American rails have been made. Whether our large manufactur-

turers will take contracts at these rates at the present time, may be problematical. In January contracts at \$55 were made with them, but the recent advance in pig iron may require a further advance upon rails. The news by the Canada was not regarded as quite so favorable for a rapid advance in iron, as was generally expected among our iron dealers.

These facts and suggestions may aid several of our friends who are in the market for iron, and who desired from us some opinion as to the probable price at which contracts could be made. We trust they will keep in view the suggestions in our last paper.

A New Railroad in Indiana.

A survey and estimate have just been completed for a railroad from Crawfordsville to Lafayette, a distance of 26½ miles, and the line is to be put under contract in the month of May next.

Crawfordsville is about 45 miles to the north-west of Indianapolis, the Capitol of the State, and is the seat of Wabash College. Lafayette is at the head of steamboat navigation on the Wabash river, 310 miles above its junction with the Ohio.

Ocean Steam Navigation.

The new steamers, Atlantic and Pacific, for Collins's Liverpool Line, are being rapidly finished. Two others of similar construction, and of the same size, one to be called the *Arctic* and the other the *Adriatic* are in progress.

It is known that two of the *Cunard* steamers are sold to one of the German States, and that two new ones are to take their places in the line, one to be called the *Asia* and the other the *Africa*.

There has been a strong impression on the minds of the people of both the American and English governments, that the best constructed boats must continue to come from the Clyde, and that Napier's engines will continue to hold their claims to superiority. We shall soon have some satisfactory means of comparing with them the workmanship of our own mechanics in these new steamers.

A Railroad Coming.

About 100 men are employed on the continuation of the Cincinnati and Sandusky Railroad, *this side* of Sandusky, with the intention of bringing it to Huron the coming season.

The Boston company which owns the Mad river road also owns the old Ohio railroad which extends from Manhattan to Coneaut, and was once partly built by the Ohio railroad company. They are coming to Huron to get deeper water than is found in Sandusky Bay. They will soon be in Cleveland, we venture to say by another spring.—*Cleveland Plaindealer*.

The Railroad Convention at Brattleboro' on Wednesday, was well attended, considering the storm. A good spirit prevailed; and a resolution passed, appointing a committee to confer with other railroad corporations, and with individuals, in regard to the raising of the stock necessary to ensure the speedy completion of the Vermont Valley road, extending from Brattleboro' to Bellows Falls.

We are gratified to state, says the Jackson, (Tenn.) Whig of the 23d ult. that the party on division No. 4, of the Mobile and Ohio railroad survey, under the charge of Mr. H. S. Kean and others, have reached the suburbs of our city, in the survey of the route of the contemplated railroad. This party commenced their operations at Columbus, and we are pleased to hear that they are well satisfied with the practicability of the road over the country they have examined. We are more and more con-

vinced of the ultimate success of this grand enterprise.—*Alabama Planter*.

From the Glasgow Practical Mechanics' Journal. Phenomenon attending the Discharge of High-Pressure Steam

The phenomenon which Mr. Vincent Bird has observed on lifting the safety-valve, is probably caused by a current of electricity passing from the steam to the metallic valve. If a conductor is brought into the vicinity of a cylinder of glass, which has been acted upon by friction, a lambent light will be seen to pass between the two. Steam, like excited glass, in passing from an orifice, is in a highly stiole, or positively electric state, whilst the boiler is pinceau, or negative. If Mr. Bird will take the trouble to insulate himself, holding a conducting-rod in the discharge of steam, he will find that an electric spark will result from touching another person standing on the ground.

It has not yet been decided whether the electricity of steam is caused by evaporation, or by chemical action. However, it is a fact beyond all doubt, that electricity is given off in immense quantities during evaporation. Whether I am right or wrong, it is my presumption, as to the origin of the light observed by your correspondent, he is, at any rate, entitled to great credit for bringing the matter forward for the investigation of the public. R. SMITH.

Blackford, Dec. 1, 1818.

New York Institution of Civil Engineers.

We have just received a published copy of the transactions of the New York Institution of Civil Engineers, organized at Albany, on the 5th of January last. This number contains the Address of the Trustees, the act of the Legislature authorising the Institution, the constitution and by-laws adopted, the proceedings of the association, and a list of its members. The whole thing is got up in a style highly creditable to the taste and skill of all parties concerned, and its typographical execution is a model for all similar works.

The Institution was organized by the choice of CHARLES B. STUART, Esq., Surveyor General of New York, as President.

EDWARD W. SERRELL,
ALEXANDER CAMPBELL,
CHARLES W. WENTZ, and
CHARLES R. RABBITT,
as Vice Presidents, and

FRANCIS A. UTTER, Actuary.

Below we give the Address of the Trustees which expresses with clearness, elegance and precision, the views which led to the foundation of the Institution, which will meet a hearty and full response from all persons at all conversant with the duties and responsibilities of the engineering profession. The physical sciences are daily becoming more and more attractive and important in the progress of the age. The profession of the engineer now offers to the man of genius and talent a more certain path to wealth and renown than any of the other learned professions. Let the spirit of this address be carried into practice, and a new impulse will be given to the cause of public improvements throughout the whole country.

By the 6th article of the Constitution there is to be an annual meeting of the Institution on the third Wednesday of January, and quarterly meetings on the third Wednesdays of April, July and October in each year.

Perhaps some arrangements to give more extended circulation to the papers of the Institution might be devised, than the issuing of them separately in the expensive form of this specimen number. An effort should be made to give the greatest possible scope to the movement of the association, so that it may bring the greatest amount of substantial benefit to the whole profession:

ADDRESS

To the Civil Engineers of the State of New York:

The undersigned, in compliance with a resolution adopted at a meeting of the members of the New York State Institution of Civil Engineers, held at the Capitol in the city of Albany, on the fifth day of January last, beg leave to call your attention to the proceedings of the conventions held in the cities of New York and Albany, and to the constitution, act of incorporation, regulations and by-laws, of the Institution, published in this number, and request your aid and co-operation in establishing an Association of Civil Engineers, upon a permanent basis, in this State.

An attempt to enlarge in this address upon the benefits resulting from such an association, in the advancement of professional knowledge, and the promotion of that friendly intercourse so desirable among men engaged or interested in like professions, will not be deemed necessary; the advantages of the organization must be apparent; the collection of drawings, models, manuscripts and publications, would enable each member of the profession to profit by the experience of all the others, and an immense amount of knowledge, to be acquired only by experiment and observation, could thus be communicated. The published proceedings of the Institution, diffusing knowledge amongst its members, would not be altogether uninteresting to the public at large, which in a remote degree is affected by the labors of the Engineer; and it is confidently believed that with unity of purpose, and reasonable exertion on the part of members, results so desirable may be obtained, and an Institution established which shall be alike creditable to the profession and the State.

At the regular meetings of the Institution discussions of practical questions may be had, and Engineers from various parts of the State participating in them, the experience of all would be embodied in the minutes. Plans and specifications of structures, built or being built, deposited at the rooms of the Institution, would soon swell to volumes, and in a comparatively short period, these volumes would contain drawings of the most important structures in use in the state. The Engineer might accompany his donations with a narrative of the difficulties which he encountered; the methods by which success was ensured, and the cost of the structure. A fountain of practical information, too voluminous for publication, would thus be acquired, from which every member of the Institution might draw on the experience of others.

The records of American inventions and improvements unpatented, may be found on scraps of paper, in drawings and models at the shops of machinists, or in the memoranda of Engineers. The tests of the strength and durability of materials, the cost of important structures, and the whole history of professional experience, acquired by years of labor, and not unfrequently at an expense to the public of large sums of money, fades with the expiring memory of the individual, and dies to be re-acquired by like expenditures.

In the State of New York a sum exceeding eighty millions of dollars, is already invested in works designed for the transit of property alone. This vast sum was originally hazarded upon the plans and calculations of Civil Engineers, and its disbursement was made under their immediate superintendence. During the next quarter of a century not less than two hundred millions will have been invested in works of similar character within our borders. But with a superabundance of capital, and a denser population, more difficult and more expensive works will be confided to the Engineer, and upon his professional intelligence largely depends a successful result.

By every motive therefore of personal interest, by every impulse of patriotic or professional pride, the Engineer is impelled to a vigorous effort, to elevate the standard of professional excellence. It now remains for each and every Civil Engineer in this great State to decide for himself, whether the Institution now formed is to effect a consummation so desirable.

CHARLES B. STUART,
EDWARD W. SERRELL,
ALEXANDER CAMPBELL,
CHARLES W. WENTZ,
CHARLES R. RABBITT, } Trustees.

Virginia.

Last week we gave some extracts from a speech delivered by Mr. Laidley, in the Virginia House of Delegates, in favor of a bill giving legislative aid to works of internal improvement. We now quote from a speech of Mr. Burwell, of Bedford, upon the same general subject. They are interesting as showing the reasons that have induced her to embark in the work of railways; and the influence that these works are extending in the states that have constructed them:—

“As a party to a compact to which she has deliberately set her seal, Virginia has agreed that the ratio in which power shall be apportioned amongst the several parties in this compact, shall be based upon comparative population, and upon a specific though qualified right of property recognized, and guaranteed to the southern members of the confederacy. Since therefore she has subscribed to the terms of this compact, since she has agreed that the representation of her interests shall be referred to the relative number of votes in the federal legislature, the measure of her influence and power must be in the direct ratio of her population, and in the ratio of her property modified by the constitutional restriction referred to. In this view patriotism and policy alike dictate that the surest way to protect her rights and promote her influence under our present constitutional compact, will be, to secure those elements of power which are recognized by that compact. When we look around we find that there is a fearful disparity between the power of other members of the confederacy and of this commonwealth. We find that the social and legislative energy of other states has offered to enterprise and capital such inducements in universal education, universal employment, in the comfort and independence which modern improvements bestow, that population and wealth have increased in a manner scarcely paralleled in the history of our race; and we cannot conceal the truth, that this remarkable disparity in the rate of increase is rapidly affecting the comparative influence of the more and less prosperous members of the confederacy. Of this, a reference to the original representation of the several states, traced through the succeeding terms of re-appointment, will afford conclusive evidence:

Virginia representation.	Whole No. Federal representation.
1790.....19	.....106
1800.....22	.....142
1810.....23	.....183
1820.....22	.....213
1830.....21	.....242
1834.....15	.....230

From this table it will be seen that in 1790, Virginia was the first state in representative influence. She now ranks the fourth. She then possessed one fifth of the whole power of the confederacy, this has declined under successive reductions to one fifteenth. The other states of the Union have increased within ten years preceding 1840, 2.19 per cent. It is therefore plain, that unless she shall encourage immigration, and prevent the emigration of her citizens to other states by furnishing facilities similar to those which exist elsewhere, that in 1860, when, according to the estimate of statisticians, the population of the United States will have reached thirty-one and a half millions, Virginia, with her present rate of increase and the present ratio of representation, will have about one twenty-fourth part of the influence of the federal government, whilst, with the ratio of representation raised to one hundred thousand, the relative measure of her federal influence will be about one thirtieth! Can any one require a more conclusive illustration of the truth, that the several states which compose this Union, are advancing in an unequal ratio in the acquisition of power under the federal constitution? If a more particular and palpable evidence of the decline of the influence of Virginia be required, it may be found by reference to another infallible indication. During the early history of our country, the highest offices were constantly filled by the statesmen of Virginia, and no administration was stable, that did not respect her opinions and principles. Yet, for twenty-five years past, consistent as she has been in her political position, those who have the right

to control her political action, have not received the poor compliment of a nomination for either of the offices of president or vice-president, whilst the great states of New York and Pennsylvania are openly regarded as the arbiters of our political destiny, and no political movement is undertaken which does not conciliate their favor.

“Nor have these great states been satisfied with political power, based upon numbers alone. New York has obtained the control of the whole fiscal system of the government. She regulates the value of the currency of every state, and no financial transaction can be accomplished without her sanction or agency. Her brokers fix the premium upon the national stock; they establish the value of all local currency—her banks fatten upon the federal credit—her agents purchase our staples—her ships transport them across the ocean—her merchants supply our merchandise; nothing is done without her agency.

“It is necessary to do more than to remind you of the vast mining and manufacturing interest of Pennsylvania, which is looked to with so much solicitude in the political conflicts of the country? Together with other northern states interested in the same elements of national prosperity, she dictates the whole system of indirect taxation by the federal government, and no rate of duties upon coal, iron, or upon imports, unacceptable to the great state of Pennsylvania, can long resist the power which she wields in the halls of national legislation and at the ballot box. Thus, manufactures, mining and commerce are her “peculiar interests,” and she is entitled to twenty-four members of congress and of the electoral college, or to more than one ninth of the whole political power of the federal government.

“If we turn to another power, great, growing, destined to rival, possibly to overshadow those to which we have referred, we behold the Northwest, standing in compact array awaiting with impatience the formalities of the census, to assume the administrative policy of the public lands, and to engage the federal government in a system of internal improvement, which will open its rivers, protect its lake commerce, and construct a railroad to the Pacific.

“Whilst Virginia, like some alchemist of old, has been endeavoring to subtract substantial good from impalpable abstractions, from the wilderness an empire has sprung into existence, and where within the knowledge of the present generation, nothing was known but military stations and Indian agencies, populous cities now gem the borders of the beautiful lakes, commerce spreads her sails, and the whole land teems with agricultural productions.

“I have thus endeavored to show that the great interests which must develop themselves to the progress of any prosperous nation, have been secured and controlled by those members of the American confederacy, who have increased most rapidly in wealth and numbers, and have thus acquired, according to constitutional provisions, a preponderant influence in the administration of the common government. Indeed, when we philosophise upon the causes which have given to the states referred to an influence which protects their “peculiar interests,” we feel more disposed to admire than to complain; for these results cannot be attributed to the natural advantages which some states possess over others. But upon examining the domestic policy of those states, the true causes will be discovered; it will be then seen, that each one of the states remarkable for its prosperity and power, is remarkable for the energy of its citizens and for the wise liberality of its legislation; each has its provision for popular education; each an enlarged plan of “internal commerce;” each has appropriated the common means towards making every common resource available. They have wooed to their ports the commerce of the world; they have tamed to its task the boundless power of their mountain streams, and made them minister to the industrial energies of their people—they have traced canals, laid down roads, and awakened from its useless torpor the mineral and metallic wealth of their mountains—a wealth richer in its usefulness, more precious in the reward which its employment bestows upon virtuous industry, than all the bright and vicious treasure of Golconda or Peru. As the obvious result of this energy and improvement, these states have added to their numbers by immigration, and to their wealth by the invited investment of capital.”

Chesapeake and Ohio Canal.

The Alexandria Gazette states that the bill guaranteeing the bonds of the Chesapeake and Ohio canal company, for the sum of \$200,000, has passed both branches of the Virginia Legislature and become a law. This will be an important aid in furtherance of the purposes of the canal.

The following important amendment to the bill, was introduced, during its passage, and is a part of the law:

And provided further, That no such guarantee shall be made by the treasurer until the board of public works shall be satisfied that the Chesapeake and Ohio canal company have paid, or arranged to pay; out of any money or assets which they now have, or hereafter may have, applicable to such a purpose, or arranged to the best of their ability, all debts due to, and to comply with all contracts made with, the Alexandria canal company, and shall grant, upon fair and reasonable terms, to the said company (which shall have power to take hold and enjoy the same) such reasonable proportion of water rights, and privileges required by the said company, which may be in the power of the Chesapeake and Ohio canal company to afford, without affecting previous contracts, or which may not injure the navigation of the said Chesapeake and Ohio canal.

Items.

Cleveland, Columbus and Cincinnati Railroad.—We are gratified to learn by the Cleveland Herald, that the work on this important road is progressing rapidly. The engines and cars are contracted for, and the heavy T rail is to be used. The Plain-Dealer says that forty miles out of Cleveland will be completed by the 1st of December next.

The building of the Peterboro' and Shirley railroad was let out on last Wednesday week, at West Townsend, to Levi W. and Henry Woods & Co. The work is to be immediately commenced, and carried forward with despatch.

The Alexandria and Gordonsville Railroad, recently chartered by the legislature of Virginia, is virtually a branch of the Louisa railroad, which latter is steadily advancing westwardly towards the Blue Ridge, and will penetrate the great valley near Staunton. The capital stock of this company is \$900,000, of which the State has subscribed three fifths, or \$540,000. Of the remaining \$360,000, the corporation and citizens of Alexandria have taken \$145,500—leaving \$214,500 to be raised in the flourishing counties of Fairfax, Prince William, Fauquier, Rappahannock, Culpepper, Madison, Orange and Greene. The lists are not all returned, but it is believed considerably more than half of the amount is already secured.—*Bull. Am.*

The legislature of Ohio has incorporated the Mississippi and Ohio railroad company. The provisions of the act are said to be in accordance with the memorial signed by 3,000 citizens of Cincinnati, adopting the provisions of the charter granted by the State of Indiana, as those of the charter from the State of Ohio, in which form it passed. The law provides for the subscription on the part of Cincinnati, of the sum of one million of dollars to the capital stock of the company—the question to be submitted to the qualified voters of the city at a special election, to be ordered by the city council after ten days' notice.—*Ibid.*

According to advices from St. Petersburg of February 1, in the Belgian papers, a rival to the miraculous regions of California has already been found. A Col. Kavelovski, of that capital, who for a considerable time had superintended the workings of extensive gold mines in Siberia, and in the course of mineralogical pursuits had latterly been exploring the interior of Africa, has discovered on the right bank of the Sornal, at one day's journey from Cassin, many considerable hills or mountains of auriferous sands. On the washing of these sands he found they yielded more gold than those of Siberia. Pushing his researches further he examined the shores of the Ramla, the Dys, the Goucka, of the Benisch Angol and the Gamanil, and in all discovered deposits more or less extensive of golden sands. He proposed therefore that miners and gold washers should be sent from Russia to try the grounds and undertake the washings on a large scale.—*Railway Chronicle.*

Cost of Locomotion in India.

The cost of every British soldier as he stands on parade in the Punjab is £150 per head—and, of course, as much more to replace him if he is killed or disabled. Sir Charles Napier, in his recently published "Reflections on Indian Warfare," states that the usual allowance on an Indian line of march is one camel to two fighting men. We will omit all the other items of elephants, bullocks, horses and camp followers, swelling the unwieldy mass which follows in the rear of our armies, but the additional expenses must be enormous. We will suppose that we have 30,000 men; these will require 15,000 camels—averaging £20 each, and we have a locomotive stock which has cost us 300,000, and will probably all be destroyed, and have to be replaced within six months, at enhanced prices, to say nothing of the loss of baggage and stores, consequent on want of means of transit. Camels move at the rate of 2½ miles per hour, and if they did 300 miles in a month, one day with another, we suspect it would be found more than the ordinary average. Look at the time our forces have been on the march from their cantonments to the frontier, in the present war, and whatever may be the difficulties in constructing an Indian railway, can any one for a moment doubt that the outlay may not be saved over and over again in wear and tear in the conveyance of troops, without considering the amazing collateral advantages which must flow from their use in developing the resources of the country.—Surely the directors or their servants must be strangely blind to their own interests. There can be no reason given why India should not reap the advantages of good roads and rapid internal communication the same as any other country.—*Railway Chronicle.*

Railways in England.

Our English exchanges, received by the Canada, are principally occupied with accounts of the half-yearly meetings of the leading railway companies in the United Kingdom. These accounts exhibit fully the workings of the spirit of disappointed rivalry, with the impatient clamor of dissatisfied speculators.

The Eastern Counties railway meeting is thus described in Herapath's Journal:

EASTERN COUNTIES RAILWAY.

Of all the bear garden scenes we ever witnessed, the Eastern Counties meeting on Wednesday bore away the palm. What a difference between the reception the Directors had that day and six months before! Scarcely had the first Director made his appearance before hissings, yells, and all sorts of symptoms of disapprobation assailed his ears, and continued until after the Directors had taken their seats. Mr. Hudson, who was expected, except by a few who had heard of his resignation, was not there, and perhaps, fortunate it was for him that he was not, as from the temper of the meeting, one of the largest we ever saw, we are not sure he would have been safe from personal violence. Mr. Waddington, the deputy-chairman, who took the chair, could with difficulty obtain permission to read a letter from Mr. Hudson to him, and his reply. The purport of Mr. Hudson's letter was that as he differed from his colleagues in the steam-boat question, he did not intend to be at the meeting, and placed his resignation in Mr. Waddington's hands. The reading of the letter was interrupted with loud laughter, hootings, &c. Mr. Waddington's reply called upon Mr. Hudson to attend or to send in his resignation unconditionally. Days had elapsed since it was written, and no reply received, the announcement of which was met by loud expressions of derision and cries of "Turn 'em all out!" The Chairman said that Mr. Roney, the Secretary, had been constantly at the telegraph, but no communication had been received; the telegraph wires were out of order, which was responded to again by loud derisive laughter. Presently after it was announced that a message had been received from Mr. Hudson by telegraph, saying "He would write to-morrow," which called forth another loud peal of indignation.

At length the meeting sobered down a little, and the business was proceeded with so far as to hear the report read and the Chairman's speech, which was a lengthy one, and repeatedly cheered. Scarcely

had he sat down before a Committee of Inquiry was moved for amidst cries of "Turn 'em all out!" One gentleman made a most vehement speech, in which he applied language of the strongest description.

In reference to the charges against Mr. Hudson, the following statement from the same Journal may suffice:

MR. HUDSON AND THE CHARGES AGAINST HIM.

The prevailing topic in the city is still the charge against Mr. Hudson and the anticipations of the report of the Committee of Inquiry, which meet next Wednesday.

Amidst the clamor that has been raised upon this subject, the merits of the case have been lost sight of. As far as we understand the question, it appears to be a charge of selling 2,800 (not as stated in our last, 2,100) £15 shares at a considerable excess above the market value of the company of which Mr. Hudson was Chairman. Mr. Hudson replies that the price was fixed by Mr. Plews, one of his brother Directors. If that be the whole state of the case, it may be an improper, but it is not an illegal, act, or one of which the law would take cognizance. If the shares were Mr. Hudson's own property, he may undoubtedly make as much of them as he can; but a question arises whether it was proper and right for him, as Chairman, to accept more from the Company than a fair market price. According to standard commercial practice he may receive £200 or £300 for £100 worth of property from any other party, if he can get a man weak enough to give it; but it would not be tolerated from his own Company.

This question disposed of, the next that arises is, whether Mr. Hudson was an agent or trustee for the Company in the purchase of these shares. If he was, his act then becomes very different in charging more for the shares than they cost, no matter whether Mr. Plews, or even the Board as a body, fixed the price; but then the other Directors are equal as guilty as he is. Under these circumstances, we believe the law will regard the parties in the light of conspirators—the act a conspiracy—and all the conspiring Directors will have forfeited their seats and must disgorge the plunder.

The statement of the affairs of this company shows an expenditure equal to £9,282,365 sterling, or more than \$45,000,000; and the report of the Directors embraced the plan of consolidating the Northern and Eastern railway and the Norfolk railway with the Eastern Counties railway, making an aggregate capital of £12,556,820 sterling, or something over \$50,000,000.

After a most angry debate, and the appointment of a committee of investigation, a motion was made by Mr. Fryer that the bill "for the amalgamation with the Norfolk companies, now in the House of Commons, be withdrawn,"—a debate occurred on the motion, and a poll was demanded, and the motion was carried by a vote of 7,949 to 2,330, or a majority of 5,609.

Mr. Sergeant Gazelee inquired whether after this vote the Directors considered they could carry on the business of the Company with credit to themselves and satisfaction to the Proprietors, or whether they would place their seats at the disposal of the Shareholders?

The Chairman—In answer to the learned Sergeant, I can only say for myself—I cannot answer for my colleagues, for no Board meeting has been held on the subject—that is not my intention to remain at the Eastern Counties Board; certainly not after the Committee have made their report. The course I intend taking will be this—I shall consult my friends, which I have not been able to do, as I have had to attend two Eastern Counties Committees to-day. But I may say this—that I feel that I cannot conscientiously do justice to the Proprietors who have this day by their vote rescinded that which they formerly sanctioned. I cannot, I say, remain at the Board, not having the confidence of the Proprietors. This is my view at present. But, as I stated to you just now, I do not intend to retire till the committee shall have made their report.—(cheers)—and I will give you my reason for having determined to take such a course. I think it is well known

to you that I have for considerable period given much of my time to the management of the traffic of this railway. I must, therefore, necessarily know much about these affairs, on which the Committee may require explanation. It is for this reason that I shall attend at the Eastern Counties Board (as I have previously done) till the Committee make their report, for I think your interests might suffer if I retired sooner.—(Cheers.)

Herapath's Journal attempts to point out some remedies for the evils under which railway Companies are suffering:

What is wanted in railways are the following things—

1st. That the Shareholders should have much more power than they have in the election of good Directors, and the dismissal of obnoxious and useless ones.

2d. That railway accounts should be kept on one uniform and simple system, so that when a man understands one he may understand any.

3d. That the accounts, and all documents connected with them should be open to the inspection and examination of the Shareholders at proper times.

4th. That the capital accounts should be closed, except under very special circumstances, within 2 years after the railway is opened for public traffic.

4th. That all contracts should be let by public tender, and the lowest be accepted proper security can be given, or if not, the lowest that can have good security should be preferred.

6th. A careful, proper, and impartial audit.

If these things were done railway property would immediately rise in value, even if they paid less dividends than they do. Had Shareholders more power of election and dismissal, we should have a better class of men than are in some of the directions. Indeed none but men of high and honorable character would be tolerated for any time. We should besides, have men of business to administer the affairs of railways, not drones who go in for the pay—men who make Directorships a profession and a livelihood, or who get in to job, regardless of the interests of the concern, provided they can fill their own pockets. On this subject we could say a great deal if we had room.

The subject of letting contracts by public tender, we have likewise discussed over and over. The system of private letting is one of the greatest temptations to fraud and plunder that can well be contrived. Large fortunes have been made entirely from plunder drawn from this system. It would fill our Journal to repeat one half we have heard on good authority, upon this subject.

Patent Railway Axles.

Judicial Committee of the Privy Council.
(Before Lord Langdale Lord Brougham, Dr. Lushington and Mr. Pemberton Leigh.)
Petition of Hardy and others for the Extension of Letters Patent.

Mr. Hill (with whom were Mr. Webster and Mr. Phipson) said he appeared on behalf of Mr. Hardy, the patentee, and Messrs. Geach & Walker, who had become, by assignment, the proprietors to pray for an extension of the patent, which was for an improvement in the manufacture of railway axles. The patent was obtained in April, 1835, and Mr. Hardy, with limited means, attempted to carry it out, but after losing all his property in the attempt, assigned it, a few years ago, to Messrs. Geach & Walker. The invention consisted in fashioning pieces of iron in a rolling-mill, so that, when combined, a perfectly cylindrical form was effected. In the old process the iron was repeatedly cooled and heated during the welding; and the result was that the iron became very much deteriorated in character, and was rendered brittle, while, by the patented method the iron preserved its fibrous character and consequently its tenacity. In illustration of the great superiority of the patent axles, two of them were exhibited; one had sustained the shock of an express train, weighing upwards of one hundred tons, and moving at the speed of 60 miles an hour; the other had been struck by a train, in a similar manner, on the Eastern Counties. Although both these axles were considerably bent by the immense force of the blows to which they had been subjected, the skin of the iron, as it was termed, was not touched, and they did not exhibit the slightest crack.

The learned counsel then referred to the great losses that had been sustained by the manufacturers during the past ten years, and contended that they were entitled, now that the railway companies and the public were beginning to appreciate the value of the invention, to an extension of the patent, in order to reimburse themselves and secure that fair remuneration to which they were entitled.

Mr. R. Stephenson, M.P., was examined in support of the petition. He said he was consulting engineer to nearly all the narrow-gauge lines—that a good many hundred miles of railway were under his superintendence, including the London and North-Western and the North Midland. His attention was first called to the patent axles shortly after the opening of the North Midland in 1841. He had subjected a great many axles, of various manufactures, to some very severe trials—the patent axles among others—by twisting them and letting heavy weights fall upon them, the aim of the experiments being to subject them to the same shocks and strains that they would be liable to in case of accident. He made these experiments in consequence of a serious accident that took place on the North Midland, and was satisfied by them of the great superiority of the patent axles. Witness then described the old and the patent process of manufacture, the former rendering the iron crystalline in its structure and exceedingly brittle, while by the latter the fibrous character of the iron was preserved, by which it was rendered extremely tenacious. A section of a patent axle was put into the witness' hand, which, he said, clearly indicated the fibrous structure of the mass to the very centre of the axle. By the old method the outside, and to some depth, was fibrous, and the interior crystalline. It was hardly possible to appreciate the value of the invention—in the safety it conferred upon life and property—in the prevention of accidents upon railways. He knew of no other axle at all equal to it. After the occurrence of the accident to which he had referred, he broke upwards of fifty of the axles of the old manufacture, and was astonished to find that they were uniformly crystalline in their texture, with one or two exceptions. They were of course all exceedingly brittle, so much so that he ordered them to be taken off the line as quickly as possible. The patent axles are now extensively, but he could not say exclusively used on the North Midland. The cost of manufacture might be somewhat more than the old method, and as the patent axles were sold at a lower price than the old manufactures, the proprietors must have obtained much less profit. The price, however, was comparatively no object. He had recommended that the patent axles should be adopted in all the contracts he had had for the last three years. If his advice was followed there ought to be no other axles used. With the exception of two or three, all the axles of the old manufacture that he tested, amounting to fifty or sixty, were unsafe to use. An accident to a luggage train might entail one to a passenger train, by blocking up the line. The Low Moor and Bowling Company's axles always had a high standing in the market, from the character of the iron, and they still stand high, putting out of question the principle of manufacture.

Lord Brougham and Lord Langdale expressed themselves perfectly satisfied with the evidence they had heard. It was quite conclusive.

Mr. Hill would just ask a few questions of Mr. Mc'Connell.—He (Mr. Mc'Connell) was superintendent of the locomotive department of the London & North-Western, and took part in some experiments that were made in 1843, upon axles. Before the patent axles came into use the Low Moor and Bowling Works axles were considered the best. The price of these axles was from 20s. to 25s. per cwt., increasing a little according to the size. The price of Mr. Hardy's axles was now 18s. per cwt., also increasing according to weight. Before 1843 they were used to some extent, but in that year he was called upon to witness some experiments at Wolverton, which quite established their character.

Mr. Hardy, the patentee, in reply to a question by Lord Brougham, stated that he had given the matter as much publicity as possible, but his means were limited. He found it extremely difficult to induce the railway companies even to test his axles. It was owing to the energy and enterprise of the present proprietors that they had been tested, and then so generally adopted.

After some witnesses had been examined relative to the value of the plant and machinery, and the profit and loss account for the last four years,

Mr. Mc'Connell was recalled, at the request of Lord Brougham, and stated that he considered the patent axles much more suitable than the old manufacture. In consequence of the great strain and wear and tear, he considered it advisable to take them off every five to seven years, depending upon the quantity of work which each did. He believed nearly all the carriages in the southern division of the London and North-Western had got patent axles. There was not more than a tenth or a twelfth of the entire that had the old axles. He believed all, or nearly all, the Great Western carriages had got them; he could not speak positively with regard to other lines.

Mr. Welsby, on behalf of the Attorney-General, having stated that he had no objection to urge to the prayer of the petition, the room was cleared, and on our re-admission,

Lord Brougham said the judges had unanimously agreed to recommend to Her Majesty to grant an extension of the patent for five years, subject to certain conditions, viz: that Mr. Hardy, the patentee, should secure one half of the profits and that the proprietors should give an undertaking that the price of the axles should not be increased to the public, but that it should be regulated by the rise and fall of the price of iron in the market.

Philadelphia and New York.

The number of new buildings erected annually in any place, appears to be the only way of ascertaining its actual growth. If this theory is correct, then we can show conclusively, that the growth of Philadelphia is much more rapid than that of the city of New York. It is well known that in Philadelphia, the compactly built part of the city is divided into municipal districts—as the City proper, Northern Liberties, Kensington, Spring Garden, South Penn, Southwark, Moyamensing, &c., but all forming one city, the same as London, which includes a number of districts besides the city proper. In New York, we include the whole of Manhattan Island.

In Philadelphia, during the year 1848, the number of new buildings erected, according to the official returns from the different districts, were as follows:

City proper	531	buildings.
Northern Liberties	144	"
Spring Garden	473	"
Penn District	219	"
Kensington	456	"
Richmond	187	"
Southwark	268	"
Moyamensing	223	"
West Philadelphia	84	"

Total.....2,585 buildings.

In addition to the permits granted above, it is known that in Spring Garden there were upwards of one hundred buildings erected without permits, the materials being deposited on lots instead of the streets. In Kensington about one hundred and fifty houses were built without permits; in Southwark and Moyamensing, about one hundred more, which would increase the total number to three thousand buildings.

In New York, according to the returns in the office of the City Inspector, the total number of new buildings erected in 1848, were, 1,191, viz.

Wards.	Buildings.	Wards.	Buildings.
1	6	10	39
2	23	11	117
3	45	12	83
4	30	13	25
5	33	14	22
6	40	15	87
7	58	16	185
8	50	17	151
9	102	18	92

Total number of buildings...1,191

Philadelphia, prior to 1820, for nearly half a century, was the leading city of the Union, in population, wealth and commerce. Her canvass whitened every sea, and the flags of all nations were displayed in her port. About that period her commerce began to decline, and the completion of the Erie Canal gave so powerful an impetus to the trade

of New York, that she has completely outstripped her sister city. The population of New York has since rapidly increased, and her commerce, both foreign and domestic, has increased in a still greater ratio. Belonging generally to the same political party with those having control of the General Government, liberal appropriations were made for fostering and increasing her prosperity—forts were built, numerous lighthouses were erected, and piers and buoys were placed wherever they were required. Large appropriations were made for building custom-houses &c. Aided by the immense patronage of the general government, New York has been, for the last twenty years, the leading city on this continent, and the great centre of the commerce of the United States.

Philadelphia, on the contrary, has received no aid from the government, because she opposed its measures. No piers have been built in the Delaware river, between this city and the ocean—even those at Reedy Island, which were ceded to the National Government, on the express condition of keeping them in repair, have been suffered to rot, and are now useless. No lighthouses, save one on the Brandywine Shoals, (which was washed away,) have been erected to warn the tempest tossed mariner of his danger, and instances, unfortunately, are not uncommon, where vessels and cargoes have been lost for want of these beacons.

Recently, a change in her business has commenced, and the departed glory of Philadelphia is fast returning. The recent developments of the inexhaustible resources of Pennsylvania in coal and iron are destined to bring back her trade, and to make Philadelphia the great manufacturing and producing city of the Union. Her population is increasing more rapidly than that of New York. The tonnage employed in her Coal Trade, still in its infancy, is now one third greater than the total tonnage arriving at New York from foreign ports, and this trade is destined to increase rapidly, for coal is indispensable to the wants of man. Philadelphia possesses the shortest and best route to the West, and upon the completion of the Pennsylvania Railroad, the produce of the teeming West will pour into her lap. The provision trade of the Union will centre here, and the shortest and best route from New York to Cleveland, Ohio, will then be through Philadelphia. The completion of this work will place this city in her former position as the first city in the Union, in wealth in manufactures, and the arts, as she already is in population.—*Phila. Com. List.*

Pennsylvania.

In the last number of the Philadelphia Commercial List, we find a very interesting report of the proceedings of the Philadelphia Board of Trade.—Some extracts from which we are happy to transfer to our journal:

The Board made an unsuccessful effort during the session of our State Legislature last year, to obtain the passage of a law authorising corporations of associated individuals for manufacturing purposes; similar applications were also numerously presented from the citizens. It is well known that, in some branches of manufactures the capital required to carry them on successfully, is too great for individual enterprise. In several of our sister states, as Massachusetts, &c., companies have been chartered very advantageously to themselves and the public. This system has enabled the inhabitants of that state to build up towns and cities, and to become the most successful manufacturers in the Union; spreading wealth and prosperity over a smiling and thrifty community, exceeded by none in the United States; subjecting other states to be tributary to her unsurpassed prosperity, and increasing in an equal ratio the commerce of her commercial capital. New York has recently, and wisely, passed similar laws. Pennsylvania, from her central position, her rich agricultural products, her proximity to the great West, the Lakes and the Ocean, added to her inexhaustible supplies of coal and iron; possesses advantages for manufacturing purposes, greater than state in the Union. Capital alone, is wanting, to enable her citizens to take advantage of her peculiar situation. This subject is deemed so important, that another application for such a law is about being made to the present Legislature, with every prospect of being successful.

The Pennsylvania Railroad, in the construction of which the board has taken a deep interest, is rapidly progressing, and by the 1st of next May, it is expected that the road will be open for travel from Harrisburg to Lewistown. From the strong interest awakened in Ohio, there is every probability that the road will be continued from Pittsburg to Cincinnati, and ultimately to St. Louis.

The following statistical tables are of great interest, as showing the progress of the Iron and the Coal Trade.

THE IRON TRADE.

The supplies of Iron sent forward from the interior of this State, in 1847 and 1848, have been as follows:—

1848. Route.	Bar and sheet. pounds.	Pig and scrap. pounds.	Castings & blooms. pounds.	Nails & spikes.
Chesapeake and Delaware canal.....	14,988,260	88,713,098	5,536,410	1,370,293
Delaware canal, Bristol.....	1,117,515	50,733,874	109,227	*1,338,415
Schuylkill navigation.....	10,223,860	29,205,120	3,071,040	1,485,120
Columbia and Reading railroads.....	18,730,700	7,347,400	4,229,705	7,119,600
Norristown railroad.....	5,866,288	2,564,108	1,672,780	1,672,785
Totals.....	50,926,123	178,563,600	14,619,162	12,986,213

* Including 1,337,225 pounds of wire.

1847. Route.	Pig and scrap. pounds.	Bar, boiler and sheet, pounds.	Castings & blooms. pounds.	Nails & spikes.
Chesapeake and Delaware canal.....	79,593,539	18,058,491	10,172,757	.....
Delaware canal, Bristol.....	46,558,206	327,852	461,815	.....
Schuylkill navigation.....	15,963,480	8,442,560	3,339,480	1,966,720
Columbia and Reading railroads.....	14,778,510	20,725,040	1,537,330	8,743,480
Norristown railroad.....	7,902,720	3,184,320	2,262,400	.....
Total.....	164,796,455	60,738,263	17,774,143	10,710,100

The following is a comparative statement of the amount of Foreign Iron imported at this port during the last five years:

	1844.	1845.	1846.	1847.	1848.
Railroad.....	Tons. 8,862 19	2,797 10	73 14	.....	383 13
Rolled bar.....	2,732 17	2,433 03	2,244 17	2,736 01	4,124 01
Sheet, rod and hoop.....	587 05	197 06	499 05	1,686 12	1,782 16
Pig.....	993 18	999 10	226 03	440 18	6,658 18
Old and scrap.....	11 08	23 16	26 11	52 11	307 11
Castings.....	147 06	84 15	94 17	54 04	71 15
Chains, etc.....	142 10	08	8 10	152 04	124 09
Steel.....	143 03	311 03	287 16	272 17	406 15
Anvils.....	58 04	69 05	85 16	68 12	88 15
Nails and spikes.....	10 17	14 05	22 03	23 07	30 08
Hammers.....	2 10	2 07	2 19	1 01	4 16
Wire.....	4 03	3 02	2 03	3 03	15 18

The following table, taken from the "Commercial List," shows the supplies sent annually from the different coal regions:

Table showing the quantity of Anthracite Coal sent to market annually, from its commencement in 1820 to 1848, inclusive. Prepared from official documents.

Years.	Total Lehigh. Tons.	Total Schuylkill. Tons.	Lacka- wana. Tons.	Pine Grove. Tons.	Lyken's Valley. Tons.	Shamo- kin. Tons.	Wyom- ing. Tons.	Total Supply. Tons.
1820....	365	.....	.....	.....	.....	.....	.....	365
1821....	1,073	.....	.....	.....	.....	.....	.....	1,073
1822....	2,441	.....	.....	.....	.....	.....	.....	2,440
1823....	5,823	.....	.....	.....	.....	.....	.....	5,823
1824....	9,541	.....	.....	.....	.....	.....	.....	9,541
1825....	28,396	6,500	.....	.....	.....	.....	.....	34,896
1826....	31,280	16,767	.....	.....	.....	.....	.....	48,047
1827....	32,074	31,360	.....	.....	.....	.....	.....	63,434
1828....	30,232	47,281	.....	.....	.....	.....	.....	77,516
1829....	25,110	79,973	7,000	.....	.....	.....	.....	112,083
1830....	41,750	69,984	42,700	.....	.....	.....	.....	174,734
1831....	40,966	81,854	54,000	.....	.....	.....	.....	176,820
1832....	75,000	209,271	84,500	.....	.....	.....	.....	368,771
1833....	123,000	252,971	111,777	.....	.....	.....	.....	487,748
1834....	106,244	226,692	43,700	.....	.....	.....	.....	376,636
1835....	131,250	339,508	98,845	5,500	.....	.....	.....	575,103
1836....	146,522	432,045	104,500	9,978	5,439	.....	.....	698,484
1837....	225,937	523,152	115,387	16,726	6,430	.....	.....	887,632
1838....	214,211	433,875	76,321	16,665	6,005	4,104	.....	746,181
1839....	222,042	442,608	122,300	19,227	5,372	11,930	.....	823,479
1840....	225,591	452,291	148,470	19,463	5,302	15,928	.....	867,045
1841....	*142,807	585,542	192,270	15,306	6,176	22,154	.....	964,265
1842....	271,913	541,504	205,253	31,437	181	10,098	47,346	1,107,732
1843....	267,125	677,313	237,605	22,879	.....	9,870	57,740	1,262,532
1844....	376,363	840,379	251,005	27,719	.....	13,087	114,906	1,623,459
1845....	430,993	1,086,068	266,072	31,208	.....	10,135	178,401	2,002,877
1846....	522,518	1,236,581	318,400	55,346	.....	12,646	188,003	2,333,494
1847....	643,568	1,572,794	388,200	61,243	.....	14,904	289,898	2,970,597
1848....	680,193	1,652,834	434,267	56,938	2,000	.....	237,271	3,063,503
Totals.....	5,505,327	11,859,150	3,392,572	384,625	36,905	124,856	1,113,565	22,417,000

* Great freshet which injured the canal. † Less Shamokin mines.

The Iron trade has suffered more seriously, being brought directly in competition with Foreign Iron, which has been selling below the cost of production. Prices have materially declined since 1848.—Many of the Rolling mills in the interior of the State are not in operation.

From the Baltimore American.

Society for the Development of the Mineral Resources of the United States.

An association of gentlemen with the above title has been organized in Philadelphia, and at a monthly meeting held on the 2d instant, accepted the charter granted them by the Legislature of Pennsylvania. The charter declares the object of the corporation to be to collect and preserve specimens of all the rocks and minerals of the United States, useful in agriculture, architecture, manufactures and the arts; to offer them for free inspection; to cause to be disseminated useful information upon economical mineralogy and geology, and to introduce into use American mineral productions. The society is also empowered to appoint teachers and professors of mineralogy, geology and mineralogical chemistry, and to grant diplomas of membership, honorary membership, and professorships. The following is the list of officers to serve until the next semi-annually election, viz:

P. A. Browne, President; George Chambers, William Darlington, Edward Swift, James S. Craft, Jonas P. McClintock, Vice Presidents; M. W. Dickeson, Corresponding Secretary; Samuel R. McClintock, Recording Secretary; Thomas Gilpin, Treasurer; M. W. Dickeson and Algernoon S. Roberts, Curators; B. B. Young, Jesse R. Burden, Samuel Moore, Richard Burr, Charles B. Penrose, William Rawle, Eli K. Price, Alernoon S. Roberts, Richard C. Taylor, George M. Dallas, T. A. Comly, and Charles Gilpin, Managers.

At a meeting on the second instant the following donations to the cabinet of the society were made: Three fine polished specimens of Marble from Alabama, from B. F. French, Esq.

Two Mineralogical specimens from E. A. Bulkly, Esq., of Wilkesbarre, which, with their accompanying letter, were referred to a committee.

A suite of 50 fine specimens, illustrating the Geology of the Flemington Copper Mines, from Fred'k. Van Dyke, M. D.

Specimens of hydrated per oxide of iron from Upper Freehold, Monmouth county, N. J., by the Rev. J. H. Avery.

A splendid specimen of tubulated iron ore, three feet long, from the interior of Pennsylvania, by M. J. A. Comly, Esq.

Among the resolutions passed was one appointing a committee of ten members to inquire into the expediency of holding on the 4th, 5th and 6th days of June next, a public exhibition of specimens tending to show the mineral resources of the United States. The committee are to communicate with gentlemen at a distance and to ascertain to what extent they will aid the society in making the exhibition. The following are the names of the gentlemen comprising the committee:

P. A. Browne, George Chambers, W. Darlington, James S. Craft, Jonas P. McClintock, Edward Swift, A. S. Roberts, M. W. Dickeson, Frederick Van Dyke and Col. B. B. Long.

After the election of several honorary and other members, the society adjourned, to meet on the first Friday in April next.

The objects of the association are truly laudable, and we doubt not that the gentlemen comprising it will receive the cordial co-operation not only of men of science throughout the Union, but of all who feel an interest in the development of the mineral resources of the country.

Massachusetts Railroads.

We are indebted to a valued friend, for a copy, at the earliest moment of publication, of the Annual Returns of the several Railroad corporations in operation within the commonwealth of Massachusetts. The following analysis of them is presented to our readers.

The returns of the 37 corporations show their capital stock to be.....	\$50,004,100 00
Add the Hartford and New Haven..	60,000 00
Add the Framingham branch.....	200,000 00
Total.....	\$40,264,100 00

The amount of capital paid in.....\$37,009,560 95
Providence and Wor-

Worcester, say.....	1,232,000 00
Pittsfield and N. Adams say.....	447,755 45
Hartford and New Haven, say.....	60,000 00
	<u>38,749,316 40</u>
Difference.....	11,514,783 60
The cost of the several railroads as appears by the returns, is.....	\$46,777,009 84
Add the Hartford and New Haven.....	60,000 00
Fitchburg and Worcester, in part, per items in return.....	49,982 09
	<u>46,886,991 93</u>
The debt of the several corporations, as per returns, is.....	\$12,420,201 19
The aggregate surplus fund is.....	1,349,230 08
Difference.....	11,070,971 11
The earnings of the several corporations were.....	6,067,154 02
The expense of working the several roads was.....	3,284,933 38
The net earnings of the same.....	2,716,920 30
The difference between the sum of the last two items and the gross earnings, being.....	65,300 34
is owing to the incompleteness of the returns.	
The dividends, as per returns, amount to the sum of.....	\$2,074,147 50
To this sum should be added the dividend upon the W. Stockbridge, say.....	1,900 00
Net earnings of the Pittsfield and N. Adams road.....	10,851 68
Hartford and New Haven dividend, say 8 per cent.....	4,800 00
Dorchester and Milton, 6 per cent. on cost of road.....	6,853 62
Cape Cod, say 2 per cent on cost of road.....	11,742 32
Total dividends.....	2,110,295 12
Amount carried to surplus funds, by 9 roads was.....	270,816 31
Amount deducted from surplus fund by seven roads was.....	55,283 18
Surplus fund increased.....	215,533 13

It is impossible, at the present time, to ascertain, with accuracy, the average cost per mile, of the several roads whose returns are made for the past year as many of them are unfinished. The committee have selected the following completed roads and made an average of the cost per mile, viz:

	Cost.	Main track.	Br.
Berkshire.....	\$600,000 00	21-137	
Boston and Lowell.....	2,013,687 40	25-761	1-861
Boston and Maine.....	3,571,832 04	74-260	5-080
Boston and Providence.....	3,031,106 72	41-000	6-600
Boston and Worcester.....	4,650,392 84	44-625	30-000
Cape Cod branch.....	557,116 01	27-800	
Cheshire.....	1,905,456 81	53-646	
Connecticut River.....	1,588,184 65	50-000	2-350
Dorchester and Milton.....	114,224 27	3-246	
Eastern.....	3,095,393 87	38-201	19-875
Essex.....	421,574 62	22-500	
Fall River.....	1,145,982 93	42-242	
Fitchburg.....	2,945,630 98	49-343	6,779
Lexington & W. Cam.....	252,680 79	6-632	
Lowell and Lawrence.....	283,248 61	12-350	
Nashua and Lowell.....	525,063 42	14-583	
N. Bedford & Taunton.....	499,965 58	20-130	0-947
Norwich & Worcester.....	2,187,829 21	59-000	7-000
Old Colony.....	2,080,903 00	37-250	7-750
Peterboro' and Shirley.....	208,311 30	12-014	
Pittsfield and N. Adams.....	447,755 45	18-650	
Providence and Wor.....	1,873,895 76	43-500	
South Shore.....	255,748 71	11-500	
Stoney Brook.....	246,659 76	13-160	
Taunton branch.....	305,085 78	11-000	0-568
West Stockbridge.....	41,516 29	2-750	
Western.....	7,975,452 09	117-804	
Worcester & Nashua.....	1,010,537 78	39-020	
	<u>43,865,236 67</u>	<u>913-104</u>	<u>88-810</u>
Length of main track.....		913-104	
" branches.....			88-810
Total, main track and branches.....		1,001-914	

Mean cost per mile of all finished roads in operation, is.....\$43,781 44

This includes 220,210 of double track, together with depot lands, depot, and furniture. In the above enumeration is included all the roads whose terminus is in Boston, and whose real estate makes an important item of their cost, as will be seen in the following statement of expenditures for stations, buildings and fixtures, by the roads named, to wit:

Boston and Lowell.....	\$354,612 55
Boston and Maine.....	373,586 82
Eastern.....	448,308 53
Fitchburg.....	358,098 40
Old Colony.....	198,731 63
	<u>\$1,733,337 93</u>

The Boston and Providence, and Boston and Worcester, are not included in the above owing to the deficiency of their returns. The addition of their expenditures to the above sum would, it is supposed, much increase the average.

The following corporations do not return dividends, viz:—

	CAPITAL.	
Cheshire.....	\$1,700,000	In operation.
Essex.....	700,000	Run by Eastern.
Fitchburg and Worcester.....	500,000	Constructing.
Fram'ham Branch.....	200,000	Organized merely.
Grand Junction &c.....	1,200,000	Constructing.
Lex. & W. Cam'.....	200,000	Run by Fitchburg.
Lowell & Lawrence.....	300,000	In operation.
Newburyport.....	250,000	Constructing.
Norfolk County.....	700,000	Constructing.
Norwich and Wor.....	2,200,000	In operation.
Peterboro' & Shirley.....	275,000	Leased to Fitchg.
Providence & Wor.....	1,232,000	In operation.
South Shore.....	600,000	Les'd to Old Col.
Stoney Brook.....	300,000	Les'd to Nashua and Lowell.
Vermont & Mass.....	3,200,000	In operation.
Wor. & Nashua.....	1,800,000	In operation.

Making a sum of...\$15,357,000

Of the above roads, the Cheshire has been completed since the last return.

Essex was opened for travel in the summer of '48. Lowell and Lawrence opened July 1, 1848. Petersborough and Shirley is leased at a rent of 6 per cent. to be, in a certain event, increased to 7. South Shore is leased to the Old Colony at 6 per cent.

Stony Brook is leased at 6 per cent., and half the surplus earnings.

Vermont and Massachusetts completed since return.

Worcester and Nashua opened in the autumn of 1848.

The length of the main road is..... 954.346 miles.

The length of branches is..... 88.810 "

Total..... 1,043.156 "

The length of double track..... 220.212 "

The average speed of passenger cars is 23.13 miles per hour.

The average speed of freight cars is 12.35 miles per hour.

The casualties—56 killed, 65 injured

During the past year, about 300 miles of railroad have been put in operation on the various lines leading to Boston, many of which are far from being completed.

The miles of railroad finished in New York, it is believed, do not exceed 750.

The whole number of miles in the United States is stated at 6,421 1/2, of which nearly one sixth part is in Massachusetts.

The extent of railroad finished in England, at the end of the year 1848, and in operation, was 4,420 miles, constructed at a cost of £131,000,000 sterling, or \$628,000,000.

The average cost per mile is about \$142,000.

These roads are thoroughly built, generally with two or more tracks.

There is no road in this country which cost the average of the English lines, excepting perhaps, the Reading railroad, in Pennsylvania.

The traffic on the English roads; in 1848, amounted to £10,092,000, or more than \$47,000,000.

The net returns were about 4 24-100 per cent. on the outlay.

The expense of working the English roads is less than fifty per cent. of the gross earnings.

The expense of working the Massachusetts roads is a fraction over fifty-four per cent.

If the returns from the several roads have been perfect, no table made from the list would have shown the average dividends of the whole. The fact that many of them have come into operation during the past year, is sufficient to show that no average could be taken of the whole, which would make any approach to exactness.

The committee have taken thirteen roads, (upon whose returns reliance can be placed, and none of which commenced operations within the year,) and averaged the dividends upon the cost of the roads.

	COST.	DIVIDENDS.
Berkshire.....	\$600,000 00	\$42,000 00
Boston and Lowe l.....	1,800,000 00	144,000 00
Boston and Maine.....	3,249,804 52	252,798 50
Boston and Providence.....	2,893,300 00	175,349 00
Boston and Worcester.....	4,245,175 00	325,500 00
Connecticut River.....	1,234,970 00	69,960 00
Eastern.....	2,655,700 00	239,628 00
Fall River.....	1,050,000 00	68,250 00
Fitchburg.....	2,735,910 00	201,029 50
Nashua and Lowell.....	525,000 00	50,000 00
N. Bedford & Taunton.....	400,000 00	24,000 00
Old Colony.....	1,601,415 00	91,362 50
Stoughton Branch.....	85,400 00	4,270 00
Taunton Branch.....	250,000 00	20,000 00
Western.....	5,150,000 00	366,000 00

\$28,476,674 52 \$2,074,147 50

Mean rate per cent. upon money paid in, 7.283.

The above is an approximation to correctness, though not entirely accurate. The Western road; for instance, paid 8 per cent; by the table, it is less.

The discrepancy is caused by the fact, that new stock has been created the present year and has been expended in construction, thus adding both to capital and cost of road during the year, while one of the semi-annual dividends was declared upon the last year's capital.

The dividends are declared upon the capital paid in and not always upon the cost, and this will show a difference between the table and the actual dividend, in cases where the cost of the road varies from the amount of capital paid in.

It should be added, that, in all statements relative to the Western railroad, the dividends are reckoned upon its chartered capital which now stands at \$5,150,000.

In addition to which there has been provided for its construction, and received by the corporation, \$899,900 sterling bonds, payable with interest, at 5 per cent. sold at an advance of not less than 8 per cent—\$4,319,520; Albany city bonds, \$1,000,000, interest 9 per cent., making the total means provided for its construction, \$10,469,520, from which there has been paid, into the several sinking funds, \$459,578, 62, leaving for construction and equipment of road, \$10,009,941 38.

The cost of the road to the date of the return is \$9,900,153 76 leaving in possession of the corporation a balance of construction funds amounting to \$109,787 62.

The balance of interest paid by the corporation the past year is \$266,390 77. The first dividend was declared upon forty thousand shares, the second, upon fifty-one thousand and five hundred, and were each four per cent. Of the surplus of \$47,330 41, \$45,833 34 must be paid into the general sinking fund, which will leave the sum of \$1,497 07 to be added to surplus fund of former years.

By the report of the commissioners of the sinking fund of the Western railroad, it appears that the amount of the fund on the 31st day of December, 1847, as per commissioners' report of that date, was.....\$409,592 71

And there was received during the year 1848, in interest and dividends.....\$23,839 98

Of Western railroad corporation, 1 per cent. on \$4,000,000..... 40,000 00

Showing an increase of..... 63,839 98

Amount of fund, December 31, 1848...\$473,432 69

Abstract from the Several Returns,

NAMES OF ROADS.	Capital.	Capital paid in.	Cost.	Length.	Length of double track.	Length of branches.	Speed of passenger trains.
Barre and Worcester.....	\$1,000,000 00						
Berkshire.....	600,000 00	600,000 00	\$600,000 00	21-137			22-00
Boston and Lowell.....	1,800,000 00	1,800,000 00	2,313,687 40	25-761	25-761	1-861	24-9 } Expr. 28-2 } 22-00
Boston and Maine.....	4,107,500 00	3,249,804 52	3,571,832 04	74-26	13-50	5-08	
Boston and Providence.....	3,160,000 00	2,893,300 00	3,031,106 72	41-00	15-75	6-60	30-00
Boston and Worcester.....	4,500,000 00	4,245,175 00	4,650,392 84	44-625	44-625	22-00 single, } 8-00 double }	22-00
Cape Cod Branch.....	500,000 00	343,000 00	587,116 01	27-800			22-24
Cheshire.....	1,700,000 00	1,401,739 50	1,905,456 81	53-646			23-00
Connecticut River.....	1,500,000 00	1,234,970 00	1,588,184 65	50-000		2-35	21-50
Dorchester and Milton.....	130,000 00	72,990 00	114,224 27	3-246	Leased to	Old Colony Rai	road.
Eastern.....	3,150,000 00	2,655,700 00	3,095,393 87	38-201	16-00	19-875	21-00
Essex.....	700,000 00	263,746 00	421,574 64	22-500			20-00
Fall River.....	1,050,000 00	1,050,000 00	1,145,982 93	42-242			22-50
Fitchburg.....	3,320,000 00	2,735,910 00	2,945,630 98	49,343	17-00	6-537 single, } 0-242 double }	25-00 } 20-00 }
Fitchburg and Worcester.....	500,000 00	52,184 00	Unfinished,	and not in	operation.		
Framingham Branch.....	Organisid	June 21, 1848.	Road not	commence	d.		
Grand Junction Railroad and Depot Company....	1,200,000 00	538,291 66	Unfinished,	and not in	operation.		
Hartford and New Haven.....				5-87	0-50		25-00
Lexington and West Cambridge.....	200,000 00	118,460 00	252,680 79	6-632	Leased to	Fitchburg Co.	
Lowell and Lawrence.....	300,000 00	200,000 00	283,248 61	12-35			25-00
Nashua and Lowell.....	600,000 00	525,000 00	525,063 42	14-583	14-202		28-00
New Bedford and Taunton.....	400,000 00	400,000 00	499,965 58	20-13		0-947	24-00
Newburyport.....	250,000 00	4,140 00	1,992 21		Unfinished, and	not in operation	
Norfolk County.....	700,000 00	414,256 53	621,488 75	25-965	Not in operatio	n.	
Norwich and Worcester.....	2,200,000 00	1,658,500 00	2,187,829 21	59-000	1-80	7-00	22-20
Old Colony.....	2,000,000 00	1,601,415 00	2,080,903 00	37-250	11-50	7-75	20-00
Peterborough and Shirley.....	275,000 00	143,460 00	208,311 30	12-014	Leased to	Fitchburg Rail	road.
Pittsfield and North Adams.....	500,000 00		447,755 45	18-65	0-70		20-00
Providence and Worcester.....	1,232,000 00		1,873,895 76	43-50	5-00		19-00
South Shore.....	600,000 00	135,935 00	255,748 71	11-50	Opened Jan. 1,	1849. Run by	Old Colony.
Stoney Brook.....	300,000 00	216,829 00	246,659 76	13-16	Leased to Nash	ua and Lowell	Railroad.
Stoughton Branch.....	90,000 00	85,400 00	91,535 01				
Taunton Branch.....	250,000 00	250,000 00	305,085 78	11-00		0-568	24-00
Vermont and Massachusetts.....	3,200,000 00	1,995,255 27	2,196,757 20	58-75	Not completed.	Leased to Fitch	burg Railroad.
West Stockbridge.....	39,600 00	39,600 00	41,516 29	2-75	Built by, and	leased to West	ern Railroad.
Western.....	6,150,000 00	5,150,000 00	7,975,452 09	117-804	51-754		22-00 } 28-00 } 20-00
Worcester and Nashua.....	1,800,000 00	934,499 47	1,010,537 78	39-02	2-12		
	50,004,100 00	37,009,560 95	46,777,009 84	954-346	220-212	88-810	mean 23-13

Showing the Leading Statistics of the Railroads.

Speed of freight trains.	Earnings.	Expense of working.	Net Earnings.	Dividends.	Debt.	Surplus.	Casualties.
11-00	\$42,000 00		\$42,000 00	\$42,000 00	Road leased.		Deficient.
12-00	461,339 35	\$268,707 40	192,631 95	144,000 00	\$59,530 00	\$251,106 76	4 killed and 4 wounded.
10-00	511,627 89	264,534 58	247,093 31	252,798 50	297,985 93	48,272 45	5 killed and 3 injured.
15-00	354,375 43	183,361 81	171,013 62	175,349 00	Balance of 101,258 04	74,380 58	4 killed.
9-00	716,284 11	406,203 72	310,080 39	325,500 00	259,634 17	4,490 88	4 killed and 5 injured.
12-35	35,635 22		20,679 28		217,395 68		1 killed and 3 injured.
12-00	80,033 90	47,068 44	32,965 46		698,127 97		
8-75	165,242 13	95,658 93	69,583 20	69,960 00	427,337 59	1,354 23	1 killed and 3 injured.
	Not stated.	Not stated.	Not stated.	Not stated.	41,234 27		
15-00	479,157 89	230,933 64	248,324 25	239,628 00	819,439 65	136,135 72	8 killed and 36 injured.
15-00	10,607 50	Worked by	Eastern Rail road.		160,958 74		Deficient.
11-00	184,344 11	109,390 98	74,953 13	68,250 00	99,101 65	15,924 07	2 killed.
10-00	486,264 63	286,046 48	200,219 15	201,029 50	213,442 63	145,938 04	8 killed and 2 injured.
	881 57	and interest. } 14,575 50 } 2,660 11 }			54,957 76	1,050 60	
12-00		9,309 11	Leased.	Leased.	127,843 81		Deficient.
12-00	20,744 06	13,711 60	7,032 46	None.	73,145 30		Deficient.
14-00	169,187 74	109,599 18	59,588 56	50,000 00	Nothing.	27,213 77	Deficient.
15-00	136,151 81	96,226 41	39,625 40	24,000 00	17,150 00	80,962 93	Deficient.
					233,166 79		
12-50	218,073 30	131,107 80	86,955 50	None.	974,945 05	291,267 28	Deficient.
12-50	227,350 27	139,592 81	87,757 46	91,362 50	509,463 51	8,000 00	3 killed and 3 injured.
			6 per cent. on	capital stock.	54,496 73		Deficient.
20-00	28,319 52	17,467 84	10,851 68	Not stated.			Deficient.
9-00	193,844 42	83,889 71	109,954 71		573,058 70		4 killed.
				None.	128,475 50		
				None.	29,188 60		1 killed and 2 injured.
	23,699 71	17,619 13	6,080 58	4,270 00		1,964 59	Deficient.
15-00	108,101 18	90,485 30	17,615 88	20,000 00	Nothing.	28,035 01	1 killed.
	63,000 00	Not stated.	Not stated.	Not stated.	557,131 15		Deficient.
	1,963 33	60 18	1,903 15				Deficient.
12-00	1,332,068 29	652,357 11	679,711 18	366,000 00	5,319,520 00	233,133 18	10 killed and 4 injured.
9-00	16,855 66	14,465 61			372,211 97		Deficient.
12-35	6,067,154 02	3,284,933 38	2,716,920 30	2,074,137 50	12,420,201 19	1,349,230 08	56 killed and 65 injured.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Aandroseggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc. by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

IRON.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT
Boonton, are now in full operation, and can execute
orders for Railroad Bars of any required pattern,
equal in quality to any made in this country. Apply
to
DUDLEY B. FULLER, Agent,
139 Greenwich street.
New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also receive
orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1848. New York.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
turning out one thousand tons of rails per month,
at their works at Trenton, N. J. They are prepared to
enter into contract to furnish rails of any pattern, and
of the very best quality, made exclusively from the famous
Andover iron. The position of the works on the
Delaware river, the Delaware and Raritan canal, and
the Camden and Amboy railroad, enables them to ship
rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently passed
into the hands of new proprietors, are now prepared,
with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Spikes and Wrought
Iron Fastenings.

THE TROY IRON AND NAIL FACTORY,
exclusive owner of all Henry Burden's Patented
Machinery for making Spikes, have facilities for man-
ufacturing large quantities upon short notice, and of a
quality unsurpassed.
Wrought Iron Chairs, Clamps, Keys and Bolts for
Railroad fastenings, also made to order. A full assort-
ment of Ship and Boat Spikes always on hand.
All orders addressed to the Agent at the Factory will
receive immediate attention.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill River,
near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 $\frac{1}{2}$ by $\frac{1}{2}$ Flat Bars.
25 Tons of 2 $\frac{1}{2}$ by 9-16 Flat Bars.
100 Tons No. 1 Gartsbrorie.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.**
No. 4 So. Front St., Philadelphia.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
ous brands of Charcoal and Anthracite Pig Iron,
suitable for Machinery, Railroad Wheels, Chains, Hol-
lowware, etc. Also several brands of the best Pud-
dling Iron, Juniata Blooms suitable for Wire, Boiler
Plate, Axe Iron, Shovels, etc. The attention of those
engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF
Freight and Baggage Cars—Fifty rods east of
the depot Springfield, Mass.
Running parts in sets complete. Wheels, axles, or
any part of cars furnished and fitted up at short notice
and in the best manner.

N. B. Particular attention paid to the manufacture
of the most improved Freight Cars. We refer to the
New Haven, Hartford and Springfield; Connecticut
River; Harlem; Housatonic, and Western, Massachu-
setts, Railroads, where our cars are now in constant use.

SCHENECTADY LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

THE undersigned is prepared to execute orders for
Locomotive Steam Engines and Tenders; and
from long experience in building, can furnish machines
of most superior workmanship. The Works are very
large, and conveniently situated near the line of Rail-
road leading to Buffalo, and can furnish Locomotive
Tenders and Railroad Machinery at short notice.
E. S. NORRIS.

February 24, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Ma-
chine Works an extensive LOCOMOTIVE ENGINE
department, and are prepared to execute orders for
Locomotive Engines of every size and pattern—also
Tenders, Wheels, Axles, and other railroad machinery,
to which they ask the attention of those who wish such
articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favora-
ble terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern im-
provements, second in quality to none in this or any
other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
this company has probably the most extensive assort-
ment of patterns in this line, in any section of the
country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
gether with all other tools required in machine shops,
may be had at the Mattewan Company's Shops, Fish-
kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly re-
ceiving from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other pur-
poses.

German Steel—flat and square, "W. I. & S." "Eagle"
and "Goat" stamps.

Genuine "Sykes" Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favora-
ble terms by

WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

**Direct Action Engines
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,**

AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Mandelay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,
THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1948.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

**Norwich Car Factory,
NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufacture of

RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF

ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

General Agent,

Norwich, Conn.,

Will meet with immediate attention.

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**CAR MANUFACTORY,
CINCINNATI, OHIO.**



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848.

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**DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF**

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,

ELIJAH PACKARD,

ISAAC MILLS,

SPRINGFIELD, MASS.

1748

**LAP-WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,**

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron, the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. **STARKS & PRUYN,** of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|-------------------------|--|
| Charles Cook, | } Canal Commissioners
of the
State of New York |
| Nelson J. Beach, | |
| Jacob Hinds, | } Engineer of the Bridges for
the Albany Basin. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer & Bridge Builder,
Utica, N. Y. |
| January 1, 1849. | |

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

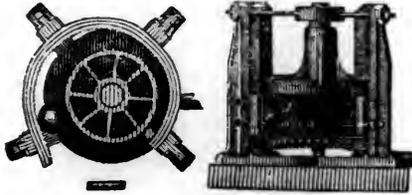
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P.-A. BURDEN.

PATENT OIL FOR MACHINERY.—The Subscribers are now prepared to supply "Devlan's Patent Oil" in any quantity; Machinists, Manufacturers, etc., are requested to call and examine the article. Certificates of its efficacy and superiority over all other oils, from several of our most extensive manufacturers are now in our possession.

OIL.—Bleached and Unbleached Winter, Solar, Elephant and Whale Oils; also light colored selected racked Whale Oil, suitable for retailing. For sale by

ALLEN & NEEDLES,
No. 22 and 23 S. Wharves, near Chestnut St.,
Philadelphia.

February 24, 1849.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

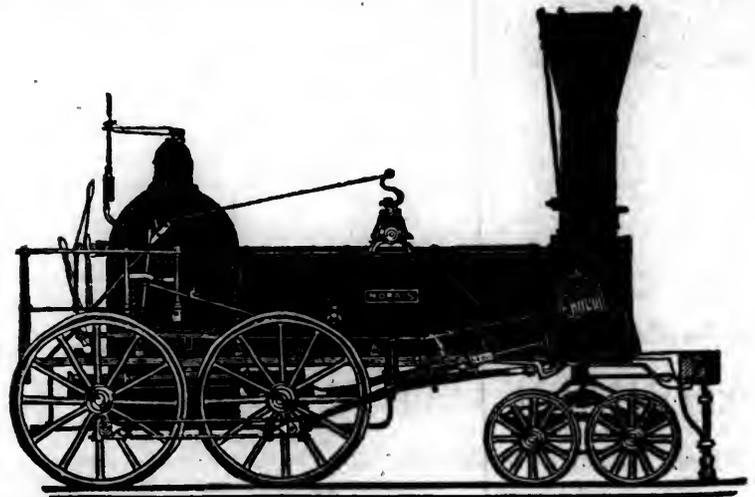
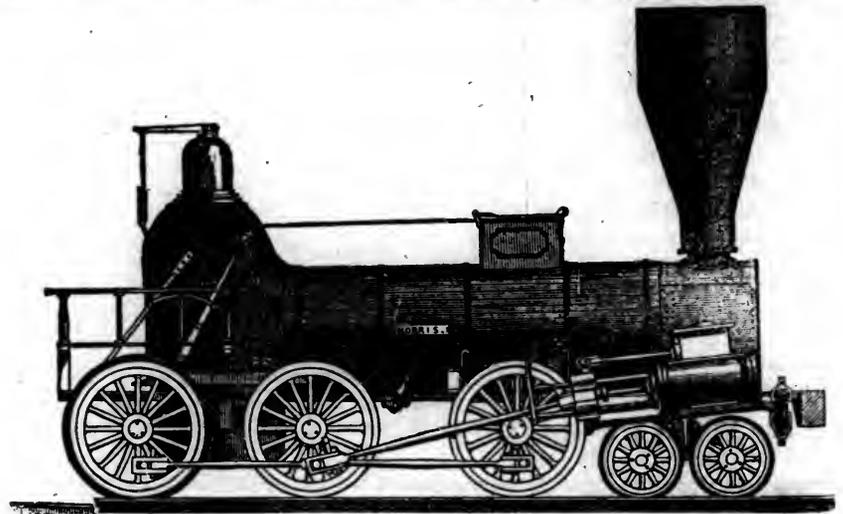
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

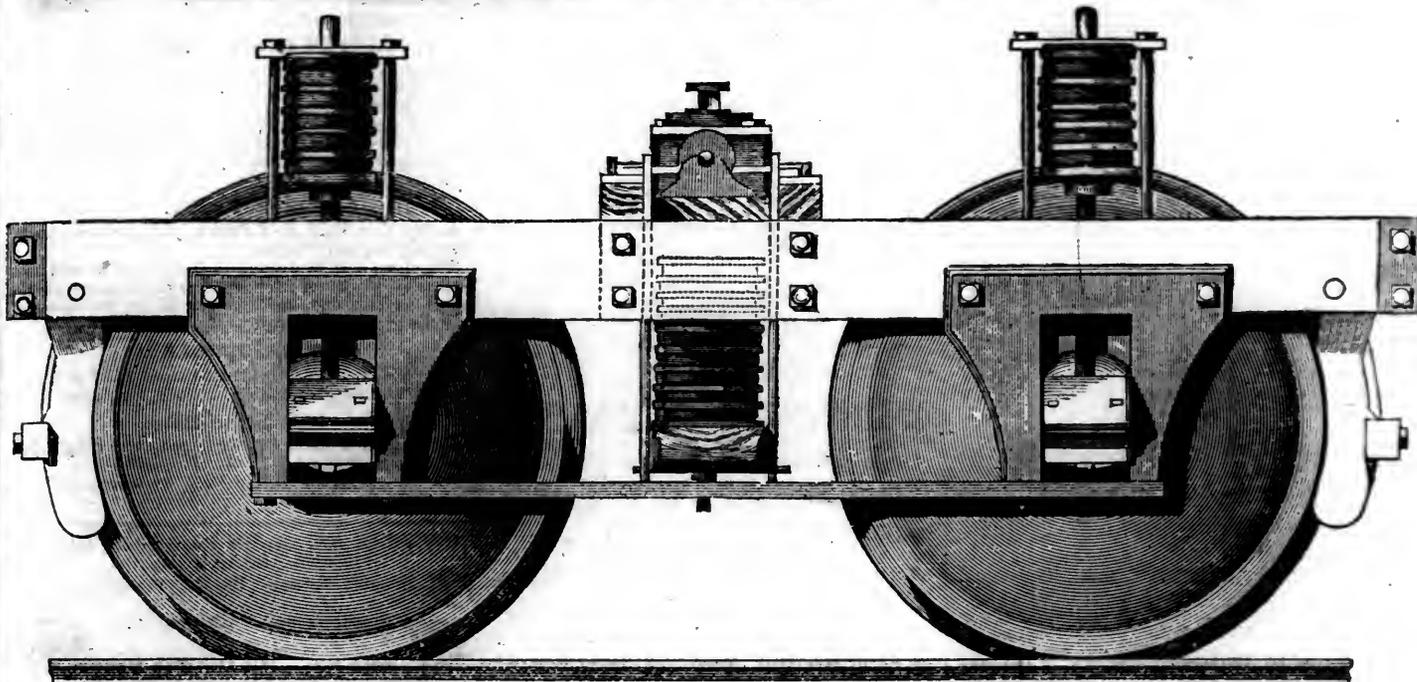
Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.— They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.— During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.

Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanised India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.

Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of STANCLIFFE & DRAPER.



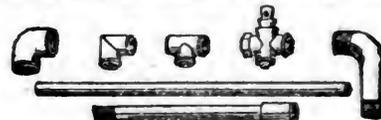
No 23 Pear street, below Walnut, y10 near Third, Philadelphia.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by MORRIS, TASKER & MORRIS. Warehouse S. E. Corner of Third & Walnut Streets, PHILADELPHIA.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TYRES Imported to order, and constantly on hand, by A. & G. RALSTON, 4 South Front St., Philadelphia.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T. Kensington, Philadelphia Co., }
March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUBSCRIBERS are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO.,
Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, OCTOBER 2d, the

 Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am, and 3 1/2 pm. Leave Providence at 8 1/2 am., and 3 1/2 pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10 1/2 pm. Leave Dedham at 7 1/2, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

Stoughton Trains—Leave Boston at 11 1/2 am., and 4 1/2 pm. Leave Stoughton at 8 1/2 am., and 2 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

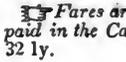
NORWICH AND WORCESTER RAILROAD.
Winter Arrangement.—1848.

 Accommodation Trains daily (Sundays excepted.) 

Leave Norwich at 6 am., 12 m., and 2 1/2 pm. Leave Worcester at 6 1/2 and 10 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars.  S. H. P. LEE, Ja., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

 Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.) 

For Lynn, 7, 9 1 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Salem, 7, 9, 11 a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Manchester, 9, a.m., 3 1/2, p.m.
Gloucester, 9, a.m., 3 1/2, p.m.
Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m.
Portsmouth, 7, am., 2 1/2, 4 1/2, pm.
Portland, Me., 7, am., 2 1/2, pm.

And for Boston,
From Portland, 7 1/2, am., 3, pm.
Portsmouth, 7, 9 1/2, am., 5 1/2, pm.
Newburyport, 7 1/2, 10 1/2, am., 2, 6, pm.
Gloucester, 7 1/2, am., 3 1/2, pm.
Manchester, 8, am., 3 1/2, pm.
Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40, am., 2 1/2, 3, 4 1/2, 7, pm.
Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, am., 2 1/2, 3 1/2, 4 1/2, 7 1/2, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am.
2, 4 1/2, 6 1/2, pm.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9 1/2, am., 4 1/2, pm.
Salem for Gloucester at 9 1/2, am., 4 1/2, pm.
Trains leave
Gloucester for Salem at 7 1/2, am., 3 1/2, pm.
Manchester for Salem at 8, am., 3 1/2, pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover.  On and after Monday, Oct. 2, 1848, 

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9* am., 3.15* pm.
Danvers " 9.10 am., 3.15 pm.
North Danvers" 9.20 am., 3.35 pm.
Middleton " 9.30 am., 3.45 pm.
North Andover " 10, am., 4.20 pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30 pm.
North Andover " 10.35, am., 5.05 pm.
Lawrence " 10.30* am., 5* pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

 Spring Arrangement, 1849. 

Outward Trains from Boston
For Portland at 6 1/2 am. and 2 1/2 pm.
For Rochester at 6 1/2 am., 2 1/2 pm.
For Great Falls at 6 1/2 am., 2 1/2, 4 1/2 pm.
For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2, 6 pm.
For Lawrence at 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm.
For Reading 6 1/2, 9 am., 12 m., 2, 4, 6, 7 1/2, 9 1/2 pm.

Inward trains for Boston
From Portland at 7 1/2 am., 3 pm.
From Rochester at 9 am., 4 1/2 pm.
From Great Falls at 6 1/2, 9 1/2 am., 4 1/2 pm.
From Haverhill at 7, 8 1/2, 11 am., 3, 6 1/2 pm.
From Lawrence at 6, 7 1/2, 8 1/2, 11 1/2, am., 1 1/2, 3 1/2, 7 pm.
From Reading at 6 1/2, 7 1/2, 9, am., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9 1/2 am., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2 pm.
Leave Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 5 1/2, 6 1/2, pm.
* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD.
WINTER ARRANGEMENT.

 On Monday, January 1st, and  until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steambot towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steambot New Haven, and Bargea.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.
WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

 Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm. 

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.19 pm.

Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.

Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted; and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dt

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3½ pm.
Arrives at	9 am. and 6½ pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12½ pm. & 8 pm.
Leaves York for Columbia at	1½ pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare to York - \$1 50
 " Wrightsville - 2 00
 " Columbia - 2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
 Or via Lancaster by railroad - 10
 Through tickets to Harrisburg or Gettysburg - 3
 In connection with the afternoon train at 6 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at 5½ pm.
 Returning, leaves Owning's Mills at 7 am.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.
AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 409 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hogshead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	0 65
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.
 F. C. ARMS, Sup't of Transportation.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.
 On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:
 Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
 Returning, leaves Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½, pm., Train from Cincinnati, and 2½, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM. The Train carrying the Great Western

Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.—1848.

Winter Arrangement.
 December 4th.—Fare \$4.

Leave Philadelphia 8 am., and 4 pm.
 Leave Baltimore 9 am, and 8 pm.
 Sunday—Philadelphia only at 4 pm.
 Baltimore only at 8 pm.
 Trains stop at way stations. A second class car run with morning line only.

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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, April 7, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

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Explosion of Locomotive Engines.

After our article upon the Explosion of Locomotive Engines, under date of March 17, had gone to press, we received a copy of the Report of a Committee on this subject, read before the Boston Society of Civil Engineers, March 6, 1849, called forth by the explosion of the engine "Taghconic," on the Boston and Providence Railroad, on 1st of February last, before referred to. We have also re-examined the reports, spoken of in our previous article, in regard to the engine "Richmond," with a view to more thoroughly appreciate the force of the hypothesis assumed by the Committee of the Boston Society of Engineers.

We have also received various suggestions from several engine builders and other parties who have been led to interest themselves in the matter, and we notice that the subject has been quite fully treated upon in several newspapers in different parts of the country.

Regarding the subject as one of the most profound importance to the whole public, and most deeply interesting to the engineering profession, and in fact to all persons in any way connected with Railroads, we had determined to call the attention of our readers to the matter, in the hope that by the application of appropriate remedies, similar calamities might be hereafter avoided.

The present week has brought to us the report of a similar catastrophe. On the 2d instant, an explosion took place on the Eastern Railroad, upon an engine used in a gravel train in the neighborhood of Chelsea, by which the fireman was instantly killed.

We have not as yet received full particulars in regard to the cause of this recent catastrophe. All we see is, that it is stated that the engine was an old one, having been one of those built by the *Machine Shop of the Locks and Canals at Lowell*, of about 11 tons weight, and that it was unfit for use.

If so, it is an admonition to all railroad companies to use more care in the working of old engines. We trust there will be a thorough investigation as to all the facts of the case, as the public is becoming more and more sensitive on the subject. The earlier built roads and engines are both going rapidly to decay. More thorough workmanship is required, to sustain the increased weight which greater speed and heavier trains now impose upon railroads.—Increased skill and more thorough knowledge of machinery than formerly are required, on the part of engineers, superintendants and engine drivers to ensure proper confidence on the part of the public, in the working of our complex railway system.

To return once more to the case of the "Richmond." It is asserted that one of her pumps alone, was amply sufficient to supply water for her boilers, and that the position taken in the Report of the Committee of the Franklin Institute, that in consequence of defect in the working of one of her pumps, the supply of water was withheld, and that this finally led to the explosion—is not sustained by the facts in the case.

Dr. Lardner, on pages 12 and 13 of his Report, says:

"If the water had been suffered to boil down so as to leave the crown piece and the upper flues uncovered, those parts must have been red hot or nearly so. The condition of copper tubes which have been red hot is easily recognised. Those in the boiler show none of the signs of having been overheated. It has in short all the appearance of having been kept under water. None of the tubes have collaps-

ed. The crown piece of the fire place shows none of the indications of having been incandescent.—Among other appearances against this, one seems to be absolutely conclusive—the soot still remains thick on the under side of the crown piece. Indeed I can positively pledge my judgment that neither the fire box nor the flues have been overheated."

It is also further asserted, that the wooden casing of the boiler of the Richmond was not charred—clearly showing that the same could not have been overheated. Whereas, in the case of the Taghconic, the evidence was full and abundant that the wooden casing was charred to such a degree as to indicate an intense heat upon the boiler.

Without going over the ground again in regard to the Richmond, we still adhere to the opinion that in that case the catastrophe was caused, not so much from any defect of the engine, or proper working of any of its parts, as from the want of proper care and watchfulness on the part of the engine driver, arising from over confidence in the capacity of his engine to sustain an extraordinary pressure of steam, and that he allowed, from some cause or other, the water in the boiler to become overheated, and then, by suddenly throwing in a fresh supply, it was suddenly converted into a volume of highly elastic steam sufficient to cause the explosion.

The explosion of the Taghconic locomotive, was the first accident of the kind in New England. The public attention was generally called to the subject, and the Report of the Committee of Engine Builders, published by us; seemed to us quite satisfactory as to the cause of the catastrophe, though we think they should have gone further, and spoken more freely of the remedy. It is known that similar explosions take place in steamboat boilers. The case of the explosion of the steamer "Moselle," a few years ago, on the Ohio, and a more recent one in the case of the "Ticonic," on the Kennebec, are attributable to the same cause, and are in all their leading features precisely alike. Both these boats had been lying still, and without any escape of steam—the fires were kept up in full blast, and on the first movement of the engine they exploded with the most terrific consequences.

In cases like this of the Taghconic, there is an unwillingness on the part of builders of engines to speak out fully their own impressions. Locomotive engine builders in England and the United States formerly regarded the insertion of the safety plug as indispensable to safety, in running at high speed. It is believed, that with a proper safety plug, in the

ordinary condition of boilers, an explosion cannot take place. So too with steamboat engines, by the proper application of Wirthington's patent steam pump the condition of the water in a boiler may be at any time ascertained, and the danger of explosions avoided.

The question arises, why are the *safety plugs* now laid aside? We are told that they are frequently taken out and their places filled with an iron plug, or some infusible metal. Unskilful men frequently occupy positions as superintendents and engine drivers. Occasionally these plugs melt out, letting the water into the fire box, extinguishing the fire, and causing the stopping of trains. These delays are an annoyance, and the unskilled manager of a road prefers to trust the strength of his boiler, than incur the chances of delay, and hence orders for locomotives allow builders to omit this precautionary remedy in many of the modern engines.

We throw out these suggestions without any intention of casting reflections upon any one, more especially those connected with the several roads where these explosions have occurred. We speak of facts which have come to our knowledge elsewhere, and throw out these suggestions in the hope of inviting full discussion of the matters in hand. There is no question in the whole range of railway economy so important as this. The locomotive holds the same relation to the railway system that the brain does to the human frame.

We think it due to the parties interested in this discussion, and indeed we regard the question of so much importance, that we are induced to spread before our readers the substance of the report of the committee of the Boston association of Civil Engineers, drawn up by W. P. Parrott, Esq. We desire also to place all the facts on record for future reference and use. The report says:

"This locomotive engine (one of the largest class now used) started from the Providence station with the passenger train from New York, via Stonington, on the 1st of February. The engineman was Mr. Lucius Cummings, who is represented by those acquainted with him, to have been a very competent and steady man. He had been in the service of the Boston and Providence railroad company about ten years, and for the last seven years had been in the charge of a locomotive engine.

The train proceeded on in the usual course from Providence to the station at Mansfield, ten miles from the point where the explosion took place. At this place it passed the freight train. The only fact having any bearing upon the accident up to this, was the remark of the engineman of the freight train, that the 'Taghconic' was blowing off steam freely, when she passed him at this place.

From Mansfield station, the narrative of George Lignham, the fireman, was taken for the statement of facts relative to the running and appearance of the engine, which was as follows, (substituting distances for points on the road noted by him):

"At Mansfield we stopped and took in wood and water; tried the upper gauge cock and found water and steam; safety valves blowing off. We started from Mansfield with one pump on; 1600 feet from the starting point, filled the furnace with wood; 13,000 feet, filled the furnace again. From this point, we ran a distance of about 10,000 feet to the summit, where the throttle was shut off to less than half its opening, and the furnace door was opened.—Thence about 4,000 feet, where a few sticks of wood (four or five) were thrown into the furnace. Thence 1500 feet to the top of the inclined plane, where the throttle valve was entirely shut, and both pumps put on, and the furnace door shut. At a distance of about 8,000 feet the pumps were tried; they worked water. Thence 7,500 feet and the gauge cocks were tried; the upper cock showed water. The engineer took down his lantern at this time and examined the flow of water carefully: remarked that he had never seen the pumps work better, and told me to shut off both pumps, which was done, as he remarked,

we should get a strike when we got on the bridge; meaning that when the steam was again let into the cylinders, the water would be thrown over into them on account of its being so high in the boiler. I asked Mr. Cummings if I should fire up. He replied No; that he wished to run easy, as the night was dark and we were about running through the switch at the part of the road where the Stoughton branch leaves the main track. I did not fire up. We ran on this way 5,500 feet, to the viaduct, where the explosion took place.

At the moment of the explosion, I was in a stooping position, moving a piece of wood in the way of the brake, which I was about to use. I recollect Mr. Cummings reaching for the cord connecting with the steam whistle; when the explosion took place. I cannot recollect having heard the whistle. When I recovered after the explosion, I called for the engineer, but he had been killed instantly by the explosion; my life was saved by being in the stooping position before mentioned. I put down the brake, and stopped the engine. My clothes were wet somewhat, but probably from the water from the tank in the tender. I was not scalded, but my face was burned. I saw no indication of hot water having been thrown on to Mr. Cummings—he was not scalded.

There was very little fire in the furnace after the explosion; it was put out with water. I cannot tell how long after the explosion it was put out."

The explosion took place about 5½ A. M., February 1st.

Description of the boiler after the explosion, made February 10th, 1849.

This examination was made ten days after the disaster occurred. The engine had been removed to the repair shop, part of the wreck cleared away, and part of the tubes had been removed; otherwise it was in the same state as it was immediately after the accident.

The explosion had apparently torn off the whole top of the boiler over the furnace, between the waist of the boiler and the front plate of the furnace down to the level of the frame of the engine. The fracture was irregular; in some cases following the line of rivets, in others giving way between the line of rivets at the angle where it joined the waist, and in other parts leaving a width of 3 to 4 inches attached to the boiler, where the parts are rejoined, or tearing off 3 or 4 inches inside of the lap.

Some parts of the iron was apparently broken, in other parts evidently torn apart. The front plate was entire, bent outwards to some extent, and two of the long stay bolts broken off. All the short stay bolts were drawn from their connection with the other parts, throughout the whole extent of the fracture.

The whole body of the boiler at the furnace end was bent downwards, and bore upon the shaft of the engine.

The crown of the fire box slightly bent downwards, but no visible fracture of the parts.

The whole of that part of the engine and machinery over the fire box was fractured, and the most part carried away.

The forward part, though deranged by the accident, being twisted and dislocated, did not indicate that any part of the boiler, or other parts removed, took that direction, but that the explosion was towards, and backwards from the direction in which the train was moving.

The boiler showed every indication that either before or after the explosion, it had been subject to a great heat.

Some parts of the iron showed evident marks of heat; the tubes in the middle and lower part were scalded by the heat, and the brazing or solder in the joints to some extent melted out. The tubes on the upper row and those at the sides did not show that they had been heated more than is usual for the working of an engine.

The wooden casing of the boiler was charred through its whole extent to a depth of 8.10 of its thickness, and at the joints of the plates it was entirely burnt to a coal. The sheet iron, which covered the wooden casing, was discolored in a small degree in one or two spots, otherwise it did not show any effect of heat.

The inside of the boiler and the outside of the tubes were covered with the usual incrustation

found in steam boilers, in all places, where heat had not scalded it off.

One of the safety valves remained in place at the time of the examination; the other was gone, and the lever broken and bent by the explosion.

The appearance of the pumps, when the engine was taken apart for the purpose of repairing it showed no indication that they had been out of order.

The grades of the road, over which this engine was working, are as follows:

From Mansfield.

3000 feet, 18 feet per mile ascending.

1300 " 24 " "

21,700 " 10 1-2 to ft. per mile ascending.

5900 " Level—Summit.

20,000 " descending 35 to 40 feet per mile to the point where the explosion took place.

Thus it appears that after leaving the station, at Mansfield, the engine worked for a distance of about 5 miles, up an ascending grade of different inclinations, varying from 10 1-2 to 34 feet per mile; then over a level of one mile; then on a down grade of 35 to 40 feet per mile, 4 miles, to the point where the accident happened.

The wind at the time was NE. and a snow storm commencing.

Having made this statement of facts, it might be proper under most circumstances, that your committee should stop here; but as the actual investigation of a subject gives an advantage in the thorough understanding of the whole subject, matter, which the reading of a recital of facts will not generally give, we shall venture to trespass upon your indulgence, to again recite some of the most prominent facts connected with this disaster, and submit such comparisons and conclusions as we have been able to make; in order that, as far as in us lies, we may do our part to prevent, if possible, the recurrence of a similar accident.

The appearance of the boiler after the explosion shows that the shell and part of the tubes had been subjected to an immense heat, and also that water had been suddenly applied to the surface of the tubes;—the evidence of this last fact is the appearance of the copper. The appearance can be only produced by heating to nearly a red heat, and then plunging it suddenly into water.

The explosion appeared to follow immediately upon opening the steam whistle, as the man at the station says that he heard the sound of the whistle and the report of the explosion, as it were, at the same moment of time.

An apparently obvious solution of the problem at once presents itself:

1st. That the water was low in the boiler.

2d. That the whole interior of it was heated to a high temperature.

3d. That opening the steam whistle caused the water to rise immediately, to come into contact with the heated tubes and sides of the boiler, thus producing a volume of highly elastic steam, which the boiler could not resist.

But this solution will not satisfy the conditions of all the evidence.

It is conceded by all persons having competent knowledge of the matter, who have been seen by your committee, that Mr. Cummings, who had charge of the engine, was an experienced and competent man, not liable to be deceived by the foaming of the engine, and, least of all, to be deceived by his pumps.

The testimony of the fireman also proves that all the time from leaving Mansfield, up to almost the instant of the explosion, one pump was in action, and that part of the time two pumps were on. That the pet cocks were tried once at least, and that they indicated full action of the pumps. This being the case, the injection into the boiler must have been going on in its usual manner. Added to which is the consideration, that the engine man, after a careful examination of his gauge cocks and his pumps, ordered them to be shut off, because he feared his boiler would be too full of water.

Another proof that the water was not nearly all out of the boiler, is the fact that the tubes were not generally burned, the heated appearance being confined to the middle of the mass of tubes, the outside and top of the mass showing no indication of undue heat. A specimen of one of these tubes is presented.

It shows the usual appearance of tubes in an engine properly worked; even the particles of carbon on the inside, usually found in them, are remaining, and it seems impossible from this testimony to believe that these tubes had been uncovered by the water.

The received opinion at present is, that boilers are either burst by crowding upon them too great a pressure of steam while working, or by allowing the water to leave the parts of the boiler exposed to heat, and afterwards suddenly throwing the water upon those heated parts, either by ejection of cold water or by altering the position of the boiler (as in steamboats,) or by a sudden foaming or ebullition of the contained water, by opening some of the apertures in the boiler. The present case under consideration has but one of these circumstances attached to it, to wit: opening the steam whistle; which occasion ebullition or foaming. The previous condition of want of water is not supported by the evidence;—but the whole of the testimony, both of living witnesses and the appearance of the boiler itself, is opposed to this position.

We can therefore assume that this accident was occasioned by an excessive pressure of steam, greater than the resistance of the shell of the boiler. From whence came this excessive pressure? As the testimony before recorded is not reconcilable with the supposition that the boiler was insufficiently supplied with water, your committee was induced to seek further for a solution of the problem, in examining the recorded cases of explosion, and different papers written in this and other countries, upon the subject of the explosion of steam boilers.

In most of these cases a direct cause has been assigned for the result, either from bad pump or actual or supposed defect in the safety valves.

Some of the most prominent cases are noted for the purpose of reference for those members of the Society, who may wish to examine further into the subject, and a note is subjoined for that purpose; rather than to swell this report with extracts from them.

It will be seen that all the locomotive engines have burst downwards with great loss of life and injury to property. This case is different the explosion being upwards. In some of the other cases of tubular boilers, the outside shell has given way, mostly from an evident weakness in the plates.

In the course of this examination, a theory but little known in this country, but one evidently much considered in Europe, seemed to your committee to meet the conditions of this case more fully than any other, and induced a further examination, and comparison of the evidence. It is now presented solely for consideration, without taking the ground that it was actually the cause, but that there is strong probability that it may have been.

The theory alluded to is the property of repulsion noticed in fluids, when placed in vessels heated above the point of maximum evaporation. This property has been quite fully investigated by Clap- roth, Boutigny, Perkins, and by the committee of the Franklin Institute, and others.

A very interesting and instructive paper upon this subject, by J. E. Bowman, Esq., read before the Royal Manchester Institution, February 17th, 1845, is recorded in the Journal of the Franklin Institute, Vol. 36, (1845) pages 183 and 268.

As the conclusion of that paper seems to afford a proper solution in this case, we take the liberty of making an extract from it.

After reciting the different experiments, he says:

"If water be now gradually thrown into an over heated boiler, we know from what has already been said, that it will pass into a spheroidal state, and will continue at 500 deg. of temperature, until from some cause or other, it is permitted to come in contact with the heated surface, when violent ebullition immediately takes place, an enormous quantity of steam is instantly produced, and if the vessel be a closed one, as is the case with steam boilers, an explosion is the almost inevitable result.

"The water, on ceasing to be spheroidal, wets, or comes in contact with the heated vessel, and is converted instantly into steam, which being thus generated in a vast quantity, finds an outlet at the point of least resistance.

"This experiment proves that if water exists in the spheroidal state in a boiler, and the boiler be al-

lowed to cool, owing to the extinction of the fire, an explosion is the almost certain consequence.

"A result precisely similar is produced by adding a quantity of cold water to a boiler containing a portion of liquid in a spheroidal state.

"But here the question arises; does water ever become spheroidal in steam boilers? And if it does what are the circumstances which lead to such a dangerous crisis?

"That water contained in boilers does pass into the spheroidal state, there can be no doubt. * * * It has actually been seen to be so. Where then are the causes which lead to this occurrence?

"The most obvious cause is deficiency of water in the boiler, owing either to the negligence of the engineman, or to some defect in the feed pipe.—When this deficiency occurs, the boiler (if the furnace be in action) shortly becomes highly heated, and it is by no means an uncommon occurrence for it to reach even a red heat. If the water under these circumstances be thrown in, the first portion becomes of course spheroidal and continues so until by an introduction of a sufficient quantity, the boiler be so far cooled as to be unable to maintain the spheroidal form of the water. No sooner is this the case, than the spheroid comes in contact suddenly with the overheated boiler, bursts into steam, and in all probability an explosion is the result."

Another and highly probable cause of water becoming spheroidal is the incrustation of non-conducting substances on the interior surface of the boiler.

From the same paper quoted above we have the opinion expressed that,

"There can be no doubt that a part of the boiler occasionally becomes nearly red hot, although this condition appears inconsistent with the supposition that it is at the same time covered with water. Yet we may have been compelled to adopt this conclusion, from having had ocular demonstration of its possibility.

"The probability of boilers sometimes approaching a red heat, receives a corroborative proof on examination of the iron plates in cases where the boilers have bulged out, and which exhibit an appearance well known to boiler makers, by a peculiar color in the iron surrounding the part which has been red hot.

"We may conclude that the principal cause of boilers becoming unduly heated, is undoubtedly, in a majority of cases, owing to the interposition of indurated iron conducting matter between the heated metal and the water."

This undurated matter is liable to be occasionally thrown off from the surface of the metal, in which case the water comes suddenly upon the heated surface and is repelled by it to a certain degree. Should it be but a small surface thus suddenly exposed, the danger of explosion will be small, but the principle will be the same, and the danger of explosion will be in proportion to the surface of metal thus deprived of its coating of non-conducting matter.

That the contained water in all steam boilers may at times (suitable circumstances concurring) assume this spheroidal form, to a greater or less degree is, we think, beyond question.

We assume, therefore, that the spheroidal theory is a true theory, and also that it will explain and conform to all the testimony collected in this matter, which the common theory (before mentioned and examined) will not do; and by no other theory as yet advanced by persons who have had competent advantage for examination, can this be done.

First; all the testimony goes to prove, as strongly as we ever expect such a fact can be proved, that the boiler was well supplied with water, that the upper and outside tubes were not exposed to the action of great or unusual heat, is proved by their appearance. That the tubes at the bottom and middle of the mass were exposed to great heat, is also proved in the same manner.

How could these tubes be burned, and those which would be the first uncovered escape, if the explosion was occasioned by the water being low?

The only possible explanation for this would be the supposition that the tubes and outside casing of the boiler were exposed to the great heat which their appearance indicates, by the fire remaining in the furnace after the explosion took place; and that

those tubes which escaped had at that time no circulation through them.

But the evidence so far as it goes, shows that the fire was low at the time, and that but a short time elapsed before the fire was put out, and after the explosion, the shell of the boiler, which was so much burned, was exposed to a circulation of air on all sides. It is to be regretted that more precise information cannot be had on this point; but the fact that the upper rows of the tube escaped the extreme heat which the others indicate, seems to prove conclusively that the water could not have been at any time below them, so as to leave them uncovered; also those burned were subjected to the action of the water after they were heated, which could not be done if heated after the explosion. This, and the other reasons, which, from the testimony, are opposed to the presumption that the water was low, carry us unavoidably to the conclusion that the difficulty was local, and beneath the ordinary level of the water, and was occasioned by the undue heating of the lower and middle portion of the tubes, thus giving the contained water the spheroidal form before alluded to.

The fire, as appears from the evidence, was low, and gradually falling lower, at the time of the explosion, in this respect conforming to the principles of the spheroidal theory, that an explosion will take place as the temperature is reduced.

The opening of the aperture connected with the steam whistle, undoubtedly hastened the catastrophe; but may very readily be accounted for upon the hypothesis, that a slight agitation of the water would reduce the spheroidal form of the water into highly explosive steam.

The causes which combine to produce this spheroidal form, their combinations and degrees, yet remain to be demonstrated; but it is considered, that in all reasonable probability, this is at least one instance of explosion from this form; and that it may induce others to collect and arrange the facts as they arise, is one reason that we have been induced to go so far into the detail of the matter.

That they may and will occur with locomotive engines of the present construction is possible, as the passages for the water between the tubes are so small and so liable to collect incrustations of matter from the water used.

The most obvious remedies for this difficulty, which have been collected during the investigation, are to keep the boilers as free from deposit of non-conducting matter as possible.

To increase as far as practicable the size of the water spaces between the tubes and the use of fusible plugs in the boiler, to indicate an undue heating of any part.

And also to provide some better arrangement for ascertaining the height and condition of the water in the boiler.

In conclusion, your committee would take this opportunity to acknowledge their obligation to W. R. Lee, Esq., General Superintendent, Mr. Griggs, the Superintendent of the Locomotive Department, and other officers and men connected with the Boston and Providence railroad, for their attention and desire to give all the information at their command.

WILLIAM P. PARROTT, Com'r.

Boston, March 6th, 1849.

The Committee, in reaching their conclusions, seem to regard the testimony of the fireman as establishing such facts as it was necessary to know for arriving at such a result. Herein it seems to us is their error. Any one, at all acquainted with the running of locomotives, is aware that from the nature of the service of a fireman, he has not the means, at all times, even if he had the disposition, to take accurate note of the condition of the engine. In this instance, too, the darkness of the night might prevent his judging accurately as to distances, running time, and other facts important to a proper understanding of the whole matter.—His first impression was, that he was scalded from the water of the boiler, but in his recent testimony he thinks he was burned instead of scalded, which shows that subsequent investigation had changed his first impressions. We do not doubt his in-

tegrity, but from the nature of the case, his means of knowledge as to the facts occurring, must be very little else than conjecture.

The committee assume that it is proved that the pumps had been shut off only three minutes before the explosion, and that no fresh water had been thrown into the boiler. Assuming these facts, they conclude that a sufficient pressure of steam could not have been generated by force of the fire alone, in this space of time, to cause the catastrophe, and that the ordinary occasion of similar explosions did not occur. They therefore adopt this idea of the spheroidal theory as the best mode of accounting for the explosion, reconcilable with the supposed facts of the case.

If we have understood this spheroidal theory, it has been supposed that such a result occurs where extremes of heat and cold come in contact. Throw cold water on iron raised to a high degree of heat, and the water flies off in the form of globules or spheroids. But can water assume this form, when gradually heated to the requisite temperature, to conform to the theory stated?

If so, the whole value of steam power is in danger of being destroyed, and the results of scientific labor are now to be thrown away. Water may be converted into steam of such highly elastic properties as to exceed some 28 times the explosive force of gunpowder and there is no doubt of the fact that steam may be raised so as to burst the strongest encasing of iron; and the same result may be produced by suddenly injecting into a heated boiler a quantity of water. This water instantly takes the form of steam of such elastic force as to explode. In our opinion by one of these modes the explosion of the Taghconic was produced. We cannot believe that when water is once raised to a highly elastic steam, that it can be condensed, or converted into water in the form of a spheroid without losing its elasticity.—This seems to be the theory of the committee. We had also supposed that water took this form only for an instant, before its entire mass could be equally heated. If this is all the committee mean to convey in their report, then it is only another mode of expressing the ordinary result produced by throwing cold water into a heated boiler. Rather than yield assent to such an hypothesis as that assumed by the committee, we are inclined to believe that the engine driver might have opened one of the pumps at the time of the explosion, and induced the catastrophe without any knowledge on the part of the fireman; or that the length of time that the pumps remained closed, might have been greater than he supposed, either of which would explain the cause of the explosion.

The question is a practical one, of the greatest possible importance. We desire to call attention to it, with a view of obtaining more satisfactory knowledge, and suggesting proper precautions for the safety of the public. We may not have understood the views of the committee. We trust we may yet hear from them again on the subject, and have the benefit of the opinions of others, more competent than ourselves to judge as to the probable cause of these explosions.

GENERAL RAILROAD LAW.—Governor Coolidge, of Vermont, has appointed the Hons. Charles K. Williams, of Rutland, Lucius B. Peck, of Montpelier, and Erastus Fairbanks, of St. Johnsbury, Commissioners to digest and prepare a general law, regulating all railroad companies, in conformity with a resolution passed at the last session of the Legislature.

Louisville and Frankfort Railroad.

The President and Directors of the Louisville and Frankfort Railroad Company state for the information of the stockholders, and all whom it may concern, that the Lexington and Ohio railroad company, chartered by the legislature of Kentucky, to construct a railroad from Lexington to the Ohio river, completed that part of the road between Lexington and Frankfort, in the year 1835 with a flat rail, and an inclined plane at Frankfort, at a cost of about \$540,000; and they expended in obtaining the right of way and in grading the route between Frankfort and Louisville between \$2 and \$300,000. In thus constructing the road, said company obtained a loan of \$150,000 on the endorsement of the commonwealth, and gave a mortgage on the whole road and its effects to secure the same, and failing to pay the interest, said road and effects were sold under the provisions of the mortgage, and purchased by the commonwealth in 1842; after which purchase the commonwealth expended about \$100,000 in making a full and complete repair; said road has been in operation ever since, being finished to Frankfort and in successful and profitable operation since it was purchased and repaired by the state.—In 1817 a charter was granted by the commonwealth of Kentucky, to the Louisville and Frankfort railroad company, to construct a railroad from Louisville to Frankfort, a distance of 65 miles (as the road has been located) and the commonwealth granted to the company the right of way and work done, etc., by the Lexington and Ohio railroad company at the sum of about \$60,000, for which interest at the rate of 6 per cent per annum is to be paid after the road is completed—and about \$550,000 of stock has been subscribed and the company organized—and engineers employed, and the road located, and the cost, when all completed and in running order, is estimated at \$925,000.

In 1847 a charter was granted to the Lexington and Frankfort railroad company to re-construct the road from Lexington to Frankfort, and the commonwealth transfers to said company the old road from Lexington to Frankfort then in use, with all the rights and privileges, including roadway, depots, etc., in consideration of \$150,000, in the stock of the company; which company has raised a subscription of about \$250,000, and has organized the company and employed an engineer, and located the road so as to connect with the present road without an inclined plane at Frankfort, and estimated the whole cost of the grade and relaying the whole road with a good T rail, weighing 56 lbs to the lineal yard, from Lexington to Frankfort, a distance of 29 miles complete, with new cars, etc., in running order, at \$300,000; which will make the cost of the twenty-nine miles to said company \$450,000. This company have purchased the T rail for the whole of the said road, and part of it is on the ground, and they have let the contracts for the new grade, and the grading is nearly completed; and they have contracted for the other materials which they are distributing along the road, and will have it all complete in running order by the 1st of October next. It will be seen that under the provisions of the charter of the Lexington and Frankfort railroad company, and the amendments to the charter of the Louisville and Frankfort company, that when completed both roads are to be run as one continuous road, and the profits of both are to be divided between the stockholders of each pro rata, according to the cost of each road to the respective companies; the cost of the whole road from Lexington to Louisville will be \$1,435,000, including the sums paid the commonwealth for the old road.

The city of Louisville subscribed \$500,000 to the stock of the Louisville and Frankfort railroad company, and are to raise the same by a tax of one per cent per annum for four years, and the tax for the year 1848 has been levied, and is in the course of collection; and the sum of \$109,000 paid to the company, and the residue of the tax for the year 1848 is in the course of collection, and the assessments are being made for the tax for 1849. The road from Louisville to Lagrange, a distance of 27 miles, is under contract for grading, bridging and culverts. The T rail weighing 58 pounds to the lineal yard, has been purchased, and other materials are under contract, and contracts made for laying the same, and will be completed and in running or-

der by the 1st of December next, at the cost, for the 27 miles, of less than \$240,000.

The balance of the road from Lagrange to Frankfort is located and being estimated, preparatory to contracting for the grading, bridging, etc., and will be put under contract so as to complete the same in time to have the road in complete running order to Frankfort by the 1st of January, 1851.

The gross receipts of the road from Lexington to Frankfort, with the flat rail and the inclined plane, have been about \$60,000 a year, and at the same rate, when the road is completed to Louisville, without any increase, will make the gross receipts \$200,000.

It would be safe to calculate the increased business at least \$50,000 per annum, and a new business in transporting live hogs and other stock at \$20,000 more per annum, which would give a dividend of at least ten per cent., and leave a surplus for contingencies.

The country through which the road passes from Louisville to Lexington, is exceedingly fertile, and it is but reasonable to calculate on a large increase for many years to come, independent of expected extensions and branch roads.

The president and directors of the Louisville and Frankfort railroad company have full confidence that the subscription of \$550,000 will be paid, and that they will be able to realise the amount in the course of the present year, and the year 1850, or anticipate what shall remain unpaid, and they have full authority to borrow on the credit of the company the sum of \$400,000 to enable them to complete the road and give a deed of trust to secure the same on the road and all its effects, and they propose to negotiate said loan so as to purchase the residue of the iron, and have the road completed by the 1st of January, 1851. They publish herewith the charter and amendments of the Louisville and Frankfort railroad company; also, that part of the charter and amendments of the Lexington and Frankfort railroad company which provides that both roads shall be run as one continuous road. They also publish herewith the estimates of the costs of the road from Louisville to Frankfort, made by Charles N. Warren, the engineer employed by the company, and his statement of the cost of the road from Lexington to Frankfort, and his statements of the receipts of the road from Lexington to Frankfort, and his estimates of the receipts and profits of the whole road when completed, and they state that Mr. Warren was employed in 1842, in repairing the road from Lexington to Frankfort, and afterwards in running the same, and he states the receipts from Lexington to Frankfort on his knowledge of what was done while he managed that road; and they believe that his estimates may be relied upon for the receipts of the whole road, also for the costs of the road; because, as far as contracts have been made, they have been within the estimates; they also append to this publication a copy of the obligation and interest checks, which they propose to negotiate with the deed of trust to secure the same.

THO. SMITH,
JAMES GUTHRIE,
JOHN I. JACOB,
WM. H. FIELD.

Estimate of Cost of Road from Louisville to Frankfort.

Cost of grading, as before reported, 407,322 yards excavation, at 10 cts. per yard.....	\$40,732 20
546,966 yards embankment, at 10 cents per yard.....	54,296 60
40,937 yards rock excavation, at 50 cts..	10,466 50
2,550 perches culvert masonry, at \$1 25 per perch.....	3,187 50
Cost of grubbing.....	2,832 00
Number of perch bridge masonry, 3,600, at \$5 per perch.....	18,000 00
Number of perch bridge masonry, 2670, at \$3 per perch.....	8,010 00
Number of running feet of bridge, 250, at \$50.....	12,500 00
Number of running feet of bridge, 360, at \$25.....	9,000 00
Cost of Beargrass viaduct, including fill.	10,000 00
Engineering and graduation.....	12,850 00
Top dressing of old grade.....	3,220 00

195,094 80

SUPERSTRUCTURE.	
2054 locust cross ties, at 50c.....	\$1,027
400 perch broken stone at \$1.....	400
10,560 running ft. mud sills at \$5,	528
Laying track, per ton.....	600
10,560 chnirs at 2½c.....	254
3,000 spikes at 6c.....	180
Distributing ties, mud sills and iron, per mile.....	200
Engineering, etc.....	500
	3,699

This amount for 65 miles.....	240,435 00
Grading and bridges.....	195,094 80
Right of way.....	15,000 00
Depots.....	40,009 00
Water stations.....	5,000 00
Turnout tracks.....	10,000 00
Turning table and depot tracks.....	10,000 00
Road furniture.....	100,000 00
Contingencies.....	4,470 20
Iron, say \$52 per ton delivered.....	305,000 00
	\$925,000 00

Cost of Lexington and Frankfort Railroad.

For each mile of superstructure, 88 gross tons of iron, at 56½.....	\$4,950
5 tons cast iron chains, at \$48 per ton.....	240
Freight on same.....	15
1½ tons spikes, at \$120.....	180
2050 locust cross ties, at \$40.....	820
5000 feet mud sills, at 4c.....	209
Hauling materials, etc.....	95
Laying track, etc., per mile.....	700
	7,200

Amount for 29 miles.....	\$208,800
Grading 5½ miles at \$10,000.....	55,000
Depots.....	5,000
Wharf at Frankfort.....	3,200
Right of way.....	5,000
1 new locomotive.....	8,000
Passenger and freights cars.....	5,000
Engineering, etc.....	10,000
	91,200

State stock.....	150,000
	\$450,000

RECEIPTS.

25,000 passengers.....	25,000
15,000 tons freight at \$2.....	30,000
5,000 tons wood, lumber and coal.....	5,000
	60,000

Running expenses per annum.....	25,000
	35,000

To wit: seventy-seven hundredths per cent. on the stock.

Estimated Business of the Louisville and Frankfort Railroad.

20,000 through passengers at \$2 50.....	\$50,000
20,000 way " at 1 00.....	20,000
15,000 tons through freight at 3 00.....	45,000
10,000 tons way " at 1 40.....	15,000
Mails and expresses.....	5,000
40,000 hogs and sheep at 40c.....	16,000
1,000 cattle and horses at \$2.....	2,000
Coal, lumber, wood, etc.....	5,000
	158,000

Running expenses per annum.....	50,000
	108,000

Profits.....	108,000
Profits of Lexington road.....	35,000
" in addition by Junction.....	5,000
	148,000

Being 10 76-100 per cent. on the cost of the two roads, of \$1,375,000. C. N. WARREN.

The people in Washington and Orange Counties, Vt., seem determined to have a road from Montpelier to Bradiord. At a meeting held in the town of Washington, last Wednesday, a Committee of two from each town interested, were appointed to solicit subscriptions and contract for surveys of the routes.

The Railroad Case Decided.

We understand that the Supreme Court of Tennessee has decided in favor of the right of the corporation of Nashville to take stock in the railroad, the case having been carried to that court on an appeal from a similar decision by the Chancellor. We will publish the decision as soon as we can procure a copy, as it will interest the citizens of Murfreesboro', Shelbyville and other towns that have taken stock in the Nashville and Chattanooga railroad. We presume that our corporation will at once issue bonds to the amount of stock subscribed in the road (\$500,000.)

There is nothing now in the way of an early completion of our great work; and in the energy of those who have charge of it we have an assurance that it will be done at the earliest possible moment. —*Nashville Union.*

Electro Magnetism.

Professor Page, who recently obtained from Congress an appropriation of \$20,000 to enable him to continue his experiments in testing, in Washington city, the applicability of the electro magnetic power to machinery, has constructed an engine by which a double cylinder printing press is driven as well as if steam was the moving power. It is thought, however, by those who have witnessed the experiments of Professor Page, that though the power which he has arranged will answer very well in cases where motive power is only wanted in small quantities and on rapid calls, it never can come in competition with steam as a propelling power, for boats, cars, &c. Others look to the experiments now in progress for more satisfactory results. —*Baltimore American.*

The Rolling mill of J. K. Pratt & Son, in Harrisburgh, which has been lying idle for some years, was started on Monday last, and is now turning out very fine boiler plate.

From the Washington Globe.
Gold.

The following communication respecting Gold Mines in Siberia their discovery and administration, from the pen of John L. Hayes, Esq., of the Katahdin Iron Works, Maine, doubtless known to many of our readers for his distinguished attainments in geology, will be read with interest at the present period of excitement on the subject of the gold mines in California:

THE GOLD DEPOSITS OF SIBERIA.

At a time when the recent wonderful discoveries in California are attracting universal attention, a notice of the gold deposits of Siberia, which, from their recent discovery, great richness and distance from the seats of civilization, offer obvious points of comparison with our own El Dorado, would seem to possess unusual interest.

The materials for the notice of the auriferous alluvions of Siberia, which I propose now to give, have been principally compiled from the invaluable repertory of metallurgical knowledge, the *Annales des Mines*, and particularly from an article extracted from the *Gazette du Commerce*, of St. Petersburg, inserted in the volume of the *Annales* for 1843.

For some years previous to 1828, the attention of the Russian Government and private adventurers was devoted to working the auriferous alluvions of the western flanks of the Oural Mountains. The works of this district made rapid progress, and establishments for washing the gold were successively organized among the mountains lying further towards the north. But it was generally considered that there was no hope of finding gold in Siberia, or the vast country on the other side of the Oural Mountains; and the directors of the principal mines of that country gave the sanction of their authority to these views. Notwithstanding this, two enterprising merchants, named Popoff and Rezanoff, determined to explore the slopes of the *contreforts* of the Oural chain, which extend their ramifications into Tobolsk. In 1829 they discovered some indications of auriferous deposits, at the foot of the Altai Mountains, in the government of Tomsk; but the product of the washings was so small as to confirm the idea of the unproductiveness of the sands of Siberia.

In 1830, a distinguished engineer of mines having been made Governor of Tomsk, the auriferous sands of this part of the Empire were methodically explored by officers who had obtained experience in the Oural, and a deposit quite rich in gold was discovered. This discovery entirely changed the ideas which had been entertained respecting the wealth of the soil of Siberia, and encouraged many private adventurers to commence explorations for gold. In 1831, Popoff found in the valleys of the affluents of the Kiy many beds of auriferous sands, but only of moderate richness. In 1831, Rezanoff discovered upon the borders of the Kondoustouyoule a very rich deposit, which is yet celebrated for its productiveness. Under this point the labors of the adventurer were concentrated for several years. In 1836, researches were extended towards the east, in the southern part of Yenisseisk. There, in a country bristling with rocks, and almost inaccessible, a series of exceedingly rich deposits were discovered upon the shores of the Birouzka.

But the treasures of this rich basin were not sufficient for the activity of the explorers, whose numbers constantly increased. In 1839, Rezanoff, with many others, penetrated the northern country, to the vast regions watered by the rivers Upper, Lower and Rocky Toungouska. In 1841, between the last two rivers, they found a great number of beds of auriferous sands, remarkable both for their extent and richness, and which in the immensity of treasures which they contained, surpassed all others before discovered.

We have no detailed account of researches since 1812; but at that period explorers were pushing still further north and east, and the reports which we have of the enormous increase of the products of the auriferous sands of Russia in 1846, show that the explorations were crowned with success.

It is a matter of scientific interest, and it may be a matter of practical importance, as indicating the proper districts for research in California, to notice the nature of the mountains among which the principal auriferous deposits in Siberia have been found.

The middle of Siberia is furrowed by an almost uninterrupted series of imposing chains of mountains, dependent upon those of Central Asia, and designated successively, from east to west, under the name of the Altai, Sayane, Duourie, &c. The important beds of auriferous sands have never been found upon the declivities of the principal chains. Even in the high mountains, which have been explored with the most care, as in the district of the mines of Kolyvan, which abound in copper and silver, no auriferous beds have been found, excepting some which were too poor to be washed with profit. All the beds of auriferous sands important for their extent or richness, as yet discovered in Siberia, have been found upon the declivities of the *contreforts* of the principal ranges, or the lesser hills, which descend in numerous ramifications from the principal ranges. The deposits containing the gold are found scattered between the summits of the different systems of lesser mountains, and in the valleys which are sometimes parallel to the direction of the chain, or transversal to them. They are more often found upon the borders or in the beds of streams of water, or in marshes. Auriferous deposits are never found upon the crests of the lesser heights; and if they are discovered on the declivities, it is always at the foot.

The beds of auriferous sands repose in part upon the underlying rock, sometimes separated from it by a bed of earth composed of gravel and rounded stones, or a fat clay. In the gravel are found fragments of rock of the nature of the formations which compose the surrounding heights—a proof that the sands have not been formed far from the localities where they are now found.

The mountains are composed principally of phyllade, (a foliated or slaty rock,) chloritic and talcose slates, alternating with a calcareous rock without petrifications. These rocks are pierced by veins of quartz and protruded masses of diorite. The presence of the latter, an igneous rock, appears to indicate the points near which the gold may be found. It would occupy too much time to give a detailed enumeration of the different auriferous beds which are worked in Siberia. One of the most celebrated deposits is one called Vosskretnessky, in the basin of the Kiy, owned by the merchants Paladine and Rezanoff—the latter one of the first adventurers.

The bed for several years produced 5 *zlotniks* for 100 *poods*, or one part of gold of seventy-eight thousand of sand. A deposit which contains 1½ *zlotniks* to 100 *poods*, is worked with great profit. This immense bed, whose thickness is at no point less than five English feet, and in many places twenty-seven feet, lies at a depth of over thirty feet under sedimentary beds, in such a manner that the working cannot be carried on under the open sky, and the bed is consequently worked by subterranean galleries. This deposit, in 1842, had produced 330 *poods*, equal to 14,520 pounds Troy, of gold. The bed called *Spusky*, upon the borders of the Great Peikin, which throws into the Oudeira, one of the latest discovered, is yet more remarkable. The yield of this bed for one year has been 9 *zlotniks* for 100 *poods*, or one part of gold in 43,000 of sand; and it has yielded in that time 4,400 pounds Troy of gold. Although there are doubtless beds which, having a larger extent, contain, upon the whole, greater riches, this deposit, by its relative richness, the quantity of metal which it contains, and the facility with which it is worked, is the most productive in Siberia. It belongs to a single individual, a merchant named Miasnikoff, who has, by his good fortune and enterprise, in a short time become one of the wealthiest men in Russia.

It is interesting to see how insignificant the first attempts at working the sands of Siberia were, and how rapid the progress of the works has been. The following in round numbers are the products of several years after the first explorations; one *pood* being equal to 43 7-8 lbs. Troy:

In 1830	5 <i>poods</i> ,	In 1837	132 <i>poods</i>
In 1831	10 "	In 1838	193 "
In 1832	21 "	In 1839	183 "
In 1833	36 "	In 1840	255 "
In 1834	65 "	In 1841	358 "
In 1835	93 "	In 1842	631 "
In 1836	105 "		

In the year 1812 the auriferous deposits of the Oural Mountains produced 310 *poods*. The whole product in Russia, in Siberia, and the Ourals, for that year, was 40,557 lbs. Troy. The production, since that period, increased in nearly the same ratio. Leplay, professor of metallurgy, at the school of mines in Paris, estimates, from reliable sources, that the value of gold produced in Russia, from the auriferous sands, in 1846, would be equal to ninety millions of francs, which would make the weight of the metal equal to 78,000 pounds Troy, (thirty-nine tons.) He states that at that time many of the alluvians, worked with profit, contained only one part of gold in two millions of earthly materials worked. Residues, worked at a former period, have been re-worked, which contained only one part in four millions. Some idea may be formed of the labor required to produce this immense mass of treasure, when it is understood that the workings of that single year would cause the extraction, manipulation, and transportation of over fifty million tons of materials, which is more than the total weight of all the materials extracted and elaborated by the collieries and iron establishments in Great Britain. The increase of the gold workings in Siberia has demanded so much iron for tools, steam engines, &c., as to have had an important effect upon the exportation of Russian iron. More extraordinary single masses of gold have been found in the Oural Mountains than in Siberia. The largest mass (pepite) of gold in the world was discovered at Minsk in 1812. It was found in a bed of auriferous sands, at a depth of about twelve feet from the surface of the soil, under the foundations of the establishment for washing. Its weight was 36,020 kilograms—over ninety-six lbs. Troy. Near this, forty-two masses were found, weighing from one to seven lbs. according to Humboldt. The largest pepit of gold before known was found in Anson County, North Carolina, the weight was about fifty-eight pounds.

Before concluding this notice, I must glance at the administrative dispositions which are made for watching and regulating the labors of the adventurers in the gold districts of Siberia.

An individual who wishes to explore the mountains of Siberia must have a licence to that effect from the ministry of finances. After he has found a deposit—and it may be remarked that many search in vain and lose all the expenses of their explorations—a tract of land called a parcel is con-

ceded to him by the Government. It is provided that a parcel shall not exceed certain limits, and that the same individual shall not possess two contiguous parcels. The duty claimed by the Government is from 15 to 25 per cent., according to the richness of the deposit, and the explorers are bound to pay four rubles for one pound of gold extracted, for the expense of a surveillance of the mines. Officers are appointed to lay out the parcels, and to see that all the gold obtained is registered in books provided for that purpose. The gold is first sent to the administration of the mines of Altai. After having been first assayed there, it is sent under charge of officers to the mint of St. Petersburg. There, a definite assay is made, which fixes the first value of the gold, and the duty which the Government shall retain. This, with the expense of coinage, is deducted, and the remainder sent to the proprietor in pieces of five gold rubles.

The washing of the gold is effected upon inclined planes of different constructions, which are set in movement by horses, hydraulic wheels, or steam power. The machines and processes have been carried to a high degree of perfection, as may be seen by the small per centage of gold in sands which are now worked with profit. The laborers belong principally to the class of convicts; but as the country is traversed by detachments of Cossacks, and all the laborers are under the surveillance of officers of the Government, perfect order and system prevail in the establishments.

The importance of this enterprise to Russia is incalculable. Developing national industry in a desolate country which would otherwise have been almost unknown and wholly unimproved, and creating an immense capital, which, taking another direction, is enjoyed and improved throughout the whole Empire, perpetually supplying a currency, and filling the treasury of the Empire without impoverishing its subjects, it has been to Russia one of the greatest sources of its national prosperity, and has tendered materially to the permanence of the most powerful Empire on the continent of Europe, while so many other governments have tottered and fallen around it.

The view of this great enterprise which we have now taken is peculiarly interesting to us, when a similar and almost parallel enterprise is presented to us on the shores of the Pacific. It shows us, if Siberia can be any example, that the sands of California are not to be exhausted in a few months; but that a field for systematic and well organized labor is there opened, whose products may be doubled for years to come. It has been said that he who finds a mine finds a workshop; the history of the Siberian mines shows that the richest deposits of gold are no exception to this rule, which should not be forgotten by the Californian adventurer. It is singular that such wonderful natural resources should, about the same time, be opened to two people of different races, and occupying the extremes of geographical position and political relations.—The influence of our race and institutions will be seen in the improvement which we shall make of these resources.

Reviews of New Books.

A RUDIMENTARY TREATISE ON THE STEAM-ENGINE for the use of Beginners. By Dr. Lardner. London: Weale. 1848. Pp. 130. Woodcuts.

It is long since we have numbered any of Dr. Lardner's literary productions in our review catalogue, and it is pleasant now to meet him as a laborer in the cause of the dissemination of simplified practical knowledge, through the pages of Mr. Weale's admirable "rudimentary treatises." The present treatise stands No. 11 of the second series, which backs the elementary instructions of the first, with a detail of their actual application by the operative. We are not sure though, that the learned author has made himself sufficiently acquainted with the modern workshop practice for the production of a book like the present, for we find occasional raw matter, which certainly does not relate to English mechanism of a late date. In the first page, where he commences to show "how steam produces mechanical action," he says, "the ends of the cylinder are understood to be closely stopped by lids. One of these lids is cast with the cylinder, and forms, in fact, a part of it; the other is attached to

it by screws and nuts, and fitted so exactly that steam cannot escape at the joints." How far the second sentence is correct, our readers will easily judge for themselves.

An example from page 19, *et seq.*, shows the author's acquisitions in a better light:—

"HOW STEAM PRODUCES MECHANICAL FORCE BY ITS EXPANSION."

"1. We have seen how a piston is urged from one end to another of a cylinder with a definite force by allowing steam to flow in upon it, and that increased efficacy is given to this by creating a vacuum on the side towards which the piston moves. The steam in this case is supposed to flow from the boiler, and to press the piston forward with a certain uniform force. The piston advances because a fresh portion of steam which enters the cylinder requires more room, to give it which the motion of the piston is necessary.

"When as much steam has entered in this manner as is sufficient to fill the cylinder, then the piston will be driven to the extreme end of it. Now, it is well to observe that in the production of this effect, no quality proper to steam, or which distinguishes steam from any other fluid, is concerned.

"If a liquid (water for example) was made to flow into the cylinder with the same pressure and in the same quantity, it would produce precisely the same effect; in fact, the steam acts thus not because it is an elastic fluid, but because it is a fluid, and is urged from the boiler with a certain force.

"2. I now come to notice, however, a mode of action in which steam performs what an inelastic fluid could not perform; one, in short, in which it produces a mechanical effect in virtue of that property which steam enjoys in common with air and other gaseous fluids, and in which inelastic fluids, such as water, do not participate.

"3. Let us suppose that the steam flowing into the cylinder acts upon the piston with a certain definite force, as one ton, and continues so to act as long as it enters the cylinder.

"4. Now, let us imagine that when the piston has been thus pushed to the middle of the cylinder, the aperture at which the steam enters is suddenly closed, so as to prevent any fresh supply. The piston will then be no longer pushed forward by any increased quantity of steam coming from the boiler. It will nevertheless be pressed by the elastic force of the steam, just as it would be by the elastic force of air under the same circumstances; it will still be pressed on by a force of one ton, supposing that no adequate resistance obstructs its motion. It will not therefore come to rest, but will continue to advance. As it advances, the steam, expanding into a larger space, will acquire a proportionately diminishing elastic force, and will press on the piston with a force less than a ton, in exactly the same proportion as the space occupied by the steam is greater than half the cylinder. Ultimately, when the piston arrives at the end of the cylinder, the steam, which originally filled half the cylinder, will fill the whole cylinder; and the pressure upon the piston, which was originally a ton, will then be half a ton.

"5. It appears evident then, that while the piston is thus moved through the latter half of the cylinder, it is urged by a continually decreasing force, which begins with a ton, and ends with half a ton.

"6. If we could calculate the average amount of this moving force, we could at once declare the mechanical effect which it produced through the latter half of the cylinder in virtue of the expansive power of the steam.

"7. At first view it might appear that the average pressure must be a mean between the original pressure of a ton and the final pressure of half a ton, and that such a mean would therefore be three quarters of a ton. But such a conclusion would be wrong.

"8. The method of calculating the exact average of force decreasing in the manner we have described, requires principles of the higher mathematics, which could not be introduced properly here. By the application of these principles, it appears that the exact average of the varying pressures, in the case we have described, would be 1545 lbs.

"9. The mechanical effect, therefore, obtained in this way from the expansive action of the steam, would be equal to 1545 lbs. driven through a space equal to half the length of the cylinder. It appears, then, that nearly 75 per cent. has been added to the

original mechanical efficacy of the steam by this experiment.

"10. It may be asked whether there be any limit to the application of this principle. It is known that other fluids, having the same natural properties as steam, are capable of expansion indefinitely, and it might at first be imagined that there is no limit to the augmentation of the mechanical force which might thus be obtained from steam; but practical considerations show that there are not only limits, but comparatively narrow ones to its application.

"11. It will be observed that the piston, which is urged by the force of expansive steam, is acted upon by a continually diminishing power of impulsion. When the pressure of the steam becomes by expansion less than the load which such piston drives through the intervention of machinery, including the natural resistance of the machinery itself, then it clear that the moving power will cease to be efficacious, and that the piston must come to rest.

"12. The inertia of the machinery may continue the motion somewhat longer than the moment at which an equilibrium takes place between the resistance of the load and the pressure of the piston, but this effect must soon expire.

"13. The expedient by which the expansive principle may be most conveniently extended is to use, in the commencement, steam of high pressure, and great density; such steam may allow of considerable expansion before it loses so much of its force as to be reduced to an equilibrium with the resistance to the piston.

"14. In all cases the expansive principles evidently involves a continual variation in the impelling power of the piston.

"Now it seldom happens that there is any similar variation in the resistance which the piston is required to overcome; and in that case an irregularity of action would ensue. In the commencement, the energy of the impelling force being greater than the resistance, an accelerated motion would be produced, and towards the end, the impelling force becoming less than the resistance, a retarded motion would be the effect. A great variety of contrivances have been suggested by mechanical inventors to equalise this varying action.

"15. The most common and the most beautiful of which is the *fly-wheel*. This is a heavy wheel of metal, well centred, and turning upon its axle with but little friction, so that the force necessary to keep it in uniform motion is inconsiderable. The varying action of the piston is transmitted to this wheel. When the impulsive force is greater than the resistance of the load, the surplus is imparted to the wheel, to which it gives a slight increase of speed. Owing to the great mass of matter in the wheel, an increase of speed which is scarcely sensible absorbs an immense amount of moving force. When the impulsion of the piston by the expansion of the steam becomes less than the resistance, then the momentum of the wheel acts upon the load, and that portion of surplus force which was previously imparted to it is given back, and the wheel assists, as it were, the piston in moving the load when the latter becomes enfeebled by the extreme expansion of the steam.

"16. The fly-wheel is thus, as it were, a magazine of force, which gives and takes according to the exigencies of the machinery. When the moving force is in excess, the fly-wheel absorbs the surplus; when the moving force is deficient, the fly wheel gives back what it absorbed.

"17. Cases occur, however, in the arts, in which the resistance to be overcome by the piston is of a gradually decreasing nature. In such cases, the expansive action of the steam being also gradually decreasing, may be kept in equilibrium with the work without the intervention of the equalising action of the fly. Thus, if the piston work a pump by which a column of water is raised, which column flows off at the top, the length of the column, and therefore its weight, is greatest when the buckets of the pump begin to ascend, and least when they arrive at the summit of their play. The weight in the buckets is in this case of continually decreasing amount, like the decreasing force of expanding steam.

"18. But in most cases some equalising contrivance is necessary where the expansive principle is extensively used, and where anything approaching to uniform action is necessary.

"19. The expansive action of steam is applied in steam-engines in various ways, but by far the most usual is that which we have described in the above illustration, by cutting off the supply of steam at some point before the completion of the stroke. In some cases it is cut off at half-stroke, in some at one-third, and in some at much smaller fractions of the centre stroke."

A sectional elevation of a 60-horse condensing engine, made by Mr. Fairbairn, does duty as a frontispiece, and several excellent cuts of water-gauges, mercurial gauges, and the details of a low-pressure waggon-boiler, are given in the last part of the book. The illustration of the last mentioned article might have been well dispensed with to make way for information upon boilers as they are now constructed.

In so far as the author has kept within the bounds which he assigned to himself, in his earlier works on the same subject, we can add our testimony to the elegant simplicity of his composition; but whenever he oversteps this, he only exhibits the extreme difference which exists between modern and antique engineering.—*Glasgow Practical Mechanics' Jour.*

Railroad to San Francisco.

REMARKS BY P. P. F. DEGRAND,

At the Complimentary Dinner given to Wm. Parker, March 13, 1849.

I take a different view from that which has been presented by the distinguished speakers, who have preceded me. So far from lamenting the departure of our valued friend, I rejoice in his promotion, to a higher salary and especially to a more enlarged sphere of action;—I glory in it, and I trust that many more of our meritorious engineers and superintendents will be called upon from our New England schools to lucrative places in other states, to carry into their railroads the practical talent and economy which can alone secure good dividends.

Good dividends, founded on actual net profits, depend much on the administration of a railroad. If well administered, about one half of the gross income goes for expenses. If administered without proper system, intelligence and economy, the gross revenue is diminished, the expense is increased and the net income is very apt to be "null and void!"

Good dividends are essential to the extension of the system; because these dividends attract naturally the loose capital of widows and orphans and a large proportion of the surplus earnings of the whole community. The New England railroads have thereby become a grand reservoir of Savings Banks on a grand and profitable scale. Bad as the year 1848 has been, as to business generally, the vast amount invested in the completed railroads in New England has in that year, averaged more than 7 per cent. net dividend. What other line of business can boast of a like result, in the disastrous year 1848? and let it not be forgotten that this result is mainly due to the intelligence, economy and thrift of New England administration, in making good railroads and carrying them on in the best way.

I rejoice then, that our friend is taken from one of our successful railroads, to carry thrift, economy, and consequent profit to the great line of roads from Baltimore to the Ohio. The Baltimore and Ohio railroad belongs to our fellow citizens and to our common country—their thrift is our thrift; as is the thrift of every portion of our vast empire. I shall rejoice to meet this line at the converging point, when it is prolonged to St. Louis in Missouri. I shall rejoice to meet it, at St. Louis by our Boston lines—the Boston and Buffalo railroad and the Boston and Ogdensburg railroad, also prolonged to St. Louis—where they all will inevitably be, at no distant day—and I glory, in the anticipation of our onward march, in tripple alliance, on the Grand National Central Railroad, from St. Louis to San Francisco—in company with our friend T. H. Benton, to pay a visit to his daughter.

Mr. President—This railroad to San Francisco is a great project, worthy of a great people. It is a great project and should be carried to completion, with a celerity worthy of ourselves—and this can be done by the adoption of the plan I propose. Of the efficiency of this plan, none are more able to judge than the intelligent men now around me.

The distinguishing feature of this plan is, that one single act of legislation shall suffice to secure, prac-

tically, mathematically and irrevocably, its completion in the shortest time allowed by its physical obstacles. This will be secured by confiding the care of it to a company into which individuals are to pay \$2,000,000 real money, and to which the Government are to lend \$98,000,000 of U. S. 6 per cent. stock. Tangible means thus credited, will enable us to finish the road, within the present term of Gen. Taylor's Presidency.

Once confided to a private company, no future freak of legislation can arrest or impede its march, as could be done, at every session of Congress, if it were merely a public work. We, of New England, who, in the last year, have opened 500 miles of railroads amidst all the difficulties of the money market—will certainly be capable (if tangible means are thus confided to us) of constructing and carrying into operation the 1600 miles, from St. Louis to San Francisco, before March 4th, 1853; for there are, on that line, no obstacles greater than we have, on more than one occasion, met and conquered on the rugged, rocky surface of New England. Neither is it to be feared that the snows of the West will arrest our trains while we are able, in the mountains of Berkshire, to pass without interruption through drifts of snow higher than the top of the chimney of our locomotives.

If the railroad to San Francisco is undertaken as a public work, we are warned by the fate of our system of permanent fortifications, that the great resurrection gun may fire before its completion. Our system of permanent fortifications was devised by Gen. Bernard, first appointed to attend to it, in 1816. This system met with the approbation of the Executive of Congress, and of the nation, and deservedly so; for it was the production of a master-mind; the production of the intimate friend and companion and pupil of the highly gifted military genius of the age; and it was sustained by the reasoning of the master-mind, carrying conviction of its necessity and of its efficiency; 33 years have already elapsed since, by universal assent, the system was thus confided to the man who commanded universal approbation; and where is the system? where was it when we were threatened with war with two of the most formidable powers in the world?—France and England—I ask where was it then? and where is it now? Alas! it is as yet, at its threshold—incomplete—inefficient—and likely to be so for fifty years to come!

The extra expense (over and beyond the cost by railroad) in money and in time of carrying from the U. S. to California 150,000 persons and of bringing back 50,000 persons a year, is upwards of \$68,000,000 per annum. The railroad, from St. Louis to San Francisco will cost \$100,000,000, and of course the hastening its completion, even two years, will more than cover the whole expense of its construction and equipment.

And a delay of 50 years in carrying this railroad to completion, will (by this mere difference in the cost of transportation) waste for the nation \$3,400,000,000; a sum a hundred times as large as all the specie now in the United States! a sum, which the most sanguine man dare not predict, as the gathering of the California mines, during a whole century to come!

The existence of a railroad will place California within the reach of our fellow citizens generally, at 2 cents per mile, for 1st class cars, the fare (for 3000 miles, from Boston to San Francisco) will be only \$60, making (with the food and time for 5 days) a total of only \$80. It will be only half that sum, for 2d class cars. At 25 miles per hour, the passage from Boston to San Francisco, will be made in 5 days; whereas now it averages 100 days, taking the various routes, viz: round Cape Horn; through the Straits of Magellan; over the Isthmus of Darien; and over land.

The loss of time and the great sum of money necessary now to make a trip to California, are entirely beyond the reach of the generality of our enterprising young men; because \$500 worth of time and money must be wasted by the present mode of passage. Even for those who have at hand the needful sum, it is a great hardship to be obliged thus to waste it, instead of keeping it as a moleus of their future fortune. Very few of our richest men in Boston began their career with a sum in hand sufficient to carry them to California, at the present time.

Another distinguishing feature of my plan is that all the materials employed in constructing and equipping the railroad to San Francisco, shall be of domestic origin; thus creating, irrevocably, by a single act of legislation, \$100,000,000 worth of American labor, in which, practically, every state in the Union will participate.

A private company will construct and equip the railroad much more economically than the government, and make a saving of at least one third in the expenditure.

The existence of this railroad will defend California and Oregon, and will avert Indian wars, North and South of its line. In the transportation of seamen, of troops, of munitions of war and of the Mail, a great saving will be made in the public Treasury.

If it be said that the plan proposed by me of a private company (furnishing \$2,000,000 real capital, and aided by the loan of U. S. stock to the amount of \$98,000,000) will not work well, we need only refer to the well known favorable result of the Boston and Albany railroad, in which 3-4ths of the capital was furnished by the stocks of the state of Massachusetts and of the city of Albany. A well conducted railroad has but one thing to do, viz: to serve the public well, as it thereby promotes its own interest, as well as its own self-satisfaction.

The plan which I propose will finish the road in 4 years. Should a delay of 50 years arise from pursuing some other plan, let it be remembered that our population is marked out by our past experience as destined during those 50 years to increase from its present number of 22 millions, to the vast number of 88 millions; and in these 50 years, two generations will have passed to the grave; and let it also be remembered, that the loss of interest, on the cost of construction, during 50 years, will be much more than four-fold its cost.

The plan which I propose will finish the road in 4 years, and thenceforth every mother in the old U. S. will be enabled to hear from her son, if in California, within 7 days by regular mail, and almost instantaneously by telegraph. Every mother then, and every sister, and every one of the fair sisterhood, whose friend may have gone to that distant land, will cherish a plan, which will thus give her news, and give her the chance of a prompt return, or of a flying visit from her relative or friend. Let me then commend the plan to their fostering care. This care will be a sure harbinger of success—as success, in the adoption of the plan, is to be founded on public sentiment; which from their gentle hands, can receive, imperceptibly, the desired impress.

If the gift by the U. S. of 10 miles of land, on the north side of the railroad and of depot grounds, and of materials from the public lands, should prove advantageous to the company, it will (without cost to the public) reward their enterprise, industry and indefatigable attention; and it will also lead to the establishment of other railroads in the great west, thereby advancing very much the value of our public lands, as well as the welfare of the republic.

The mere existence of the railroad to San Francisco will add to the value of our public lands an amount more than covering its whole cost. By creating this additional value, at an early day, it will add still more to the means of wealth of the whole country.

The existence of this railroad will render our union with our fellow citizens in California and in Oregon indissoluble. It will afford the means of transmitting government orders; general news and private intelligence by telegraph, and of transmitting the mail in the only way worthy of the age we live in. It will furnish a great market for the productions of the south, and of the Mississippi valley, and for the manufactures, fisheries and imports of the Atlantic states.

St. Louis is marked out as the proper starting point, by the feasibility of the route starting thence, and by its being a central place, already accessible by steam to every portion of the United States, north, south and east of it.

Common sense then dictates the adoption, at the earliest day, of some plan which like the one I propose, shall secure, at once, practically, mathematically and irrevocably, the completion of this railroad, in the shortest possible time. I rejoice that we shall have with us the Maryland Pioneer Line.

Near the seat of government, their aid will be of great value to illumine the path which is to lead to National honor, National convenience, national interest and National glory.

Let us invoke the friends of internal improvements throughout the Union; let us invoke the public press—that mighty engine, ever ready to move, for great national good. Let us resolve that this great national work shall be carried to completion in a shorter time than any work of equal magnitude was ever constructed by any other nation! And in conclusion let us say:—New England tact and talent, in building and in administering railroads—may this tact and talent spread its innumerable benefits throughout our vast empire!

AMERICAN RAILROAD JOURNAL.

Saturday, April 7, 1849.

Patent India Rubber Oil.

Of all the substances of modern application, that of India rubber seems to be one of the most extraordinary as well as the most useful. We have had occasion to speak of it before in the Journal. One of its most recent, and probably one of its most useful applications has recently been made in using it as an oil, or rather in so combining it with oil, that it holds it in such a condition as to render it capable of increased fluidity, at the same time that it has a sort of toughness, or a fibrous quality like glue. This composition is called "Devlan's Patent Oil." We beg to call attention to the advertisements of Messrs. Allen & Needles, of Philadelphia, and Kennedy & Gelston, of this city, in today's paper, agents for the sale of the above article. We have seen it tested, and have been shown several certificates from responsible parties, tending to prove that besides having all the useful qualities of the best of sperm oil for bearings of machinery, it has still greater lubricating qualities, and not so subject to evaporation or waste. If so, it will introduce an important saving in the expense of working machinery. To railroad companies and machine shops, it is a matter of great importance, and we have no doubt they will all be anxious to test its qualities, and avail themselves of its use if it satisfies the conditions required.

Value of Railroads in Indiana.

The only railroad in actual operation in Indiana is the Madison and Indianapolis railroad, extending from Madison, on the Ohio river, 89 miles below Cincinnati, to the capital of the State, a distance of 86 miles. The par value of the stock of this road is \$50 per share. A public sale of some shares held by the State, was made a short time since by the auditor of the State, for \$64 41 per share, or 29 per cent. advance. It is stated by the Pittsburgh Gazette that the clear net earnings of the road in 1848, were fifteen per cent. on the capital employed.

Railroads in the Interior.

CONNECTICUT AND PASSUMPSIC RIVER RAILROAD.

The Connecticut and Passumpsic River Railroad, in Vermont, was opened in the fall of 1848, from the mouth of the White River, in the town of Hartford, to Well's River, in the town of Newbury, a distance of 40 miles, following the western bank of the Connecticut. At the mouth of White River, it connects with the Northern railroad, furnishing a connected line of railway from Boston, via Concord and Lowell, of 185 miles, to upper Vermont, and New Hampshire. It also connects at the same point with the Central railroad, extending west to Northfield, and southerly by way of Windsor, connecting with the Cheshire and Fitchburgh railroads, affording a communication with Boston in a distance of 197 miles.

We have before us the Annual Report of the Directors of this company, from which we gather the following interesting facts as to its curves and grades

Table of Curves and Straight Line.

27.14 miles of straight line.	
.15	" curved on a radius of 8595 feet.
1.53	" " " 5730 "
.27	" " " 3820 "
4.68	" " " 2665 "
.19	" " " 2292 "
3.88	" " " 1910 "
1.49	" " " 1432 1/2 "
.25	" " " 1146 "

39.58

Table of Grades.

14.64 miles of level.	
1.24	" on an inclination of 5.28 ft. per mile.
.59	" " " 7.92 "
3.49	" " " 10.56 "
5.16	" " " 13.20 "
4.81	" " " 15.84 "
5.04	" " " 21.12 "
1.70	" " " 23.76 "
2.91	" " " 26.40 "

39.58

We have been furnished too, at our request, with a statement of the weekly earnings of the road since it has been under way:

Week ending	Passengers.	Freight.	Total.
1848—Dec. 1 & 2....	254 94	222 57	477 51
9.....	764 50	950 00	1,714 50
16.....	764 50	1,040 66	1,805 16
23.....	683 42	922 69	1,606 11
30.....	579 00	884 85	1,463 85
1849—Jan. 6.....	602 50	899 40	1,501 90
13.....	661 51	1,242 18	1,903 69
20.....	611 34	1,276 81	1,888 15
29.....	615 68	1,323 79	1,939 47
Feb. 3.....	557 88	967 06	1,524 94
10.....	553 83	1,217 50	1,770 98
17.....	592 81	1,338 81	1,931 67
24.....	785 31	1,396 91	2,082 22
March 3.....	817 22	1,157 41	1,974 63
10.....	723 41	965 79	1,689 20
17.....	826 99	953 37	1,810 36
24.....	903 14	763 82	1,666 96

The cheap working of this line of road, having such favorable curves and grades, will certainly give it an aggregate of net earnings beyond most other lines in the country. It is believed that the gross income will be equal at least to \$100,000 for the first year.

It is expected that the road will be opened as far as St. Johnsbury, 20 miles north of its present terminus in the fall of 1850.

The distance from Brattleboro' to Bellows Falls, is unquestionably the best unoccupied line for a railroad in New England, as far as the assurance of large dividends are regarded. It will give a continuous line of over 300 miles from New York, more favorable for business, and more attractive to the pleasure travel than almost any route in the country.

Railroads in Canada.

It would be well if the Government of Canada, which is at last awake, would look now and then at its next door. It may be invidious; we cannot help it—it is certainly mortifying; but the mortification we must endure—to be ever and anon contrasting the senile pace of the old country's Government with the springy step of brother Jonathan. A writer well acquainted with the American character warns us that those who would enter into competition with Jonathan "must be up early." The American has been long up and doing; and if our Colonial Government will not submerge its lazy spirit to an activity in some degree commensurate with that of its rival, by the very force of natural causes those magnificent territories must fall into the hands of those who will place them in their proper rank in the scale of nations.

The private enterprise of the United States has already spanned the Isthmus of Panama with several projected railroads. In Canada capital is wanting. Even the *puvica fides* of Pennsylvania repudiators is not so fatal to enterprise as the dead inertia with which our Colonial administration hangs upon its Provinces. A portion of the contemporary press of the Colony looks for the regenerative ardour from the repeal of the Navigation Laws, and the extension of commercial freedom. Let us hope, at least, that the Government is at length fully bent on developing the resource of those provinces, building them by that one recognized bond of country, and letting in upon them all the benefits which ought to result from their connection with this powerful country, which has but one great fault—injustices and neglect towards its transmarine dependencies.—*The Emigrant, London, Feb. 17.*

Extraordinary Locomotive Speed.

In a late English paper we have an account of a first class engine on the York and Newcastle railway, which took the express train from York to Darlington, a distance of 45 miles in 40 minutes! It was computed, further, that when new rails were placed on the road, as was soon to be done, the same engine would perform the same service in 30 minutes, which would be at the surprising rate of 90 miles an hour.

Engine Taghconic.

The following is the description of the engine 'Taghconic,' referred to in our article on the Explosion of Locomotive Engines. Though not essential to a proper understanding of the question we think it worth preserving for future reference:

Description of the Engine.

This was one of the large class engines, built by the Boston and Providence road, at their shop, and was put upon the road in January, 1848; so that, consequently, it had been at work about one year at the time of the accident.

The boiler was one of the usual form, consisting of a fire box and cylindrical boiler; the heat being conveyed through the boiler into the smoke arch by a number of tubes.

The following are the principal dimensions of the boiler:

Diameter of the waist or cylinder, outside 40 inches.

Number of tubes 135; made of copper brazed.

Size of the tubes 1 9-16 inches inside diameter; 1 12-16 inches outside diameter.

The space between the tubes and the lower part of the boiler, 0 150 of a foot.

Whole height of the upper row of tubes above the bottom of the boiler, 1 515 feet.

The size of the furnace inside, 3.05 feet in length—the water spaces between the two plates making the fire box 2 inches, or 0 18 foot.

Length of tubes, 10 feet.

The height of the crown of the fire box, above the level of the tubes, 0 27 of a foot to the under side of the bridge bars, which were 0 19 of a foot deep—wrought iron.

The thickness of the iron plates, constituting the shell of the boiler, was for the part forming the casing of the furnace, 3-8 of an inch thick; for the cylindrical part, 5-16 of an inch thick—made of Pennsylvania iron—Lukin's brand.

The boiler was well stayed between the shells of the furnace; and longitudinally between the heads of the boiler, there were six long stay bolts, and also four shorter ones, which were attached to the head of the boiler at one end, and the other bolted to the top plate of the arch.

The boiler was provided with two safety valves of the capacity of 2 1-2 inches diameter, loaded to a pressure of about 90 pounds to the square inch. The gauge cocks were on the front side of the furnace, a little to the right hand of the furnace door.

The outside of the boiler was covered by a casing of pine wood, which was also covered with a casing of sheet iron.

The committee of engine builders, who examined the engine, report, February 7th, that "the construction of the boiler was substantially that which is common to other locomotive boilers, and its materi-

al, workmanship and proportions were all sufficiently good."

A steam brake was attached to the top of the boiler, which was carried away, but there is no probability that this had anything to do with the explosion, unless the mode of fastening it to the boiler may have weakened the plate, which there is no reason for believing to have been the case. It is mentioned here, only that all the circumstances may be recorded for future reference.

We copy the following article from the Augusta Chronicle. The Augusta Company have not yet been a year in operation and we deem the gratifying demonstration which it has afforded to the practical utility of manufacturing enterprises at the south, to be worth all the arguments that have ever been written or spoken against the tariff laws:

The Manufacture of Cotton Goods.—We chronicled a few days since that the Augusta Manufacturing Company had increased its capital from \$160,000 to \$200,000, by the unanimous vote of the stockholders. Having many applications for their stock and being allowed by their charter to increase their capital to \$500,000, the Board have recently decided to open new books, and receive subscriptions to the amount of \$160,000, with a view to build a new mill by the side of the one now in operation.

The present mill is turning out 32,000 yards of cloth a week, which will soon be increased 50,000. The demand for these goods greatly exceeds the supply. Each loom gives a product of 40 yards a day. There is a full supply of worthy females, and of males who seek employment at this important mechanical pursuit. Their wages are good and satisfactory. All classes are beginning to appreciate the wisdom of bringing the loom and the spindle to the cotton, the bread and the meat; all see the folly of being at the useless and the enormous expense of carrying Georgia cotton, breadstuffs and provisions to Old or New England, to be wrought into common goods, for Georgia consumption.

Georgians can do their own carding, spinning and weaving. They will soon make their own shoes and boots, saddles and harness, and tan more leather than they wear out. Nor will we stop at the point which will barely meet the home demand for manufactured articles. Already a gentleman of wealth from another state, who made his money in a cotton mill, is taking preliminary steps to erect one in this city, with a view to spin yarn for export. As there is no lack of water power, no want of laborers and raw material, we may reasonably expect that capitalists will not overlook so promising an opportunity for making money. The processes for picking, carding, spinning and weaving our great staple are among the most simple in the whole range of the mechanical arts. Falling water propels all the machinery; children tend it. Whatever capital, skill and industry can do in the way of manufactures, the citizens of Augusta are bound to accomplish.

P. S. DEVLAN & CO'S Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificate of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON,

5 1/2 Pine street, New York, Sole Agents for the New England States and State of New York. 1y14

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Aandrosggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street,
New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturer's name, and inspected before shipment at the works in Wales. For sale by
DAVIS, BROOKS & CO.,
68 Broad street.
March 18, 1849. 2m.11

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Junlata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN,
41 Broad street.
March 29, 1849. 3m.13

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ¾ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartshrorie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.,
No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, &c.
Sandusky City, Ohio, March 15, 1849. 2m.13

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent,
Albany Iron and Nail Works.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section 2. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 28 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections between those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed from the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 28th of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the contract. The most energetic prosecution of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
Baltimore, March 14, 1849 5t.12



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDGEEST,
Secretary U. C. M. C.

Hamilton, 24th February, 1849. 12f

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and aquare, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.
All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1849.

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

**Norwich Car Factory,
NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

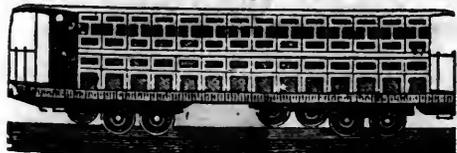
General Agent,

Norwich, Conn.,

Will meet with immediate attention.

178

**CAR MANUFACTORY,
CINCINNATI, OHIO.**



HECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,

SPRINGFIELD, MASS.

1748

**LAP — WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steam-boats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,

Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J.

The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,
Nelson J. Beach,
Jacob Hinds,
Willard Smith, Esq.,

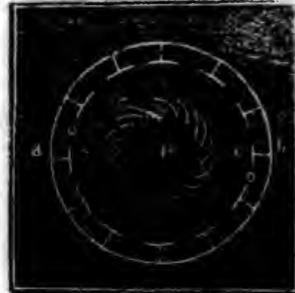
Messrs. Stone & Harris,
Mr. Wm. Howe,

Mr. S. Whipple,

January 1, 1849.

Canal Commissioners of the State of New York.
Engineer of the Bridges for the Albany Basin.
Railroad Bridge Builders, Springfield, Mass.
Engineer & Bridge Builder, Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent, Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

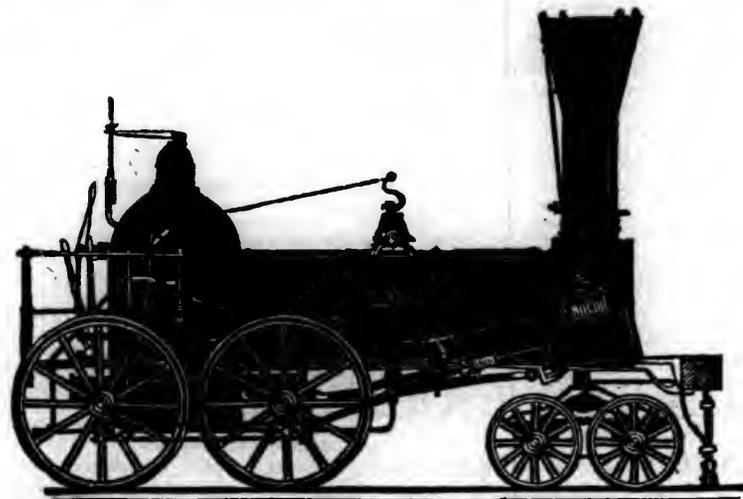
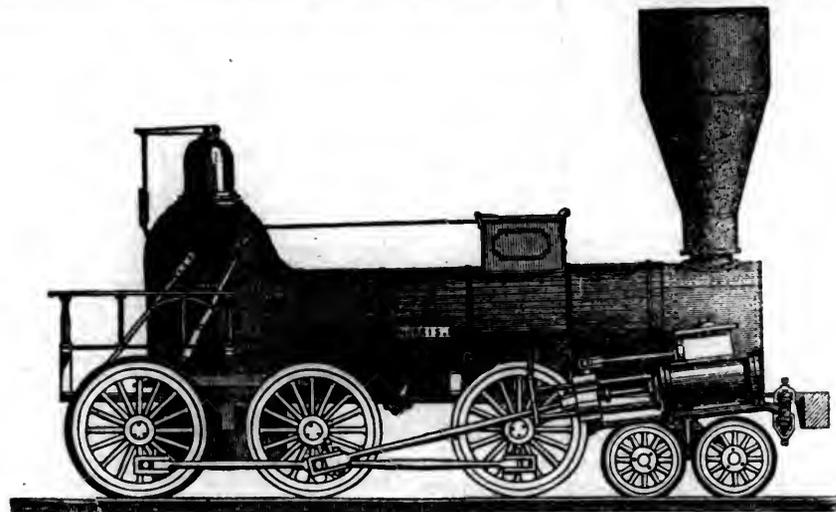
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

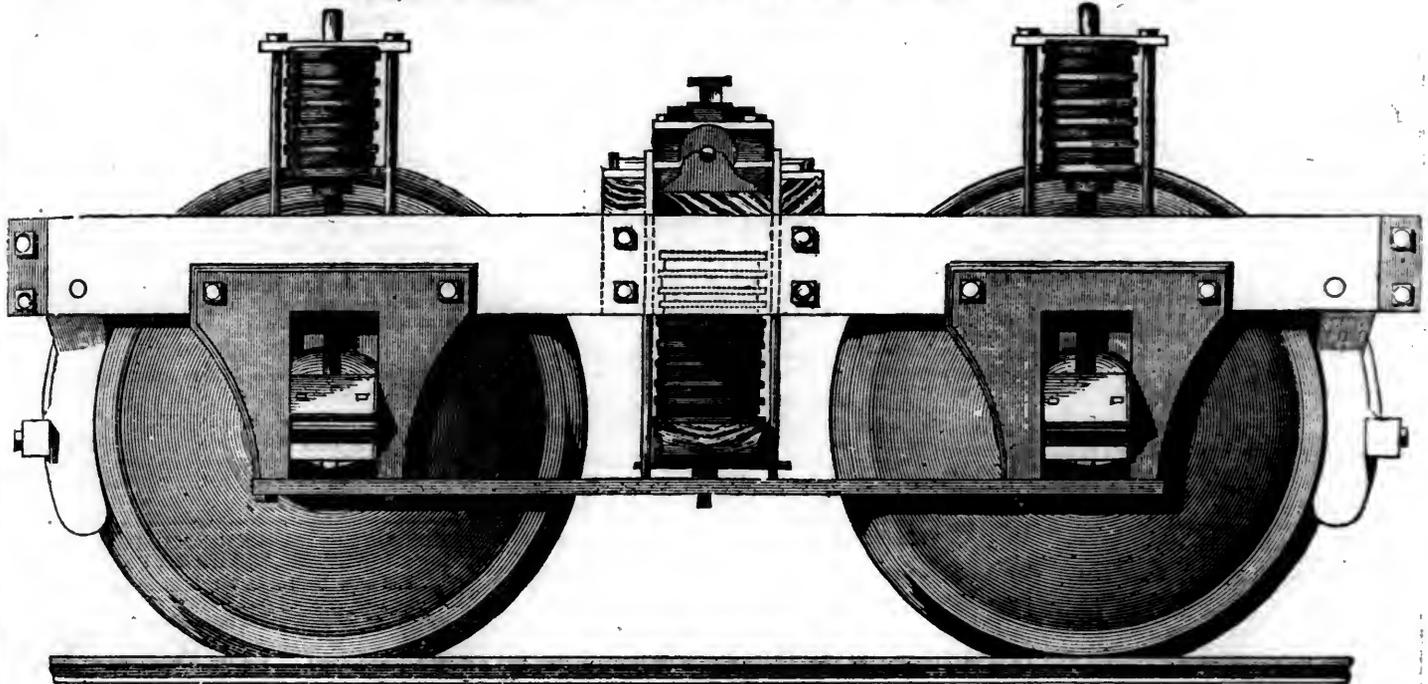
Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.— They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.— During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of STANCLIFFE & DRAPER.



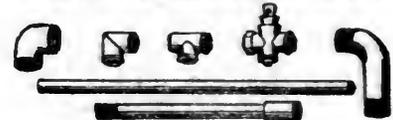
No 23, Pear street, below Walnut, y10 near Third, Philadelphia.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

MASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1/2 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLOWS.



Manufactured and for sale by MORRIS, TASKER & MORRIS. Warehouse S. E. Corner of Third & Walnut Street. PHILADELPHIA.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.— The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt, & Co., New York; E. Pratt & Brother, Baltimore, Md.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UN-dersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UN-dersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

NEW PATENT CAR WHEELS.—THE SUB-scribers are now manufacturing Metallic Plate Wheels of their invention, which are pronounced by those who have used them, a superior article, and the demand for them has met the most sanguine anticipations of the inventors. Being made of a superior quality of Charcoal Iron, they are warranted equal to any manufactured.

We would refer Railroad Companies and others to the following roads that have them in use. Hartford and New Haven, Connecticut River, Housatonic, Harlem, Farmington, and Stonington Railroads.

SIZER & CO.,
Springfield, Mass.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, OCTOBER 2d, the

 Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm. Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 3½ pm. Leave Providence at 8½, a.m., and 3½, pm.

Dedham Trains—Leave Boston at 9 am., 12 m., 3, 6, and 10½ pm. Leave Dedham at 7½, 10½, am., 1½, 4½, and 9 pm.

Stoughton Trains—Leave Boston at 11½ am., and 4½ pm. Leave Stoughton at 8½ am., and 2½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

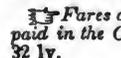
NORWICH AND WORCESTER RAILROAD.
Winter Arrangement.—1848.

 Accommodation Trains daily (Sundays excepted.) 

Leave Norwich at 6 am., 12 m., and 2½ pm. Leave Worcester at 6½ and 10 am., and 4½ pm., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. 

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848.

 Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.) 

For Lynn, 7, 9 1½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9, 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m., 3½, p.m.
Gloucester, 9, a.m., 3½, p.m.
Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
Portsmouth, 7, a.m., 2½, 4½, p.m.
Portland, Me., 7, a.m., 2½, p.m.

And for Boston,
From Portland, 7½, am., 3, pm.
Portsmouth, 7, 9½, am., 5½, pm.
Newburyport, 7½, 10½, am., 2, 6, pm.
Gloucester, 7½, am., 3½ pm.
Manchester, 8, am., 3½, pm.
Salem, 7½, 8½, 9, 10½, 11-40, am., 2½, 3, 4½, 7, pm.
Lynn, 7½, 8½, 9½, 10½, 11-55, am., 2½, 3½, 4½, 7½, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 8½, 10, 11-25, am.
2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

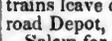
GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, am., 4½, pm.
Salem for Gloucester at 9½, am., 4½, pm.
Trains leave
Gloucester for Salem at 7½, am., 3½ pm.
Manchester for Salem at 8, am., 3½ pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover. On and after Monday, Oct. 2, 1848.

 Trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st. 

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9, am., 3.15, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am., 2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30, am., 5, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.  Outward Trains from Boston 

For Portland at 6½ am. and 2½ pm.
For Rochester at 6½ am., 2½ pm.
For Great Falls at 6½ am., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
For Lawrence at 6½, 9, am., 12 m., 2½, 4½, 6, 7½ pm.
For Reading 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½ pm.

Inward trains for Boston
From Portland at 7½ am., 3 pm.
From Rochester at 9 am., 4½ pm.
From Great Falls at 6½, 9½ am., 4½ pm.
From Haverhill at 7, 8½, 11 am., 3, 6½ pm.
From Lawrence at 6, 7½, 11½, am., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9, am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½ pm.
Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

 On Monday, January 1st, and until further notice, the trains  will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Eric. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run

 as follows, until further notice:— 

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chappaqua, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.

Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.

Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham. A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dl

S.T. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8 1/2 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3 1/2 pm.
Arrives at	9 am. and 6 1/2 pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12 1/2 pm. & 8 pm.
Leaves York for Columbia at	1 1/2 pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	\$1 50
" Wrightsville	2 00
" Columbia	2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg Or via Lancaster by railroad \$9
 Through tickets to Harrisburg or Gettysburg in connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5 1/2 pm.
 Returning, leaves Owing's Mills at 7 am.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

31 ly

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
 Returning, leaves Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2, pm., Train from Cincinnati, and 2 1/2, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburg. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburg \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburg \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm.
 Leave Baltimore 9 am., and 8 pm.
 Sunday—Leave Philadelphia at 10 pm.
 " " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.
 " " " " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leaves Philadelphia at 12 m. 4 and 7 pm.
 Leaves Wilmington at 7 1/2 am., 4 1/2 and 7 pm.

Newcastle Line.

Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm.
 Fare \$3.—Second class, \$2.
 N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 13 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " " " Reading	58	2.25	and 1.90
" " " " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8th.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50 cts.	per hundred
On measurement goods	13 cts.	per cubic ft.
On brls. wet (except molasses and oil)	1 50	per barrel.
On brls. dry (except lime)	80 cts.	per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts.	per hundred
On hhds. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$36 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.

This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

SCHENECTADY LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

The undersigned is prepared to execute orders for Locomotive Steam Engines and Tenders; and from long experience in building, can furnish machines of most superior workmanship. The Works are very large, and conveniently situated near the line of Railroad leading to Buffalo, and can furnish Locomotive Tenders and Railroad Machinery at short notice.

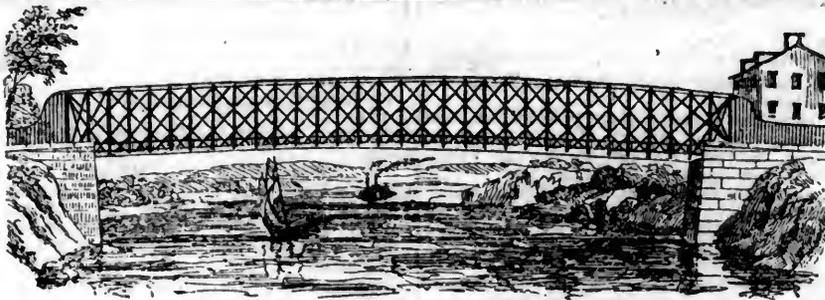
E. S. NORRIS.

February 24, 1849.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc.

Manufactured and for sale by MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

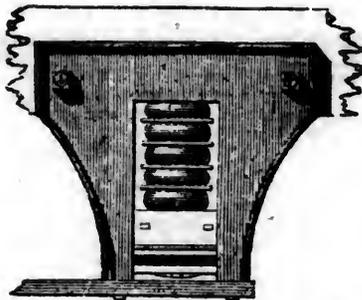
THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an Indiarubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders. Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.
Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.
THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- | | |
|--------------------------|-----------------------------|
| Eastern Railroad. | Boston & Maine Railroad. |
| Providence Railroad. | Providence and Wor. Road. |
| Western Railroad. | Concord Railroad. |
| Old Colony Railroad. | Fitchburg Railroad. |
| Schenectady Railroad. | Syracuse and Utica Road. |
| Balt. and Ohio Railroad. | Baltimore and Susq. Road. |
| Phila. & Reading Road. | Schuylkill Valley Road. |
| Central (Ga.) Railroad. | Macon and Western Road. |
| | New York and Erie Railroad. |

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 81 Water st., N. York.
} A. B. NORRIS, 196 Market st., Philadelphia.
April 22, 1848. } 1y*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of Twenty years has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,

Factory, 9th st., near Coates, cor. of Melon st.

Office, No. 3, North 5th street,

1y25 Philadelphia, Pa.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plans No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR.)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

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LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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SATURDAY, APRIL 14, 1849.

[WHOLE No. 678, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, April 14, 1849.

P. S. DEVLAN & CO'S Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,

54 Pine street, New York,

Sole Agents for the New England States and State of New York.

ly14

Railroad Matters in Kentucky.

In our last issue, we gave the very interesting statement of the President and Directors of the Louisville and Frankfort Railroad Co., in regard to their road. This is the only line of railway in progress in the State, with the exception of the short line of 3½ miles, from the city of Louisville to Portland, passing the rapids in the Ohio. Kentucky, however, is imitating the example of her neighbors, and is moving toward something like a comprehensive railway system for the State.

It is now proposed to extend a line of railroad from Louisville to some point near the mouth of the Ohio: another line from Lexington to the eastern line of the State, so as to connect with the Virginia roads: and another line from Louisville to the Tennessee line, in the direction of Nashville. Authority has been granted already, to extend the line of the Mobile and Ohio railroad, from the Tennessee

line to the mouth of the Ohio river. A glance at the map of Kentucky will convince any one that the carrying out of these plans will have the most salutary effect upon all the great interests of that State. Kentucky and Virginia should go hand in hand in their public improvements.

We have recently been put in possession of a copy of a letter from B. C. Grey, Esq., of Hopkinsville, Ky., a highly distinguished member of the legislature of that State, to Gov. Brown of Tennessee, on the subject of railroads in the west, which letter the Governor requested permission to publish. Notwithstanding its length, our readers will feel gratified that we give it so much space in the Journal.

NEAR NASHVILLE, Dec. 28, 1848.

Mr. E. G. Eastman, Editor of the Union:

Sir: I enclose to you a letter addressed to me by a member of the Kentucky Legislature, on the subject of "the Mobile and Ohio railroad," and its extension eastward through the interior of Kentucky. Some of the views presented by him, are so bold and striking, and display such an interest in, and acquaintance with the subject, that I think the interest of the public requires its publication. The Mobile road in point of importance is to our fellow citizens of the western part of the State, what the Chattanooga and Hiwassee roads are to the people of east Tennessee. The communication is so full that I will not trouble you with any comments of my own, especially as my views were so fully expressed in favor of that road to the last Legislature of the State. With the advantages of Columbus as the terminus of the Mobile road over other places I have not the means of now forming an opinion, but concurring with the general views of the writer as to the importance of the proposed works to the different parts of the country through which they would pass, I respectfully ask its publication, if you can spare the space in your valuable paper.

Very respectfully,

Your obt. serv't,

AARON V. BROWN.

BOWLINGGREEN, Ky., Dec. 23d, 1848.

Hon. A. V. Brown:

Dear Sir: Will you do me the favor to furnish me with a copy of your message to the Tennessee Legislature at the commencement of its last session?

I am very solicitous for the early completion of the railroad from Mobile to Columbus, Ky., near the mouth of the Ohio river, and intend writing some communications, in advocacy of that enterprise, with a view of securing an investigation of its valuable and important bearings upon the interest of the whole United States, and wish to avail myself of some extracts from your message, for, if I remember aright, you were in that message a friend and advocate of this line of improvement. I wish to quote from the highest authority.

If you will examine a report made by the Hon. Mr. Breese to the Senate of the United States, you will be convinced that the "Illinois Central railroad" will soon be completed from Cairo to Chicago. Over one million of dollars has already been expended upon this road, in grading, &c.

The completion of this road from the mouth of the Ohio direct through the centre of the State of Illinois to Lake Michigan, will certainly deprive St. Louis not only of the lake trade and of the trade and business of the interior of Illinois, to which she is so largely indebted for her growth and prosperity, but will also cut off from St. Louis all the travelling passing from the mouth of the Ohio by way of the Lakes to the northern and eastern cities and so vice versa.

The contemplated railway from New Albany to Alton would, during low water and ice, draw freights and travellers from Albany and Alton to this "Central road," thence down to the mouth of the Ohio.

Will the city of St. Louis permit this to be done? No, the concentration of capital and of business men of that city—the energy, enterprise and intelligence of her business men and prominent citizens, and the immense interest they have at stake, will immediately force to its completion a railroad from St. Louis, by Springfield to Chicago, or to an intersection of the Cairo and Chicago road.

Nor would a road from Chicago to St. Louis only, stopping at that city, at all compete with the Chicago and Cairo road in securing the "trade of the Lakes" or of the interior of Illinois, nor the travel and transportation, to and fro, between the mouth of the Ohio and the Lakes.

But St. Louis will be compelled, for self-preservation, to secure a continuous railway the entire distance from the Lakes, by St. Louis to the lower Mississippi, opposite to Columbus.

St. Louis, the great central depot of the vast agricultural and mineral productions of that immense and fertile region of the upper Mississippi, Missouri and Illinois rivers, and the dangers and losses, the delays and hindrances resulting from the unsafe and uncertain navigation between the mouth of the Ohio and St. Louis, would, even without their being stimulated to do so, by the rivalry of this central road, induce the capitalists of that great and growing city to complete a railway connection of St. Louis with Columbus (150 miles) as soon as the road is completed from Columbus to the Gulf of Mexico (460 miles.)

Again, the railroads from Vicksburg by Jackson, Brandon, Montgomery, (Ala.) &c., to an intersection with the railways of Georgia and the Carolinas, will soon secure a continuous line, extending from Vicksburg through the South Atlantic States to the eastern cities. A large portion of the southern travel will then pass by this route east.

Of those persons coming up by the Mississippi river, (or from Charleston, Savannah and Mobile,) by this railroad to Columbus, nineteen-twentieths of

them going to the northern and eastern states, cities and watering places, would pass from Columbus by St. Louis, or through the centre of Illinois to the Lakes, and thence by railroads east, in preference to going up the Ohio, or through the interior of Kentucky and Tennessee.

Most assuredly such will be the course of travel. To a very great extent that is even now the case, and every year increases the tendency of trade and travel in that direction. The "Michigan Central road," (connecting Lakes Michigan and Erie,) will be completed by the beginning of 1849, and the estimate is that by the end of 1849, travellers will pass from Chicago to Boston in two days and a half, on railways the *entire* distance.

The completion of these lines of railroads will take from the Ohio river nearly the whole of the travelling passing between the north and the south, thus missing altogether the centrally situated states of Kentucky and Tennessee.

Will Kentucky stand *idly* looking on until the completion of such vast enterprises, and, without a struggle, permit herself to be cut off from all participation in their advantages? No, never.

A railway communication will soon be complete from Vicksburg east, and equally certain is it that the two roads from Columbus to the Lakes will be pressed forward to a speedy completion.

But, sir, the great state of Kentucky, will not be *idly* looking on. She can never be a passive spectator when so deeply interested; but that energy, enterprise and public spirit which so strikingly characterises this great Commonwealth, both individually and as a state, will induce her to immediately press forward with rapid progress an enterprise of vastly greater magnitude and importance, both to herself, to the whole of the middle states, and those of the south and west, than any to which I have alluded, by commencing a railroad from Columbus, by Hopkinsville, toward Louisville and Lexington, through the centre of Kentucky, and extending on through the very heart of the whole Union, until it becomes linked with the "Richmond and Kanawa," and with the "Baltimore and Ohio" railways, at or near their western termini. It is now hoped that the Baltimore road will incline west as far as Parkersburg before it intersects the Ohio river.

The "Great Central Branch" will form the most valuable and important link in the great chain of railways "now being projected, to connect the eastern and middle with the southern and western states, by running a line of railroads to the south and east of the Ohio river, of which the Baltimore and Ohio road is the commencement."

It will be perceived, by an inspection of the map, that this Central Branch connecting Columbus with the Richmond and Baltimore roads, will, because of its course and direction, be the most convenient, advantageous and popular line for persons passing from the eastern, northern and middle states to and from the south and west, and will, by reason of its lateral branches and connections with other great lines of travel, immediately become the greatest thoroughfare in the Union.

There are no other railways in the Union that approach a comparison in importance with the "Mobile and Ohio road" and its two branches, extending from Columbus, the one toward the north-west and the other towards the northeast.

Passengers and freights from Charleston, Savannah, Mobile, New Orleans and the interior of the whole south, will arrive by the main trunk at Columbus, whether destined for St. Louis and the west, or for Louisville and the east.

Travellers from the east will pass from the Baltimore and Richmond roads along this "Great Central Branch," through Kentucky and the centre of the Union, to Columbus, whether destined for Mobile and the south or St. Louis and the west. In like manner will the railroad from St. Louis bring freights and passengers to this point, whether destined to Mobile or to Louisville.

Again, every steamboat destined from St. Louis to Pittsburgh, or from Pittsburgh to St. Louis, may bring freights and passengers for the south as far as Columbus.

By a report made by the Hon. Wm. S. Bodley, of Vicksburg, in 1845, it is estimated that there were then over 450,000 persons annually travelling upon the Mississippi river (1,233 daily.) It cannot be doubted, but that the greater certainty, regularity,

speed and safety of railroads over steamboats, would induce the larger portion of travellers passing the mouth of the Ohio, to take this road; for, let it be remembered, that this road, so far from running parallel with the Mississippi, cuts off 540 miles in a distance of 1000.

	MILES.
Distance from Columbus to New Orleans, by river,	1000
" " " Mobile, by railroad,	460
" " " St. Louis, by river,	235
" " " " by railroad,	150
" " " St. Louis to New Orleans, by river,	1235
" " " Mobile, by railroad,	610

From Columbus to Mobile, by railroad, in 23 hours, thence to New Orleans in 14 hours. The trip from New Orleans by the best boats to Columbus has been made in four days, though six days is about the average time for good boats.

From Columbus to St. Louis, by railroad, (150 miles) in 7 hours. From Columbus to St. Louis, by the water, requires from 2 to 3 days usually; for the dangers to navigation between St. Louis and Columbus prevent boats from running after night, even when there is seven feet water on the bars. It is very certain, therefore, that, all travellers between St. Louis and Columbus, would pass by the railroad in preference to risking steamboat navigation upon this, the most dangerous portion of the Mississippi river.

As the Mobile road forms a junction with the Tennessee river at or near Savannah, Tenn., (331 miles from Mobile, 129 from Columbus) a branch road might be made from Nashville, intersecting this road at Savannah—"thus avoiding altogether the Cumberland mountains, which present many obstacles of a serious kind to any other approach to Nashville from the sea ports on the south Atlantic coast."

By this branch Nashville "would have a much more direct communication, with a better sea port for her purposes, and by far, over a more favorable route than *via* Chattanooga.

Distance from Nashville, via Chattanooga, to Charleston, 591 miles.

Distance from Nashville, via Chattanooga, to Savannah, (Geo.), 580.

Distance from Nashville, by Savannah, (Tenn.) to Mobile, 431 miles.

From Nashville, by Savannah, (Tenn.) and the Mobile road to the crossing of the road from Montgomery towards Vicksburg, would also connect Nashville with Vicksburg in about 448 miles.

This branch, too, would doubtless be extended from Savannah by way of the Lagrange and Memphis railroad to Memphis.

From Nashville, by Savannah, (Tenn.) to Memphis, 340 miles.

From Nashville, by Savannah, (Tenn.) to the mouth of the Ohio, 229 miles.

A railroad from Nashville due north, 50 miles, would intersect at Russellville, Ky., or at Bowling-green, with the road from Louisville to Columbus.

Thus, this branch of 50 miles would connect Nashville with Louisville, and (by Columbus) with St. Louis.

	MILES.
Distance from Louisville, by Columbus, to Mobile	725
" " " Nashville & Charleston	779
" " " to Savannah, (Geo.)	765
" " " and Savannah, Tennessee, to Mobile,	616

This branch to Savannah, (Tenn.) being upon a much better direction for travel, and connecting with sea ports, cities, and other roads so desirable for Nashville, will assuredly secure its construction.

South Carolina first attempted to obtain railway communication with the Ohio river through east Tennessee. But the Legislature of Kentucky refused to grant such privileges as she desired. Her prominent statesmen were next in attendance upon the Mississippi Legislature to obtain such charters as would secure a railroad from Charleston to Vicksburg, and those roads are now in progress of construction.

Georgia and Carolina, in the meantime, extended their railroad to the Tennessee river, but at a point so high up that stream as does not afford them a de-

sirable communication with the Ohio river and the markets of western produce.

The Chattanooga road will connect them at Nashville, with the Cumberland, but they will not yet be at a market which produces the bagging, bale rope, pork, flour, and other supplies of western production which they demand.

The great and prominent object of Georgia and the Carolinas is to effect a *direct* railway communication between the South Atlantic ports and the Mississippi and Ohio rivers.

The Mobile and Columbus road connects with Charleston and Savannah by means of the railroad from Vicksburg across by Montgomery, &c., and whilst the Chattanooga road affords to Charleston an uncertain communication through the Cumberland river, for a *portion* of the year, with but a *part* of the west, the Mobile and Columbus road opens throughout the *entire* year the commerce of the whole west, and is upon a much better direction for travel.

Therefore, the Georgia and Carolina railways will be made to connect with the mouth of the Ohio by the construction of a branch road from or near Atlanta to the Decatur and Tusculumbia road; thence extend that road from Tusculumbia, west, to an intersection with the Mobile road.

The connection of Charleston and Savannah, (Geo.) and of every branch and link of those southern railways, with the mouth of the Ohio by the most direct route, will add 50 per cent. to their present annual receipts, and will, in every respect, be so advantageous as will induce those several railroad companies to unite for the construction of the branch from or near Atlanta to intersect the Mobile road, at a point on said road, about 180 miles from Columbus 50 miles south of Savannah, Tenn, and 30 miles west from the Tusculumbia road.

This link from Atlanta to the mouth of the Ohio will open a direct communication of the whole interior of the south, with the whole west; for there the Ohio and Mississippi rivers and their numerous tributaries from the Alleghanies and also from the Rocky Mountains, concentrate their vast waters; thus, securing to this point, as is justly remarked in a report by a committee of the Illinois Legislature, all those "advantages of commercial position which few cities of the earth can rival."

It is here that "20,000 miles of navigable waters converge, draining a territory unequalled for fertility upon the surface of the globe." It is this point which all those southern roads are most interested in connecting with.

A glance at the map will show that Columbus is the nearest point of the Mississippi river to Charleston and Savannah, and is also the nearest point of that river to Nashville and Louisville. From the 'Reports' of Louis Troost, Esq., and of Judge Bodley, the distance—

From Charleston (by intersecting the Mobile railroad,) to Columbus, 625 miles.

From Savannah, (Geo.) by the Mobile railroad, to Columbus, 600 miles.

From Charleston, by Nashville, to Columbus, 764 miles.

From Savannah, (Geo.) by way of Nashville, 750 miles.

From Charleston to Vicksburg, by railroad, 900 miles.

From Savannah, (Geo.) to Vicksburg, 670 miles.

The trip will be made from Columbus to Charleston in about 31 hours, and from Columbus, by Charleston, to Washington city, in a little over 3 days. From St. Louis, by Columbus to Charleston, 775 miles, and brings down the time of travel between St. Louis and Washington city to about 4 days.

My argument is, that, the inevitable result to Kentucky, from the completion of those two roads from Columbus to St. Louis and the Lakes, and the one from Vicksburg, east, will induce such a conviction throughout *this whole state* of the value and absolute necessity for the branch from Columbus to the Baltimore road, as will secure its completion by the time the cars commence running from Columbus to Mobile. This central branch, linking together, as it will, all those roads at Columbus with the Baltimore and Richmond railways, and passing through the interior of this state from the extreme west to the extreme east end of it, will thus secure in its advocacy and support every interest and every section of Kentucky.

There will be no wrangling about "sectional divisions"—for "Southern Kentucky" the "Green River Country," the "Middle Division," "Northern Kentucky," and our two rival cities, Louisville and Lexington, will, all, be united alike in interest and policy for its completion. It can, and it will be constructed.

The Mobile and Ohio Railroad penetrates a region of country cut off from water communication, but which this road will make the garden spot of America. This main stem runs a straight course of 460 miles from north to south, through different degrees of temperature, through different varieties of soil, and mineral and agricultural productions, passing the entire route without crossing a single navigable river or mountain, and without any rock excavations, "through the richest portions of four of the most productive states of the Union, and by its lateral branches renders tributary to its inexhaustible beds of bituminous coal, iron and marble."

Although "passing through different state governments, it will be governed throughout by the same laws, subject to the same institutions, and will be under the same management and responsibility. The Mobile and Columbus railroad thus forms a connecting chain between people of every character, and climates of every description, and becomes the channel for distributing their various productions."

This railroad connects the best harbor and most central port upon the Gulf of Mexico, and the most inland and nearest point upon that Gulf, with the mouth of the Ohio river, which the Hon. Mr. Breeze in a report to the United States Senate, remarks, "is one of the most remarkable points on the globe—the confluence of the Ohio with the mighty Mississippi—a spot to which all the great rivers of the west converge as to a centre, and where most of the commerce, bound on their bosoms, must pass on its way to the ocean, or from state to state—whether from the Missouri or Upper Mississippi, the Wabash or the Ohio, the Cumberland or the Tennessee."

Columbus is the only point on the Mississippi river where the banks on either side never fall in, nor form sand bars, by the washing of the river. Owing to the peculiarities of the banks, the course of the river, and attendant circumstances, those banks never have been and never will be washed off or added to. The Hon. Mr. Breeze, in a report to the United States Senate, remarks, in reference to the mouth of the Ohio, that there "terminate the alleys of the Tennessee and the Cumberland, which come down from the south of it to meet their kindred streams from the north—of the Ohio from the east, which throws its branches to the Alleghany Mountains, and almost to the borders of the Lakes on the other—of the Upper Mississippi which ascends almost from the Frozen Sea to the north, and of the Missouri with numerous branches stretching to the Rocky Mountains in the west."

An able and experienced engineer examined all the points upon the Mississippi river, from Cairo down to Mills Point, 35 miles, in the fall of 1847, and after he had reported the results of his investigations to the Mobile and Ohio railroad company, they, in their report of April last, say of this road, "It has three termini at points which command immense trade and traffic—the southern terminus being at Mobile—the middle terminus on the Tennessee river, at a place below all obstacles to navigation, and where the route will obtain the trade of the valley upwards of 800 miles in length, and the northern terminus at Columbus, near the mouth of the Ohio, the best harbor on the Mississippi, without exception, where the road will be accessible to the trade and travel of eight states and the western territories."

But the more sensible, intelligent and thinking men will recollect that the vast domain, bounded on the north by the 49th degree of latitude, south by the Gulf of Mexico, and east and west by the Alleghany and Rocky mountains, known as the great Mississippi valley, "is the most highly favored region on the globe."

Sensible men will reflect that this Mississippi valley, no longer a frontier, is now the centre of the Union, the "bone and sinew" of the American republic; and while its main artery continues to roll its mighty waters to the gulf, the artificial veins of railroads must be constructed by the enterprise of man at every point of this valley, to distribute its abundance, with the expansion of its population."

Intelligent men will remember, too, that the Mississippi valley is an area of about 1,500,000 square miles, and contains 960,000,000 acres of land—that the "richest staple articles which give animation to the commerce of the whole world—cotton, rice, sugar, hemp, tobacco, corn, etc., may be considered as indigenous to portions of the country."

Intelligent men will know that all the crops of the United States are estimated to be worth \$591,400,000—and of these products the New England States contribute only \$58,000,000—that Indian corn appears to be the great staple of the country, the quantity for this year being worth \$144,573,000—the hay crop is estimated to be worth \$128,000,000—the wheat crop \$53,514,000—the product of the dairy \$12,360,000. When it is considered that the country is as yet comparatively uncultivated, and its resources very partially developed, no one can fail to be impressed with the enormous capabilities of our country.

Intelligent men will know that the area of the country drained by the Mississippi and its tributaries, is about six times as large as the old Thirteen States, and that "compared with the present condition of the New England and Middle States, it could sustain, in similar wealth, prosperity and comfort, 60,000,000 of inhabitants. A population, however, of 230 to the square mile, similar to that of Great Britain, would give to the valley of the Mississippi the enormous number of 345,000,000 of human beings."

Intelligent men will know that 65 years ago, wandering tribes of Indians, and 20,000 French and Spanish, were the only inhabitants of the Mississippi valley; but by the census of 1840, the population was 8,434,759, and may now be estimated at from twelve to thirteen millions. The value of the products were, in 1840, estimated at \$750,095,920; the descending trade of the Mississippi at \$120,000,000 and the ascending at \$100,000,000. The population of New Orleans has more than doubled itself within a period of ten years. In 1802, its population was but 10,000 Spanish and Creole, and in 1840 it contained 102,193 inhabitants.

Intelligent men will know that the population of St. Louis, which was in 1840 less than 17,000, is now nearly 60,000, and that the city of Chicago, which in 1830 was an advanced military position, is now a city with a population of twenty thousand. Its imports are of the value of \$2,641,852 annually; and its exports to the value of \$2,297,299. From a report made to the last Congress, the northern tier of counties in Illinois have increased in population in the last twelve years one thousand per cent. Their productions of wheat have increased in the last seven years from 500,000, to near 3,000,000 bushels.

Intelligent men will know that the road from Cairo to Chicago passes through a region, which, for mineral wealth, extent of coal fields, and agricultural resources, may challenge the whole world;—but more than half those lands being destitute of timber and means of transportation, there are now within six miles of this line of road 1,746,415 acres yet belonging to the government, all of which has been in market for an average of 22 years.

Intelligent men will know that the cars are already running upon ten miles of the road from Chicago towards Galena, and that in 1851 the trip will be made from Galena to Boston and New York, in three days' time—that this line of railroads, extending along our northern border, from Galena to Boston, has now lateral branches of railroads and canals extending south, from this northern border and reaching down to the Ohio river.

All enterprising men will agree, that while the cities of Boston, New York, Philadelphia, Baltimore, Richmond, etc., and also those of Canada, are extending their iron arms into the valley of the Mississippi, and uniting in their efforts to open new passes through which to draw its abundant and varied productions, and it is the interest of the whole west to unite in building railways from north to south, not for the purpose of superseding the rivers, but by connecting the interior of the northwest with the interior branch railroads of Georgia, Carolina, Alabama, etc., to open a direct and speedy communication between the north and south, and ramifying to every important section of the Mississippi valley.

Reflecting and patriotic statesmen will appreciate the value of these roads to the general government, in transportation of her mails, and the supplies and munitions of war. To her armies they will secure

"concentration of force, and celerity of movement." The Statesmen of Kentucky—those who aspire to be her politicians and the guardians of her public interests, will be convinced that the growth, wealth and prosperity of this commonwealth, will be greatly more promoted by a railroad through her interior connecting with the railroads at Columbus on the west, and with those of Baltimore and Richmond at the east, than by all the other improvements that can ever be constructed within her borders.

Those railways "will multiply and furnish innumerable markets with produce and merchandise now limited to one. They will enlarge the circle of trade, by giving greater speed, certainty and security to the traveller and the trader, and will bring into closer communion the social, political and commercial relations of communities of common origin, common institutions, and common sympathies."

I am, dear sir, with great respect and high regard,
Your obedient servant,
B. C. GREY.

In giving place to so extended a communication, we feel persuaded that no one will regret the space it occupies. The opening of a line of railway thro' the centre of Illinois, from Lake Michigan to the mouth of the Ohio, and the completion of a line from Mobile and several of the other cities to the same point, may be considered as parts of a great national scheme, to which the attention of the whole country is to be more fully directed. We do not intend to prejudge the matter, or intimate an opinion as to what point or locality is to be most benefitted, or has the highest claims to importance.

The editor of the *Cairo Delta*, speaking of this subject, says: "While we remark, that so far as Cairo is concerned, it matters very little whether this great and important railroad terminates three miles below it, on the Kentucky shore, or twenty miles, as in either case there must be a line of boats to this point—yet, we cannot consider it altogether settled that the Mobile and Ohio railroad will terminate at Columbus. We saw the written report of the Chief Assistant Engineer before it was published, and in that, while he states the landing of Columbus is superior to any other from height, etc., on the Mississippi, for the purpose, yet he says that two and a half or three miles below the mouth of the Ohio, a depot could be erected at comparatively small expense, and that as it would be in sight of Cairo, stock would perhaps be more readily taken in the Eastern cities. This last fact is of more real importance to the road, than any consideration that could be offered for making any other point the terminus, inasmuch, as to get the stock taken is always the first and the grand object."

We understand the citizens of Paducah, Ky., are making efforts to secure at that place the termination of the road, and urge as one argument, that the number of steamboats per year, passing Paducah, is far greater than the number passing Columbus.—We have obtained through the kindness of Mr. T. J. Smith, the following data, as taken from his wharf boat register, in relation to the number of steamboats passing the above mentioned places, during the year ending this month. Paducah, it will be recollected, is on the Ohio river.

From Ohio River to St. Louis.....	1728
New Orleans.....	1740
From St. Louis to "	1058
	4526

Of these, 3168 passed Paducah, and 2798 passed Columbus. Thus during the year ending March 1, 1849, six hundred and seventy boats passed the former place more than passed the latter.

Now it will be remembered that all these steamers passed Cairo—therefore, so far as this consideration operates, the road should be made to terminate as

near Cairo as possible. As declared in Mr. Troost's report, this nearest point is about three miles below the mouth of the Ohio—and the best point, so far as regards high land, is at Columbus, nineteen miles below Cairo. But, as we have said, the point of the termination of this road will matter very little with Cairo, so it be not located further down the Mississippi than Columbus.

The writer of the above mentioned letter appears very sanguine as to the ultimate greatness of Columbus. We hope that his expectations may be gratified, and believe that in some measure they will, from the desirable situation of that place. Yet Columbus ought not to be confounded with 'the mouth of the Ohio,' as the writer of the letter appears disposed that it should be, neither should he declare, as in substance he did, in a portion of his letter, that a city can never be built at this point, for that idea has been laughed at by every engineer who has visited Cairo within the last few years. It can only have influence with those utterly unacquainted with this point—one of the most remarkable points, says Judge Breese, in his report to Congress, 'on the globe, at the confluence of the Ohio with the mighty Mississippi, a spot to which all the great rivers of the west converge as to a centre, and were most of the commerce bound on their bosoms, must pass on its way to the ocean, or from State to State, whether from the Missouri or upper Mississippi, the Wabash or the Ohio, the Cumberland or the Tennessee.'"

Quebec and Halifax Railway.

The final report of Major Robinson, royal engineer, on the proposed trunk line of railway from Nova Scotia through New Brunswick to Quebec has been made, from which it appears that five routes were examined and surveyed, the first being 600 miles in length, the second 435, the third 652, the fourth 595, and the fifth 602 miles in length. The second line is the one recommended, commencing at Halifax, and running to Truro, at the head of the Bay of Fundy, thence over the Cumberland Mountains to Amhurst, then along the coast from Bay Verte to Shediac, thence by a northwesterly course, crossing the rivers Richibucto and Miramichi, so as not interfere with the navigation; then by the Valley to Bathurst on the Bay of Chaleurs, along the coast of this bay to the Restigouche River, and by it and the valley of the river Metapedia to the St. Lawrence, and by the right bank of the St. Lawrence to Quebec. This line passes through extensive coal fields and mineral districts, in which iron ore is abundant. One most important object is to be attained by the construction of the railroad is the settlement of the public lands, and the encouragement of emigration from the mother country. It is stated to combine in the highest degree the greatest amount of remuneration for the expenditure to be incurred as compared with the other routes, the opening up a large field for provincial improvements for the settlement of emigrants, and by affording the opportunity, in addition to internal, of external communication by means of the Gulf of St. Lawrence and the Bay Chaleurs, that it will tend to develop in the highest degree the commerce and the fisheries of the provinces of New Brunswick. After explaining the advantages of this route as to climate, agriculture and engineering, it states the estimated cost to be about £700 per mile, which, for the 635 miles, would amount to £4,445,000, and adding one-tenth for contingencies, to £4,445,000, total £4,889,500, or in round number, \$5,000,000. It is estimated that the whole population at present which will be benefited by and become contributors to the line may be taken at 400,000, and would, at 10s. per head, give £200,000 as the profitable revenue per annum. Various suggestions have been made for raising the capital required for the construction of the line by Earl Grey, the Secretary of State, and the governors of the provinces; but nothing definite has yet been come to with regard to the mode of raising the capital. They admit the advantages of the railway, and the governors of the provinces their wil-

lingness to contribute towards its construction.

We have received a series of documents accompanying a report on this line, drawn up by G. R. Young, Esq., Commissioner of the Province of Nova Scotia, which contains a mass of information on this subject, and from which we shall give extracts in our next paper.—*European Times*.

We cannot make use of any comments so interesting as the following remarks from the London Colonist:

The Quebec and Halifax railway appears to be the forlorn hope of the Imperial Government. We quote from the Report of Major Robinson, on behalf of the Royal Commissioners. The report is dated at Halifax, August 31st, 1848. Major Robinson says:

"It (the Quebec and Halifax railway,) is the one great means by which alone the power of the mother country can be brought to bear on this side of the Atlantic, and restore the balance of power now, fast turning to the side of the United States.

Every new line of railway made in that country adds to their power, enabling them to concentrate their forces almost whenever they please, and by the lines, of which there are already some, and there will soon be more, reaching to their northern frontier, they can choose at their own time any one point of attack, on the long extended Canadian frontier, and direct their whole strength against it.

"In a political and military point of view, the proposed railway must be regarded as becoming a work of necessity.

The increasing population and wealth of the United States, and the diffusion of railways over her territories, especially in the direction of the Canadian frontier, renders it absolutely necessary to counterbalance, by some corresponding means, their otherwise preponderating power.

Their railway communications will enable them to select their own time and their own points of attack, and will impose upon the British the necessity of being prepared at all points to meet them.

It is most essential, therefore, that the mother country should be able to keep up her communications with the Canadas at all times and all seasons. However powerful England may be at sea, no navy could save Canada from a land force.

Its conquest and annexation are freely spoken of in the United States, even on the doors of Congress.

Weakness invites aggression, and as the railway would be a lever of power by which Great Britain could bring her strength to bear in the contest, it is not improbable that its construction would be the means of preventing a war at some no distant period.

And if, for great political objects it ever becomes necessary or advisable to unite all the British Province under one Legislative Government, then there will be formed on this side of the Atlantic one powerful British State, which, supported by the Imperial power of the mother country, may bid defiance to all the United States of America.

The means to the end, the first great step to its accomplishment, is the construction of the Halifax and Quebec railway."

In the Despatch of Earl Grey, transmitting this Report, the same degree of emphasis is observed in recommending the undertaking, as one of very great necessity. Here then is the Imperial Government moving in the matter of a great military work, a railway 600 miles in length, to run through a wilderness, for the ostensible object of making the North American Provinces a field for military operations against the United States, at some future day. Now had it been designed to draw the necessary funds for its construction from the Imperial Treasury, the work might have appeared practicable though even then its availableness for the purpose intended might with great truth be questioned. But it is clear that Earl Grey is miscalculating his means, and is building up his hopes in utter disregard of the facts which the commercial tendencies of the times are setting forth.—The construction of the Quebec and Halifax railway, a great military work, ill-comports with retrenchment in the army and navy and coast defences. The idea of war between Canada and the United States does not harmonize with the new commercial system which promises peace through commerce. And no greater mistake could be committed than to suppose that the free traders of Canada who have had free trade forced on them,

and who are now reconciled to it, can have any other intention than to cultivate friendship with the people of a neighboring and prosperous and powerful Republic; and in the spirit and according to the doctrines of free trade, to break down all commercial barriers, and belligerent barriers also. Had this scheme been proposed under a system of protection to Colonial produce in the British market, the appeal would then have been made to our interests; but a free trader, whose motto is peace, whose means of obtaining that peace is commerce, and who must be naturally interested in making commercial and friendly alliances with that nation which from position and fraternity, language and institutions offers the most ample facilities for the accomplishment of his desire, is not likely to regard a military work with any other feeling than that of repugnance. In this province the commercial and frontier interests all favor free trade, and they will naturally ask why they should be called upon to aid in the construction of a military work in which they have no interest, but which they engender a thousand causes of apprehension, and may ask, besides why they should be expected to place themselves in the event of war, between two fires.—*Colonist*.

The more recent despatch of Earl Grey to Lord Elgin, under date of January 24, 1849, published in our paper of the 24th ult., as then stated by us must be regarded as dashing the whole scheme in the face. The last hope of the lower Provinces is finally taken away at the very time, when of all others, they most need the protection and the jointing aid of the Home Government.

High-Pressure Steam Ventilation.

On Wednesday last, about 40 Members of Parliament attended at the Polytechnic Institution, agreeable to an appointment made by some influential Members of the late and present Government, to inquire into the principle of application of Mr. Gurney's system for the ventilation of coal mines by high-pressure steam. The Polytechnic Institution was selected on account of the hydro-electric steam apparatus, from which high-pressure steam might be obtained for experiment, and was closed to the public for that purpose.

Dr. Bachhoffner demonstrated the principle of producing currents of air by the steam-jet, in a series of very interesting experiments, beautifully illustrative of the maxim, "that the toys of boyhood are the tools of men," beginning with some simple experiments demonstrating the principle of the action of high-pressure steam in ventilation, and ending with one showing the absolute power of this stupendous agent to the clearing of the largest coal mine in England in five minutes. Dr. Bachhoffner said, notwithstanding he had had his attention called to the subject for some time, yet so great was the difficulty of understanding the action of high-pressure steam, as a motive power for ventilation, that he might be said to have but a glimmering into its rationale; and as Mr. Gurney was present, he would beg him more clearly to explain it, in connection with the subject before them.

A long and very interesting discussion now took place. In the course of conversation, and answers to questions, Mr. Gurney detailed a vast deal of interesting information connected with the history and application of high-pressure ventilation. His first experiments were made when a schoolboy, spending his Christmas holidays with the late Mr. Davies Gilbert, in 1810, where he became acquainted with Trevithick, the inventor of the high-pressure steam-engine; this acquaintance led to his (Mr. Gurney's) experiments on locomotion, and ultimate application of high-pressure steam to procure a draft up the chimney of steam-carriages on common roads, in 1826.

It will be in the recollection of some of our readers that this carriage propelled itself from London to Bath, and returned over the turn-pike, from Bath to London, the next day, making the journey in 12 hours. Turnpike trusts, foolishly interfered, the experiments were stopped, and railways were the consequence.

Mr. Gurney said: its application to locomotive engines on railways followed; and it was to this draft, and to this alone, the life and soul of the engine was due. Without this application of the

principle now used in coal mines, railways never would have been made; the same principles, however, when carried into coal mine ventilation, required modification to meet the conditions of the mine. The modification essential to success was pointed out in the *Report of the South Shields Committee*, published in 1843. Mr. Forster, the extensive and scientific viewer, of Newcastle, whose letter was published, had referred to that report, after seeing some experiments in the Polytechnic Institution, and had succeeded in his application.

Mr. Gurney demonstrated, by a single experiment, that a current of air, by high-pressure steam, might be kept up at any rate, or for any length of time, as a constant quantity, or might be increased or diminished at pleasure. To the apparatus which he used in the experiment, he attached a mercurial gauge, and showed by the height of the column the force produced, and the degree of current indicated. Extraordinary as it may appear to those unacquainted with the fact, the mercury rose when the full current was on to 49 in. Now, it may be well for us here to observe, that a current of air, moving at the rate of 80 miles per hour, only gives a pressure equal to half an inch of mercury; 70 miles per hour is a violent storm; 80 miles per hour is the rate of a hurricane, only known in the West Indies. Here was a power of current equal to 19 in., or 38 times that rate of current! When the pressure of the current was applied to water, it rose a column instantly, which, he stated, if there had been height in the room, would raise to 20 ft. He (Mr. Gurney) observed, this was an experiment only to show the extreme range of power; it might be regulated to any given quantity—down to almost an insensible current, and there fixed at pleasure. He fixed it at a $\frac{1}{4}$ in. of mercurial gauge; then to $\frac{1}{2}$ in., and gradually to every degree on a graduated scale. It was adjusted, at a given degree, and kept steady to the points without variation—in short, to whatever degree the regulator was adjusted, to that degree, and that only, would the current extend. In answer to a question from Sir Robert Peel, as to the rate of current necessary to secure safety from fire-damp, and to protect health from carbonic acid and other impurities, Mr. Gurney said he thought a current of 12 ft per second (about 9 miles per hour) would do for ordinary mines. Some required more ventilation than this, where fire-damp was prevalent, particularly in weather when the barometer was low; and in some mines, 6 to 8 ft. per second would be ample. This amount of ventilation (he said) must be kept up through every gallery. It often happened that a current of 12 miles per hour might be read off in the upcast shaft; when in the galleries the air did not move at a rate exceeding five; because the sum of the areas of the galleries exceeded the area of the upcast shaft in that proportion. In such case, the rate of current up the upcast shaft should be raised to 23 feet per second; the observation applied to every working part.

In answer to a question from Mr. Cayley, Mr. Gurney said, three-fourths of the deaths from coal mine explosions arose from choke-damp; in the recent case at Barnsly, only one-third were killed by fire damp, 48 were killed by after-damp; this latter was heavier than the atmosphere, and so difficult to remove, that in some cases, no one could go into the mine for days. High-pressure ventilation, in full power, would remove it in three minutes. To a question from a gentleman whom he did not know, respecting the choking up of the air courses in case of explosion, he (Mr. Gurney) observed, that in no such case was the gallery at the fall hermetically sealed; it was only partially stopped—in short, from whatever part of the roof might fall, it would leave an imperfect opening; in such case, the great value of the high-pressure ventilation was evident; for, if the fissures and imperfect opening left amounted in the gross to a few inches sectional area, a current of air through them might be induced so great, making up in the intensity what it lost in the area, to blow out the mine, certainly sufficient air to render the galleries breathable; he instanced, on this point, the height of mercury then standing in the gauge, and observed that the current the pressure indicated would through a small opening of two in., produce sufficient heat to smelt iron in the largest furnace. This immense blast was shown by Dr. Bachhoffner, and in a moment, at will, he reduced it to a current, mov-

ing only at the rate of 2 miles per hour, at which it was fixed.

In answer to a question by Sir James Graham, as to the expense of high-pressure ventilation, he observed it was the cheapest possible, and simple in its construction; that for 5l., if a boiler was on, or near the mine, the apparatus might be fitted. He had no interest whatever in the subject, it was open to the public; it was given in his evidence in 1835, and any one might use it that liked. In answer to a question from the Marquis of Lansdowne, Mr. Gurney observed, that a given arrangement was essential to success, and referred to the details in Mr. Mather's *Report of the South Shields Committee*.

Sir Charles Lemon inquired, whether it was necessary that the apparatus should be in the upper-shaft?—Mr. Gurney observed, that a horizontal gallery on the surface of the earth, connected with the shaft, would act equally well, and as there was no obstruction in the working of cages and buckets up and down the shaft in which the steam was used, the horizontal gallery was an expense that might be saved.

In answer to a question from Mr. Hume, Mr. Gurney said, instead of dying in five minutes, as the passengers did in the steambot going to Ireland, or in five hours, as the soldiers did in the black hole of Calcutta, the colliers were 30 years about it; there was no question that the impure air and want of proper ventilation, fearfully affected their health; he remarked at the late colliery explosion at Barnsly, there were but 4 out of 75 men killed over 40 years of age.

Lord Ashley, we believe, asked whether this system would reduce the number of accidents?—Mr. Gurney said, with a true and proper ventilation the worst mine might be worked with safety. That among the number of persons employed about a mine, and the difficulty of warning them, it would be too much to say an accident would not occur; but with fair management, and proper regulations, he did not see how fire-damp could ever collect to be explosive.

Sir Robert Peel asked if the safety-lamp need be used?—Mr. Gurney said, except in some cases of blind cuttings, he thought it need not be used.

A great many experiments were now repeated, at the request principally of Lord Lansdowne and Sir Robert Peel. After about two hours the party separated.

Amongst the company present were Earl St Germans, Marquis of Lansdowne, Sir Robert Peel, Sir James Graham, Sir J. Walmsly, Right Hon. Sydney Herbert, Mr. Joseph Hume, M.P., Lord Ashley, Sir Charles Lemon, Mr. Edward Cayley, M.P., Mr. J. Pendarves, M.P., Admiral Bowles, Admiral Hope, Mr. J. Brotherton, M.P., Mr. C. Forster, M.P., and a number of other gentlemen connected with the Legislature, the Government, and the members of the Institution.—*Land. Min. Jour.*

Railroads in Illinois.

ERROR CORRECTED.

We observe in the American Railroad Journal of the 17th ult., an article copied from the Cincinnati Gazette, on the subject of the proposed railroad from that city to St. Louis, which demands a passing notice. This publication, besides its wanton aspersions upon this place, does great injustice to Illinois. The writer may not have intended it. The zeal felt by him, in common with the city of his residence, for a railroad to the Mississippi, may have so entirely possessed him, that the merits of other routes for the same road may not have received due consideration. He evidently forgets, that there are "two sides to this case." We will notice what he says, in the order in which he presents it.

We have, it is true, applied to Congress for a grant of lands to assist in the completion of certain roads in the state, long since projected. We consider, on the score of sheer justice alone, Illinois is entitled to an additional grant of lands for such purpose; because what she has already received falls far short of the donations made to her sisters, Ohio and Indiana, for the same object. Equal justice then requires the additional grants, now applied for, should be made; but if they should not be, our cause of complaint would be small in comparison with what it would be, if deprived of the right of so locating and terminating our roads in our own state as shall best promote its interests, without in-

jury to our neighbors—as also without the loss of the large amount already expended towards the structure of roads which we have already commenced. We claim, as we have already said, this grant as matter of right and justice. We also show to Congress the propriety of making it, under existing circumstances, from motives of high public consideration, and of interest to the Government in effecting a speedier sale to its remaining lands.

As to the location of the Cumberland road.—We are sorry to see the Editor of the Gazette so soon forget that Illinois, in what she has done in this matter, has followed only the example of her sister, Indiana. Did not that state resolve that this road should pass out of the state at Terre Haute and not elsewhere? and were the appropriations withheld on that account? and this too, when another route through that state had been surveyed and determined on. Illinois has not acted in this particular so presumptuously as did her sister. She has only resolved that this road should cross the Mississippi where it was first surveyed; where the route was best and shortest to the river; and where the act of Congress required. Why then make fish of one state and flesh of the other? If this course was right in the state of Indiana, why was it wrong in Illinois? Our respected neighbor threw the first "fire brand," if any has been thrown—not Illinois.

The withholding of appropriations for the road surely cannot be ascribed to this cause; for the road has never been half completed, even so far as it has been located. We are sorry to see the writer forget that this road was to be made out of a certain fund—a certain portion of the proceeds of the sales of the public lands, which have been exhausted and exceeded a hundred fold before the appropriations were stopped being made. Has he so soon forgot that those "who arrayed themselves systematically against all appropriations for Internal Improvements," gained the ascendancy in the National Legislature under the administration of Presidents, who held doctrines much more stringent on this subject than before prevailed? Does he not remember, moreover, that these more stringent doctrines became very predominant at the time when the Cumberland road failed so badly? A new spirit was abroad in the land, and influenced the public councils in this particular. The resolution of Indiana and Illinois never contributed a feather's weight to prevent the appropriations. The right of both states to control in this matter was fully recognized; and had it not been for the factious spirit of St. Louis, awakened then, as it is now, no question would have been made—no trouble created. But if the progress of that road was stopped for any such cause as the writer mentions, it was the fault of St. Louis, in resisting the exercise of an unquestioned right of this state. She then is the party in fault, and not Illinois "at the prompting of a few lot holders at Alton."

This writer, who, for aught we know, may hail from St. Louis, affects to think it very mean and contemptible in Illinois to refuse the boon which has been proffered by those cities. She is wanting in courtesy to her neighbors, in refusing the facilities asked, for executing their beneficial purpose? "The taking a meal at Alton, and paying a tax in the shape of portage, to its citizens, is a small business—a very small business for a sovereign state," says this political economist. Yet, small as this business is, if it be all that is involved, it is doubtless as much for Alton as it is for Vincennes, or St. Louis, or Cincinnati; unless it be conceded, as it seems to be contended, that they shall be permitted to swallow all, because they are a great deal larger.

We trust that the intelligent Editors of the Railroad Journal and the Commercial Gazette, whose object should be, and doubtless is, to communicate valuable information to their readers, on the important subject in question, will look at it, not as it is presented in the St. Louis prints, but in its true and proper light, as set forth in the reports submitted to our last Legislature, and in the discussions which took place in that body towards the close of the session. This will enable them to become acquainted with all the facts bearing upon the case at issue, and to correct the errors into which they may have been led by unsupported assertions, and *ex parte* statements.—*Alton Telegraph.*

The able and intelligent Editor of the Telegraph may be assured that we had no intention of doing in-

justice to Illinois, or casting any aspersions upon the good people of Alton, by copying the article referred to from the Cincinnati Gazette.

We have read with great interest the able editorial articles and communications in the Telegraph on the Railroads of Illinois. It must be admitted that Alton has made her influence strongly felt in the councils of that State, and we may be unable, from our position, to enter fully into all the reasonings which induced the Legislature of Illinois to withhold their assent to the charter for the Cincinnati and St. Louis railroad.

We care nothing personally for Alton, or St. Louis, or any locality, except as the arrangements and confirmations of nature direct attention to them as favorable points for business. The natural laws of trade must in the end prevail, whatever temporary advantages the energy, the industry, and foresight of the men of particular localities may achieve.

Suppose the legislation upon this question was under the control of the national government instead of the State of Illinois, would not the charter of the Mississippi and Ohio railroad be readily granted? We beg our friend of the Alton Telegraph to answer this inquiry in the same frankness as we put it.

Would it not be better for the whole country that the public lands within the several States, or the proceeds when sold, should be appropriated to the construction of railroads within their respective limits? This is a question deeply affecting Illinois, and she should take a comprehensive view of the railway policy which is yet to grow up into a general system for the whole country. The legislation of the Union may possibly come in aid of State enterprise with the unanimous consent of all the States in the confederacy.

Notwithstanding the action of the Illinois Legislature, the friends of the Cincinnati and St. Louis railway seem equally alive as formerly to the undertaking. The citizens of the former city have agreed to subscribe \$1,000,000 to the stock, and the city of St. Louis has also agreed to take the sum of \$500,000. Our western exchanges are largely filled with discussions upon the matter.

Improvements in the Make of Iron.

The astonishing increase in the produce of the furnaces in the bituminous districts takes its origin from the application of steam and engine power to the production of a continuous stream or pillar of blast, instead of the puffing of the old fashioned wind bellows; and further, to the discovery of my highly valued friend, Anthony Hill, Esq., of the Plymouth Works, Merthyr Tydvil. It is to the science, energy, and research of this gentleman, that the iron trade is indebted for the practical discovery that the cinders produced in the various stages of converting, in our forges, crude, or cast iron, into wrought or malleable iron, were capable of being re-smelted and re-converted in the blast furnace, and the iron they contained, amounting to 50, 60 and 70 per cent., profitably extracted from them. These cinders were formerly thrown away as refuse, or used only for the repair of our roads and thoroughfares—they are now eagerly sought after, and purchased at values as high as some of our richest iron ores. To Mr. Hill a debt of public gratitude, and something more, is due, which I should rejoice to see properly acknowledged and paid. Mr. Yates, of Rotherham, Yorkshire, has, at his works, at Wingerworth, near Chesterfield, erected blast furnaces of an entirely different construction from those in use in this district, and the plan of which he has patented. They are about twenty feet in height, of a peculiar shape, and are blown with a soft fan blast. When I visited them, a few months ago, they were working admirably, and producing excellent pig iron, at the rate of 120 tons and upwards in a week, at each furnace. These furnaces, and their blowing apparatus and appendages, appeared to me

so simple and inexpensive of construction, in comparison with the huge piles of masonry and ponderous machinery of our blast furnaces and engines in Wales, that I imagined they would create a perfect revolution in the iron trade. In the anthracite districts of our mineral basin, the improvements effected by the late Mr. Craue, and the application by him of hot blast to the smelting of iron with anthracite coal, were acknowledged, certainly not more gratefully than they deserved to be, by those who are interested in the mineral productions of the anthracite districts, wherein the deposit of iron stone or ore is enormous, but its reduction with its accompanying fuel almost new. The recent improvements of Mr. J. Palmer Budd, adopted at his extensive works near Neath, and patented by him, are worthy of the greatest attention. Mr. Budd, who read an admirable paper, explanatory of his improvements, to the chemical section of the meeting at which my address was delivered, and with the kindest liberality, invited the members of his association to visit and inspect his works, has succeeded in economising the use and consumption of an expensive and valuable fuel, and in preserving from positive waste, and applying to profitable use, volumes of heat evolved in the process of smelting, heretofore allowed to escape.—*C. E. and A. Jour.*

Artificial Light.

Professor Brande delivered a lecture at the Royal Institution, "On the Theory and Practice of the Production of Light." Mr. Brande commenced by referring to mould candles and single-wicked oil-lamps used in houses and streets at the beginning of the present century; and remarked that the vast improvement made in artificial illumination might be taken as a striking instance of the great influence of applied science on the comforts of life. He then proceeded to give a statement of the scientific causes of this improvement. In common flames the evolution of light results from two independent causes—*ignition and combustion*. Ignition is probably a mere transient physical state of matter, producing no change in the ignited substance. *Combustion* is essentially a chemical phenomenon,—the heat and light produced are the effect of successive chemical actions, and the substance is permanently changed. *Combustion*, then, may be regarded as the origin of the heat—*ignition* of the light afforded by flame.—Mr. Brande demonstrated, by many experiments, that the luminosity of flame is due to solid matter existing in the combustible gas; and he noticed the expansive effect of heat in throwing down charcoal in the combustion of olefiant gas. The conditions of the fitness of bodies for purposes of common illumination were stated to be, that the matter from which the luminosity is to be obtained should be combustible; and that the product of its combustion should be *gaseous, inodorous and harmless*. The products of the combustion of oil, wax, tallow and gas were contrasted with those of phosphorus, arsenic, &c.—which, but for the corrosive and poisonous matters resulting from their combustion, might be used as sources of light. It was also noticed, that though carbonic acid gas (which is one of the products of the combustion of coal gas, &c.) by itself noxious, it becomes harmless when diffused through the atmosphere. The importance of an accurate adjustment of the solid matter of the combustible to the oxygen required for its combustion was next dwelt upon. It was shown by experiments with Leslie's burners that when too much air is admitted to a flame light is lost, and that in an insufficient supply of air the flame emits smoke, owing to the imperfect combustion of its carbon. The light of flame must be as nearly white as possible. This was proved by the obliteration of color when viewed by a monochromatic flame. The artificial light may imitate that of the sun in purity was shown by the obtaining a Talbotype in less than a minute by the light of phosphorus burnt in oxygen. A brilliant light was exhibited, produced by a kind of petroleum. From 130 to 150 gallons of this substance are daily collected at Ridding, Derbyshire. By distillation it yields 5 per cent. of naphtha, 5 per cent. of paraffine (mineral tallow), and 80 per cent. of mineral oil. This oil is worth above 4s. a gallon; and when burnt in a common alcohol lamp gives the light of seven candles at the cost of three-eighths of a penny per hour. In conclusion, Mr. Brande noticed the electric light. He mentioned that the notion of el-

ectricity, as a source of illumination, had been suggested by Davy nearly half a century ago, with whom it was a favorite idea. Mr. Brande stated that a mode of procuring cheap electricity must precede the economical use of such illumination; and that were this obtained, water might be decomposed, and its hydrogen naphthalised and then burnt, so as to produce a vivid, bright and steady flame in its other element—oxygen.—*Civ. Eng. and Arc. J.*

Lockport and Niagara Falls Railway.

We are indebted to CHARLES B. STUART, Esq., Chief Engineer of the State, for his very attractive Report of a Survey for the *Lockport and Niagara Falls* Railroad. The line follows the general course of the Erie canal, passing through the villages of Middleport, Medina, Albion, Holley and Brockport, a distance of about 55 miles, making the distance from Rochester to Niagara Falls 76 miles.

The field labor has been performed by IRA SPAULDING, Esq., Engineer of Location, and he states the maximum grade at 19-80 feet per mile, 45-506 miles of straight line, and the curvatures of the remaining 8-785 miles as free from objection.

The cost of the road is estimated at \$773,761, or \$13,959 per mile. The Report of Mr. Stuart says:

The distance from Rochester to the Niagara Suspension Bridge, by your road, when extended and improved, will be only 73 miles. The distance between the same points, by the present lines of railroad, is nearly 99 miles—or 26 miles greater distance; besides having some 300 feet more elevation to overcome, on maximum grades of over 40 feet per mile.

If it should be thought that the length of the route from Rochester to Buffalo, via the Falls, would be an objection, when compared with the line via Attica, it should be remembered that the difference of 22 miles is in a great degree compensated by the longer tangent lines, easy curves and light grades of the Niagara route, and especially will this be the result when the present roads from Lockport to Buffalo shall have been re-laid with heavy iron rails, and improved in their construction, as is now contemplated. In addition to this, there will always be the great attractions of the Falls of Niagara, the Suspension Bridge, the Whirlpool, and the double tiers of combined locks at Lockport, to draw travellers over this route, when it is known that all these wonders of nature and art can be seen from the line of your road, and that, too, without the loss of a single hour, if the saving of time is deemed important.

Sources of Business.—It has already been shown that the termini of your road, east and west, are converging points, where the population of New England and New York, moving west, and that of the northwestern States and Canada West, moving east, will be drawn upon its track. In addition to this there is the yearly pleasure travel to the Falls of Niagara, now numbering over 60,000, half of which number passed over the western end of your road the past year. There is, at least, 300,000 travellers passing between Rochester and Buffalo yearly, on the Erie canal, and by the railroad cars and Lake Ontario steamboats. The arrivals and departures at Buffalo, as stated by Mr. Barton, in his report in 1846, numbered 260,000 persons, which number must have greatly increased since that period.—There is also the way travel and traffic on your line to be added to that already alluded to—for which it is not easy to find data to arrive at any very satisfactory conclusion. But as your line passes through a very rich and populous country, and touches 18 flourishing villages and in the vicinity of half as many more, and terminates in a manufacturing city numbering over 30,000 inhabitants, which is rapidly increasing, it must form a very important item, equal probably to the ratio of any railroad in this State.

Probable Income.—It has been shown that your road, when completed, will depend for its support—

- 1st. On the way traffic of the line.
- 2d. On the pleasure travel to the Falls of Niagara either in going or returning.
- 3d. On the Canada travel, and that passing thro' Canada to and from the Western States and Territories.
- 4th. On a fair diversion of the Buffalo travel and traffic.

5th. On the transportation of produce and merchandise, to and from Canada.

6th. On the carrying of the U. S. mail.

To estimate the amount and value of the travel and traffic from all these sources, with any very great degree of accuracy, is of course impossible; but we may, I think, fairly assume that the aggregate travel, exclusive of that which will be brought to your road upon the completion of the Great Western railway, will be equal in number to those last year passed over the Attica and Buffalo railroad, which was 127,004 through passengers, and 19,231 way passengers. But I shall, for the purpose of greater caution, estimate for the pleasure travel to and from the Falls of Niagara, only 40,000, a number equal only to those carried over your road last year, which, at \$2 each, would be \$80,000. For the Canada travel until the completion of the Gt. Western railway, say 20,000 do \$2,000. . . . \$40,000

For the diversion of the Buffalo travel say one-fourth of last years number—31,750 do \$2. 63,500

For way travel, say half the way travel of the Auburn and Rochester railroad last year—54,233, do \$1. 54,238

For the freight traffic, say half the amount received for freight last year on the Auburn and Rochester railroad, which would be. 41,568

For U. S. mail. 10,000

Total receipts. 289,306
Deduct one-third of receipts for expenses. 96,435

Net income. \$112,871
or 12 per cent. on the cost of the work.

It seems to me clear, in view of the foregoing facts, and of the constantly increasing sources of travel and business between the east and the west, no apprehensions need be entertained, that the profits of your road when completed, will not be as large as the most extravagant could desire. With the greatest confidence, therefore, in the success of the enterprise in which you have embarked, I cannot but urge you to press forward its construction to an early completion.

Respectfully submitting these views, I am, gentlemen, your obedient servant,
CHARLES B. STUART, Chief Eng.
Rochester, February 1, 1849.

Statistics of British Commerce.

The returns of the Board of Trade, for the month and 12 months, ending Jan. 5th last, have just been issued, from which we find that the total exports of British produce for the 12 months have been 46,407,939; and the decrease, as compared with the previous year, 4,597,000. For the month ending Jan. 5th last, there was exported—iron and steel to the value of 281,004.—being a decrease, as compared with the month ending Jan 5, 1848, of 41,618; copper and brass, 124,561.—being a decrease of 97,691; tin, unwrought, 70,300.—being a decrease of 7980; lead, 0492.—being an increase of 3161; and tin plates, 37,145.—being an increase of 14,093; British salt was exported to the value of 26,062.—being an increase on the corresponding month of 1848 of 15,294; glass, 19,754.—being an increase of 975; hardware and cutlery, 189,147.—being a decrease of 14,443; machinery, 29,805.—being a decrease of 45,200; and coals and culm, 66,139.—being a decrease of 4707. The total of the above exports of mineral produce for the month amounted to 724,929, and shows an amount of decrease over increase of 86,597.

The exports of foreign and colonial metals have been, for the years 1847 and 1848, as follows:—Copper, unwrought, 1847, 8043 cwt.; in 1817, 3726 cwt. Iron bars, 1847, 5053 tons; 1848, 3432 tons. Steel, unwrought, 1847, 13,357 cwt.; 1848, 9779 cwt. Lead, pig and sheet, 1847, 3462 tons; 1848, 3748 tons. Spelter, 1847, 3346 tons; 1848, 3777 tons. Tin, bars, ingots, blocks, and slabs, 1847, 11,471 cwt.; 1848, 8341 cwt.

The imports of metals from foreign parts and our colonies, for the years 1847 and 1848, were as follows:—Copper ores under 8 and 9 Vic., c. 90, 1847, 41,431 tons; 1847, 14,167 tons. Under 11 and 12 Vic., c. 137, 1847, —; 1848, 35,981 tons, making a total quantity of copper ores imported in 1848, of 50,148 tons. Copper, unwrought, 1847, 10,265 tons;

1848, 10,255 tons. Iron, in bars, 1847, 33,317 tons; 1848, 23,496 tons. Steel, unwrought, 1847, 13,097 cwt.; 1848, 6755 cwt. Lead, pig and sheet, 1847, 3932 tons; 1848, 3507 tons. Spelter, 1847, 12,769 tons; 1848, 13,423 tons. Tin, blocks, ingots, bars, or slabs, 1847, 23,307 cwt.; 1848, 6733 cwt. The exports of British and Irish metals, for the years 1847 and 1848, in declared value, were—Iron and steel, 1847, 1,541,868; 1848, 1,272,675. Lead, 1847, 170,344; 1848, 117,181. Tin, unwrought, 1847, 159,466; 1848, 143,436. Tin plates, 1847, 462,369; 1848, 530,061. Machinery, 1817, 1,263,016; 1848, 809,561. Hardware and cutlery, 1847, 2,341,981; 1848, 1,658,593. Coal and culm, 1847, 868,502; 1848, 1,096,356. Glass, 1847, 291,180; 1848, 236,518. And salt, 1847, 261,467; 1848, 265,296.—*London Min. Jour.*

English Patents.

Specification of a Patent granted to Thomas, Earl of Dononald, Vice-Admiral in Her Majesty's Navy, for Improvements in Marine Steam-Boilers, and Apparatus connected therewith.—[Granted, February 11, 1848.

The principal features of this invention are the application to marine-boilers of the principle adopted for consuming the smoke in other boiler-furnaces, by admitting a steam of hot air behind the bridge, to burn the gaseous products, and the removal of the steam-chest from the top of the boiler to the end of it, thereby lessening the height. His lordship claims seven separate parts, which may be thus briefly noticed:—Firstly, the more perfect combustion of the gaseous products at their entrance into a tube-chamber, constructed according to a former patent, granted to him, by combining a steam of undecomposed hot air with such products. Secondly, the constructing boilers with the steam-reservoir placed below the level of the water in the boiler in lieu of the steam-chest as usually constructed above the boiler. Thirdly, the dying of the steam by its being exposed to a portion of the fire-place, or by passing the flue or chimney through it. He claims, Fourthly, a mode of preventing the priming of steam-boilers by means of a plate or separator placed within the boiler, the end being below the surface of the water in the boiler. Fifthly, the right of making and using a spiral or centrifugal separator: which, however, may be made square or other shape, and still retain the principle of the invention—namely, the separation of the water from the steam, and the mode of carrying off such separated water back to the boiler, without being obstructed by a contrary current of steam, by means of a pipe or channel from such spiral separator to the boiler. Sixthly, he claims a mode of working the propellers of steam-vessels by means of short propeller-shafts. And, Lastly, a mode of constructing boat boilers and apparatus.—[Inrolled, August 11, 1848.

Specification of a patent granted to William Russell, of Lyndbrook, Gloucestershire, for an Improvement in the Preparation of such Bar-Iron as is used in the manufacture of certain kinds of Rod-Iron.—[Granted January 29, 1848.

This invention may be very briefly described. The object is to remove from the surface of the ordinary bar iron the spill or scale, which is found to be very injurious in making the billets from which wire-rod-iron and horse-shoe-nail rod-iron is manufactured. The scale is removed by passing the bar-iron through a kind of draw-plate, called a "cleanser," composed of grooves formed in the shape of the letter V. In conducting the operation, the iron is first made into lumps of about one hundred weight and a quarter. It is then removed to the hammer, where it is reduced by hammering to short bars of five or six inches square. It is next passed through the rolls in the usual manner, and reduced to bars of about one inch and a quarter square. In passing through the two last and finishing grooves in the rolls, opposite which the cleanser is placed, the lower half is slightly lowered in order to admit of the entrance of the bar to the rolls which draw the bar through. During this finishing operation, pressure is exerted to bring up the cleanser by means of the lever and shaft, thereby scraping the iron on all its four sides, and effectually removing all the spill and scale from the surface. The bar is then passed over the upper roll, and is introduced through a smaller groove in the rolls, when the operation of

scraping is repeated as before.—[Inrolled July 29, 1848.—*Ibid.*

Native Copper in America.

At a recent meeting of the Academy of Science at Paris, M. Cordier exhibited a mass of native copper, from the banks of Lake Superior, in the United States of America, and communicated on the subject the following particulars:—Some time since, beds of native copper, of considerable extent, were discovered on the eastern banks of Lake Superior; more than 120 companies are at present occupied in working these valuable beds, which are extremely remarkable in many respects. The copper is always found in its native state, and is disseminated in pieces of various size and irregular form, through a vast extent of pyroxenic porphyry, passing to the state of brown wacke, often amygdaloid, and which completely resembles the pyrogenous rocks in the neighborhood of Oberstein in the Palatinate. The metallic particles are sometimes found as forming part of the rock, and at other times they occupy irregular veins, formed of white and spathous carbonate of lime.

A specimen exhibited to the academy by M. Cordier, weighed upwards of 112 lbs., and contained very little gangue. This specimen, as well as another more than ten times its weight, formed part of a cargo of several tons which recently arrived at Havre; it is intended to be placed in the Museum of Natural History. The copper is of extraordinary tenacity and purity, containing scarcely ten parts in a thousand of sulphur and silver. At one of the extremities of the copper district, where this metal somewhat less abundant, it is replaced by native silver, disseminated in some parts throughout the rock, and also in the copper, in particles extremely fine, generally not readily to be perceived, and rarely attaining the size of a sentime (0.393.) The association of these two metals in a native state, is a circumstance entirely new. From the information communicated to M. Cordier, a copper is obtained by smelting, often containing 20 per cent. of silver. M. Cordier has seen an ingot sent for assay, which was found to contain more than 30 per cent of silver. If, as it would appear probable, these discoveries should lead to extreme working, the United States of America, which already possess rich mines of iron and anthracite in the old territory of the Union, and who will derive advantage from the working of the lead mines of the Upper Mississippi, and of the almost incredible "diggings" in California, will be placed at the head of those nations which Nature has most favored in the distribution of subterranean wealth.

The Effect of Steam on Timber.

Mr. Violiter has lately presented to the Academy of Science in Paris, a very able communication on the desiccation of different kinds of wood by steam. He stated that steam raised to 482° Fah. was capable of taking up a considerable quantity of water, and acting upon this knowledge he submitted different kinds of oak, elm, pine and walnut, about 8 inches long and half an inch square to a current of steam at 7½ pounds pressure to the square inch, but which was afterwards raised to 482 degrees. The wood was exposed thus for two hours. It was weighed before it was exposed to the steam and afterwards put into close stopped bottles until cool, when the samples of wood were again weighed and showed a considerable loss of weight, the loss of which increased with the increase of the temperature of the steam. For elm and oak the decrease in weight was one half, and ash and walnut two fifths, and pine one third. The woods underwent a change of color as the heat was rising from 392 degrees to 482, the walnut became very dark, showing a kind of tar, formed in the wood by the process, which was found to have a preserving effect on the wood.

It was found that wood was thus treated became stronger—having an increase in the power of resisting fracture. The maximum heat for producing the best resisting fracture power for elm was between 302 and 347 degrees, and between 257 and 302 for oak, walnut and pine. The oak was increased in strength five ninths, walnut one half, two fifths for pine, and more than one fifth for elm. These are but preliminary experiment which may lead to very important results, and are therefore interesting to architects especially. By this process,

the fibres of the wood are drawn closer together, and maple and pine treated in the steam to a temperature of 482, were rendered far more valuable for musical instruments than by any other process heretofore known. This is valuable information to all musical instrument makers—who knows but this is a discovery of the Venitian fiddle maker's great secret.

AMERICAN RAILROAD JOURNAL.

Saturday, April 14, 1849.

Railroad Scales.

Freight on a railway is generally paid at a given rate per hundred or ton. The use of scales for ascertaining quantities is now universally adopted instead of the old mode of estimating or measuring by the foot. We have often been struck with admiration on witnessing the ease with which large loads of merchandise have been weighed on FAIRBANK'S Patent Scales. On applying the severest tests and the closest scrutiny their perfect accuracy has often been tested. After weighing a load, then dividing it into several parts and weighing these parts separately, the aggregate would be precisely the same in both instances. The labor of weighing a hundred tons is about as easily performed by the use of these scales as the weighing of a single pound. The perfection of these scales consists in their accuracy, and their convenient and compact form. For all parties or companies requiring the weighing of heavy bodies, they are found to be almost if not quite indispensable. By referring to our advertising head parties will see whom to address.

Railroad from Lewiston Falls to Rumford Falls, in Maine.

We have been favored with a copy of the Report of a Survey and Estimate for a Railroad from Lewiston Falls to Rumford Falls, Me., made by WILLIAM H. NOBLE, Esq., Engineer, accompanying which, is a finely executed map of the road. The Report does great credit to the ability and taste of the engineer, and presents in a very attractive form the arguments in favor of this line, following, as it does, the general direction of the valley of the Androscoggin.

The distance is 42 miles, and the engineer estimates the cost of the road at \$12,861 per mile, estimating the superstructure at \$5,254 per mile.

From some knowledge of the localities, we think the estimates for grading, etc., are not understated. The price of iron is put too low, and a lighter rail than 56 pounds to the yard will be required, to come within the estimate.

The people along the line of this route have the means within themselves to build the road, if they are united and in earnest. The spirit of Vermont, or of Massachusetts, is only wanting in Maine, to bring the splendid water power of the Androscoggin into rapid use. It is by far the most attractive river of New England, and has more advantages for manufacturing purposes than any one of its streams.—From Lake Umbagog to the sea, in a distance of about 150 miles, it has a fall of 1254 feet, presenting a succession of cascades more attractive to the pleasure tourist than can elsewhere be found in New England.

The Railway Bridge of the Lewiston and Waterville Railroad crosses at the head of Lewiston Falls, nearly one hundred feet above the foaming waters below, and at Rumford, the waters of the Androscoggin are precipitated more than 180 feet over the irregular granitic masses which break their fall.

In New England, at the present time, the question in regard to railways is not so much one, as to where on the whole can the best line be obtained; as who

will consent to live away from the reach of their influence? The same spirit is extending itself throughout the whole country, and notwithstanding the stringency in money matters, railways are destined to go forward, with more strength, energy and vigor, than has yet been witnessed, with the single exception, perhaps, of the State of Massachusetts. Almost every town in that State is now within striking distance of a railway, and every good water power attracts to it a line of railway at once.

Locomotive Engines.

History of the Manufacture in the United States.

In our paper of February 24th, we gave some account of the Manufacture of Locomotive Engines in the United States, with a brief allusion to the several works engaged in their construction. We made careful inquiry into the history of the manufacture, but could find no satisfactory record, or testimony on the subject, except through a great variety of private sources. In this matter, as in all others of similar import, we desire to draw forth, from various engineers and other parties, now scattered throughout the country, all the information that can be gathered upon the subject.

The mechanical skill of the age is now more devoted to railway machinery than to any other branch of mechanics, not excepting even steam navigation. The Locomotive Engine is the most wonderful of created things. Everything touching its history or its progress, is now eagerly sought for by practical men, with the same earnestness as that awakened by a new discovery. We feel, therefore, more than ordinary gratification in being able to lay before our readers the following very interesting note addressed to us by JOHN HAMPSON, Esq., of Louisiana, Engineer of the New Orleans and Carrollton Railroad.

Carrollton, 23d March, 1849.

To the Editor of the Railroad Journal:

In your number of February 24, you give a short historical sketch of locomotion, which is not fully correct. The writer of this assisted in the construction of the first locomotive that was made in this country for a railroad company; and also in the putting together, and trial of those which first came from England. The following are the facts:

In 1829 the Delaware and Hudson railroad company imported two locomotives from England of the old form; one of them was erected and tried in the West Point company's shop, at the foot of Beach street, in your city, and the other was tried at Dunscombe's, near the East river. I did not see them on a railroad, but I heard that they did not succeed. In the latter part of 1829, or perhaps the beginning of 1830, a locomotive engine was made at the said West Point company's shop, for the Charleston and Hamburg railroad; this was employed in conveying materials for the construction of the road, and I believe was the first one made in America that performed successfully. About the end of the latter year, another one was made at the same establishment, for the same railroad. In the beginning of 1831, an engine was also made at the same place for the Albany and Schenectady railroad. The writer assisted in its construction and trial on the railroad. It was called the DeWitt Clinton, and was of small size, not weighing quite four tons; it would not take over three cars (small ones) from Albany up to Schenectady; however, alone, it attained a speed of near 40 miles an hour. Soon after this engine commenced running, which was about July, 1831, one of Stevenson's improved locomotives arrived on the road, from England. It had

four wheels of the same size, and 10 inch cylinders 14 inch stroke. The contrast, between this engine and the American one, was great; the latter being a beautiful, light, race-horse looking machine, while the former looked heavy and "Elephantine" in comparison. It was immediately christened "John Bull." However it proved to be an excellent machine, and the writer has (in 1831) on the Mohawk and Hudson railroad, frequently driven it, with a train of cars behind it, 5 miles in 12 minutes. This I believe was the first English engine that run with regular passenger trains in this country; at least I am not aware of any one before it. By the way—this engine was subsequently altered, and I believe was the first locomotive under which a truck was placed, which was done in the railroad company's shop, under the direction of Mr. Asa Whitney, the company's superintendent. Yours, etc,

JOHN HAMPSON,

Engineer N. Orleans and Carrollton R. R.

Our hearty thanks are due to our attentive friend for the above information. We are thereby enabled to place on record, for future reference, facts which are of the greatest interest to all persons interested in railway improvements. We ask the same from other friends of the railway.

Contrast the best engines of this day with those of 1829 and 1830, and you see, by the comparison, something like a distinct record of the progress of the age.

Portland and Montreal Railroad.

The receipts of the Atlantic and St. Lawrence Railroad, for the first quarter of the present year, have been as follows:

	Passengers.	Freight.	Total.
January.....	\$3,437 11	\$1,931 98	\$5,369 90
February.....	3,469 90	2,915 04	6,384 95
March.....	5,238 37	4,147 36	9,385 73
			\$21,039 76

The business of March was upon a line of 42 miles, including 6 miles of the Lewiston and Waterville railroad. The Montreal road is to be opened to Paris, 47 miles from Portland, and the Lewiston road to Waterville, 82 miles from Portland, and 55 miles from the Danville Junction, at an early day the coming season. Both lines have favorable grades, and are of cheap construction. They can be more cheaply operated than most of the New England roads. From Portland to Paris, 37 miles, or 78 per cent. of the whole distance, is on a straight line, and no grade exceeding 35 feet to the mile.

Troy and Rutland Railroad.

The bill incorporating a railway company by the name of the Troy and Vermont railroad, authorising the construction of a line from Troy to the line of Vermont, in the direction of Rutland, was passed into a law in New York.

A Check upon Railway Schemes.

There is now a proposition before the Massachusetts Legislature, designed to operate against the numerous speculative railway schemes springing up in that state. It is proposed to withhold the grant of charters in all cases till the line of route is determined by actual survey, and 50 per cent. of the capital in good faith subscribed. The work not to be entered upon till *three-fourths* of the cost of the road is actually provided for, the debts of each company not to exceed at any time *one-fourth* of the amount of the capital paid in. It is doubtful, however, whether a law with such provisions can be passed the present year, though the proposition has strong advocates both in the Legislature and among the capitalists of Boston.

Bridging Lake Champlain.

The bill allowing the Ogdensburgh Railroad Co. to bridge the outlet of Lake Champlain, was defeated in the Senate of New York after having passed the House of Assembly.

Syracuse and Rochester Air Line Railroad.

The bill which passed the House of Assembly, granting a charter for a direct line of railway between Syracuse and Rochester was defeated in the Senate.

New Haven Canal Railroad.

The railway committee of the Massachusetts legislature by a vote of 4 to 3, reported adversely to the bill granting authority to the New Haven Canal railroad construct their line to West Springfield to a point of junction with the Western Railroad.

The question is now pending before the Legislature, and the liveliest interest is felt as to the result. The opponents of the bill regard the granting of a parallel line as an infringement of the rights granted to the Hartford and New Haven Railroad Co.

Returns of Railroad Companies.

The New York Legislature passed a law requiring more full returns, than have hitherto been made, from the several railroad companies in this state.

The British Navigation Laws.

The bill for the repeal of the Navigation Acts, passed to its third reading in the House of Commons by a majority of 56 votes, after full discussion. Its success in the upper House is regarded as certain.

Mississippi and Ohio Railroad.

The question of subscription of one million to this stock submitted last week to the voters of Cincinnati, resulted in ayes 4188, nays 1237—a majority of 2951 in favor of the subscription. The money is to be expended, as far as it will go, in building the road from Cincinnati, the direction bearing, we understand, down the river valley towards Aurora.

Columbus and Lake Erie Railroad.

We have before us the report of the Directors, Treasurer and Engineer of the Columbus and Lake Erie Railroad Company, submitted to the stockholders at their annual meeting, on the 20th of March, 1849.

The grading on the whole route between Newark and Mansfield, 60 miles, is nearly finished, and can be got ready for the iron in June next. The report of J. W. Webb, Esq., Engineer, says:

"There are four thousand seven hundred lineal feet of bridging on the whole route; three thousand feet of which are completed—ready for the iron bar. The timber for the remaining seventeen hundred feet is all on the ground, and mostly framed, ready to raise early the coming spring. The abutments are of the most permanent character, being composed of solid masonry; the foundations of which, consisting of timber and plank, are sunk below the beds of the streams, and on these are erected the abutments with hewed stone laid in lime mortar.

The culverts are completed throughout the entire length of the whole sixty miles, and are constructed of the most durable material that could be procured along the line, of stone well dressed and laid in 'range work,' when it could be done at a reasonable cost; when not, hewed, white, or burr oak timber, have been temporarily substituted; and at the opening of the road, stone can be hauled with cheapness and dispatch to rebuild the wooden ones when they have failed.

There is now near four miles of the superstructure laid, and ready to receive the iron bar, on the south end of the road, in the vicinity of Newark; also, timber delivered on the line, at different points sufficient to lay ten miles more. The company have erected on the route, two large steam saw mills, where plenty of good oak timber could be had contiguous to the line, capable of swing thirty thousand feet (board measure) every twenty-four hours.

With such facilities as these at our command, and in a region of country where timber is abundant, I am justified in the assertion that the timber for the balance of the superstructure is all provided for. The curves and grades are favorable for the rapid transportation of heavy freights.

The minimum radius of curvature is two thousand feet, and maximum grade forty feet to the mile.

In the prosecution of the work on your road so far, it has been done with a view that it shall, when completed, be unsurpassed in workmanship, durability and strength, by any other in the state, or even in the United States."

Railway Improvements.

SALON CARRIAGES are now being introduced both upon long lines and lines of pleasure. They have been launched on the Caledonian for the convenience of travellers in a continuous journey of between 400 and 500 miles in or out of London. The interior is divided into two parts by means of a sliding panel, on which are placed two large mirrors, and it is seated with two roomy and easy arm chairs and two sofas covered with morocco. In the centre there is a folding table, and room is left to pass round it. Each division forms a comfortable little parlor. The hangings are of dark blue, edged with white, and the windows are ornamentally stained. Outside the carriage and at either end, a short platform is fixed upon which travellers may stand and enjoy the scenery as the train passes on. They are painted a rich lake color, with the company's arms in the centre. Beds or couches may be made up as they are on shipboard.

We have already introduced to our readers the novelty of light locomotive passenger carriages; and our present number includes in its pages a representation of that built by Messrs. Adams. The full detail of its advantages for branch traffic will be found accompanying the engraving; but the cursory reader will be glad of the following summary:—

- 1st. A diminution of dead weights as compared with profitable load.
- 2nd. A saving of fuel.
- 3rd. A diminution of expense in "maintainance of way."
- 4th. A diminution of capital in rolling stock.
- 5th. Increased accommodation to the public.
- 6th. Increased safety by facility of starting and stopping to avoid danger.
- 7th. Increased safety by lowered centre of gravity, enabling the carriage to become a self-retarding sledge in case of a wheel breaking.
- 8th. Power of increased speed without damage to the rails or roadway.
- 9th. Facility for the cheaper structure of railways.—*Railway Chronicle.*

To Railway Companies and Principal Engineers.

AN ENGINEER and Land Surveyor, of ability and good reference, is prepared to conduct surveys, or take charge of work. Address
MR. DAIGERFIELD, Lithographer,
21*15 2 Wall street, New York.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Garnett, C. F. M.
Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Jones C. F.,
South Oyster Bay, L. I.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plane, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Pig and Bloom Iron.
THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

DUDLEY B. FULLER, Agent,
139 Greenwich street.

New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,
22 South William street,

February 3, 1849. New York.

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturers' name, and inspected before shipment at the works in Wales. For sale by

DAVIS, BROOKS & CO.,
63 Broad street.

March 18, 1849 2m.11

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President

Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN,
41 Broad street.

March 29, 1849. 3m.13

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2½ by ½ Flat Bars.

25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Garthrorrie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by

A. & G. RALSTON,
4 South Front St., Philadelphia.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, etc.
Sandusky City, Ohio, March 15, 1849. 2m.13

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

SCHENECTADY LOCOMOTIVE WORKS

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section st. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 28 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections between those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed from the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 28th of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the contract. The most energetic prosecution of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
Baltimore, March 14, 1849 5t.12



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRAE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,

J. D. BRONGEST,
Secretary U. C. M. C.
Hamilton, 24th February, 1849. 12tf

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Bliester Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may
be built in the United States, under license, which can
be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/4 to 15 inches diam-
eter, and any length not exceeding 17 feet—manu-
factured by the Caledonian Tube Company, Glasgow, and
for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patente.*

These Tubes are extensively used by the British
Government, and by the principal Engineers and Steam
Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

Mattewan Machine Works.

The Mattewan Company have added to their Ma-
chine Works an extensive LOCOMOTIVE ENGINE
department, and are prepared to execute orders for Lo-
comotive Engines of every size and pattern—also Ten-
ders, Wheels, Axles, and other railroad machinery, to
which they ask the attention of those who wish such
articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favor-
able terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern im-
provements, second in quality to none in this or any
other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
this company has probably the most extensive assort-
ment of patterns in this line, in any section of the
country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
gether with all other tools required in machine shops,
may be had at the Mattewan Company's Shops, Fish-
kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's
"Patent Lubricating Oil"—price 80c. per gallon
4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Nor-
ris Brothers, in whose works, any one by calling can
see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during
the last six weeks, "Devlan's Lubricating Oil" and so
far as we have been able to judge from its use, we think
it preferable to the sperm oil generally used, for both
heavy and light bearings.

NORRIS BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

144

**LAP - WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manu-
facture as those so extensively used in England,
Scotland, France and Germany, for Locomotive,
Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patente.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the
town of Newcastle, Del., Locomotive and other steam
engines, Jack Screws, Wrought Iron Work and Brass
and Iron Castings, of all kinds connected with Steam-
boats, Railroads, etc.; Mill Gearing of every descrip-
tion; Cast Wheels (chilled) of any pattern and size,
with Axles fitted, also with wrought tires, Springs,
Boxes and bolts for Cars; Driving and other wheels
for Locomotives.

The works being on an extensive scale, all orders
will be executed with promptness and despatch. Com-
munications addressed to Mr. William H. Dobbs; Su-
perintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANU-
facturers of Railroad Machinery. The subscri-
bers have for sale American and English Bar Iron, of
all sizes; English Blister, Cast, Shear and Spring
Steel; Juniata Rods; Car Axles, made of double re-
fined iron; Sheet and Boiler Iron, cut to pattern;
Tires for Locomotive Engines, and other railroad car-
riage wheels, made from common and double refined
B. O. Iron; the latter a very superior article. The
Tires are made by Messrs. Baldwin and Whitney, Lo-
comotive Engine Manufacturers of this city. Orders
addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in
the order, a fit to those wheels is guaranteed, saving
to the purchaser the expense of turning them out in-
side.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR
Railroad Turnouts. This invention for some time
in successful operation on one of the principal rail-
roads in the country, effectually prevents engines and
their trains from running off the track at a switch, left
wrong by accident or design. It acts independently
of the main track rails; being laid down or removed
without cutting or displacing them.

It is never touched by passing trains, except when
in use, preventing their running off the track. It is
simple in its construction and operation, requiring only
two castings and two rails; the latter, even if much
worn or used, not objectionable.

Working models of the Safety Switch may be seen
at Messrs. Davenport, Bridges & Kirk's Cambridge
Port, Mass., and at the office of the Railroad Journal,
New York.

Plans, Specifications, and all information obtained,
on application to the Subscriber, Inventor and Paten-
tee. G. A. NICOLLS,
Reading, Pa.

**MACHINE WORKS OF ROGERS KETCHUM
& GROSVENOR, Patterson, N. J.**

The un-
derdesigned receive orders for the following articles man-
ufactured by them of the most superior description in
every particular. Their works being extensive, and
the number of hands employed being large, they are
enabled to execute both large and small orders with
promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and
Tenders; Driving and other Locomotive Wheels, Axles
Springs and Flange Tyres; Car Wheels of Cast Iron
a variety of patterns and chills; Car Wheels of Cast
Iron with wrought tyres. Axles of best American re-
fined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions
and of the most improved patterns, style and work-
manship.

Mill gearing and millwright work generally, hydrau-
lic and other presses; press screws; callenders; lathes
and tools of all kinds; iron and brass castings of all
descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

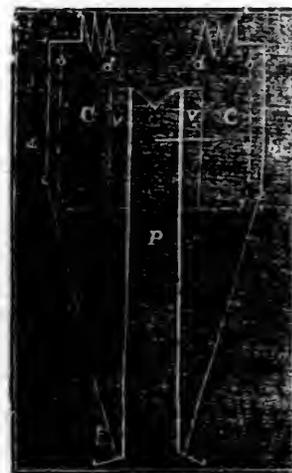
IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York,
having at great expense established a manufactory with
every facility of Machinery for Manufacturing Iron
Bridges, Bridge and Roof Bolts, together with all kinds
of the larger sizes of Screw Bolts, Iron Railings, Steam
Boilers, and every description of Wrought Iron Work,
are prepared to furnish to order, on the shortest notice,
any of the above branches, of the very best of Amer-
ican Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished sever-
al Iron Bridges for the Erie Canal, Albany Basin, etc.
—and a large amount of Railroad Bridge Bolts, all of
which have given the most perfect satisfaction.

They are permitted to refer to the following gentle-
men:

- | | |
|-------------------------|---|
| Charles Cook, | } Canal Commissioners
of the
State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | } Engineer of the Bridges for
the Albany Basin. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer & Bridge Builder,
Utica, N. Y. |
| January 1, 1849. | |

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS.

Railroad Directors and Managers are respect-
fully invited to examine an improved Spark Arrester re-
cently patented by the undersigned.

Our improved Spark Arresters have been extensive-
ly used during the last year on both Passenger and
Freight Engines, and have been brought to such a
state of perfection, that no annoyance from sparks or
dust from the chimney of engines on which they are
used is experienced.

These Arresters are constructed on an entirely dif-
ferent principle from any heretofore offered to the pub-
lic. The form is such that a rotary motion is imparted
to the heated air, smoke and sparks passing through
the chimney, and by the centrifugal force thus acquir-
ed by the sparks and dust, they are separated from the
smoke and steam, and thrown into an outer chamber
of the chimney through openings near its top, from
whence they fall by their own gravity to the bottom of
this chamber; the smoke and steam passing off at the
top of the chimney, through a capacious and unob-
structed passage, thus arresting the sparks without im-
pairing the power of the engine by diminishing the
draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Flsk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

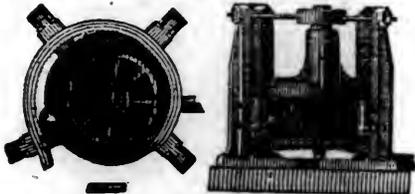
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR

WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

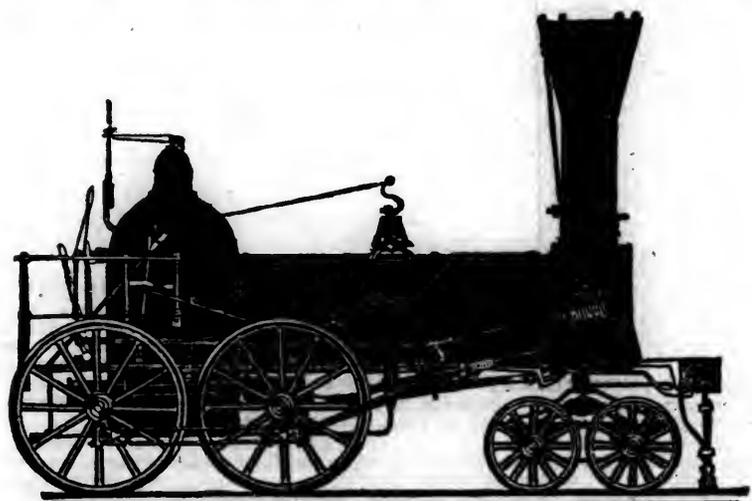
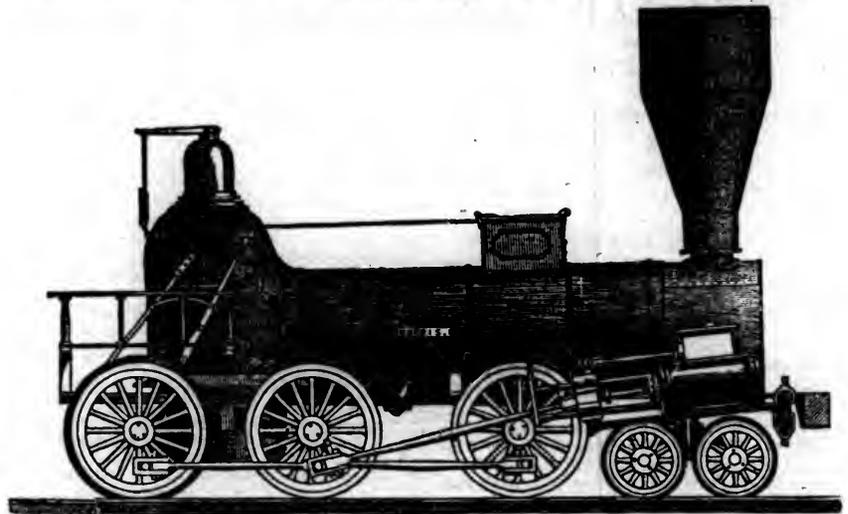
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

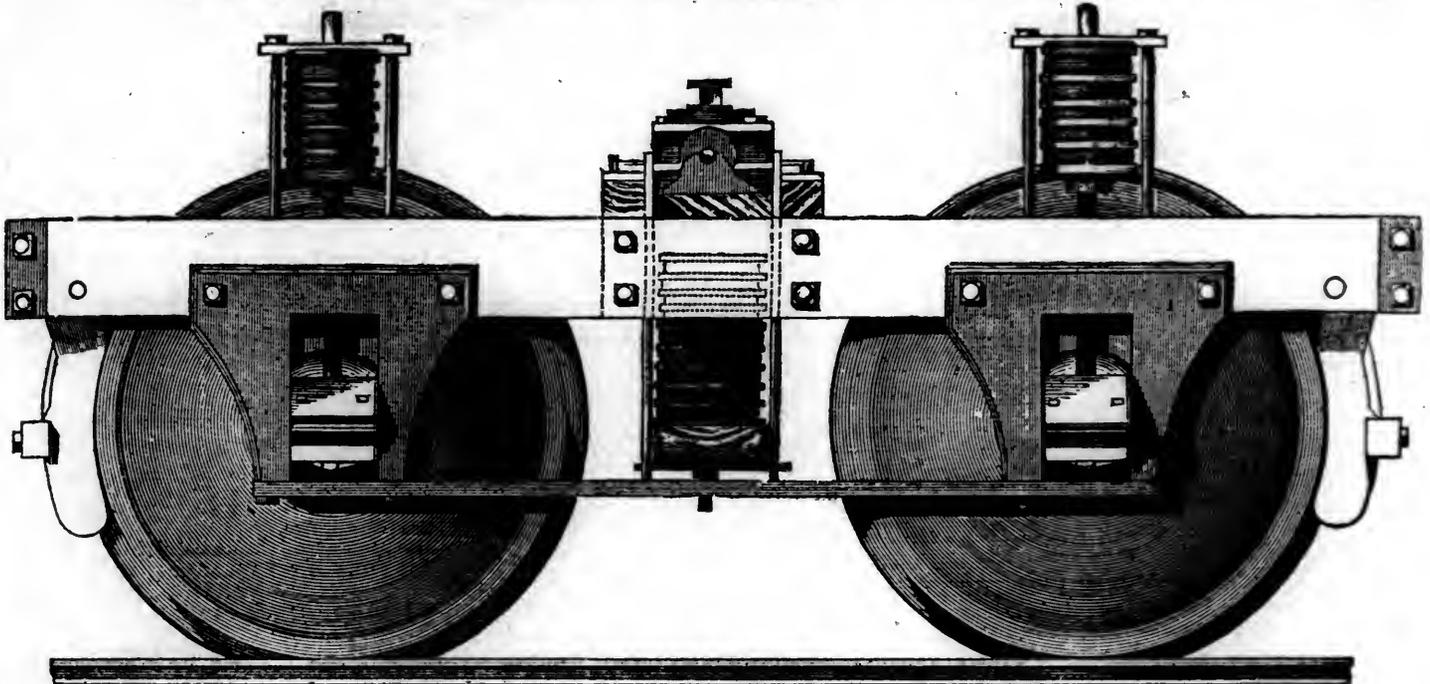
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with **WM. RIDER & BROTHERS,** No. 58 Liberty-street, New York, or with **F. M. RAY, Agent,** 100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,
Surviving partner of **STANCLIFFE & DRAPER.**



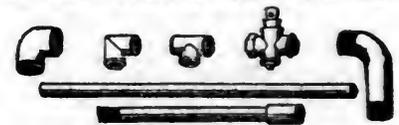
No 23 Pear street, below Walnut, Philadelphia, 10 near Third,

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1/2 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER PLANS.



Manufactured and for sale by **MORRIS, TASKER & MORRIS.**
Warehouse S. E. Corner of Third & Walnut Street, PHILADELPHIA.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

Norwich Car Factory, NORWICH, CONNECTICUT.

At the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of

RAILROAD CARS, OF EVERY DESCRIPTION, VIZ: PASSENGER, FREIGHT AND HAND CARS, ALSO, VARIOUS KINDS OF ENGINE TENDERS AND SNOW PLOUGHS. TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice. Orders executed with promptness and despatch.

Any communication addressed to **JAMES D. MOWRY, General Agent, Norwich, Conn.,**

Will meet with immediate attention.

EASTERN RAILROAD. WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)
 For Lynn, 7, 9 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
 Salem, 7, 9, 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
 Manchester, 9, a.m., 3½, p.m.
 Gloucester, 9, a.m., 3½, p.m.
 Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
 Portsmouth, 7, a.m., 2½, 4½, p.m.
 Portland, Me., 7, a.m., 2½, p.m.

And for Boston,
 From Portland, 7½, a.m., 3, p.m.
 Portsmouth, 7, 9½, a.m., 5½, p.m.
 Newburyport, 7½, 10½, a.m., 2, 6, p.m.
 Gloucester, 7½, a.m., 3½, p.m.
 Manchester, 8, a.m., 3½, p.m.
 Salem, 7½, 8½, 9, 10½, 11-40, a.m., 2½, 3, 4½, 7, p.m.
 Lynn, 7½, 8½, 9½, 10½, 11-55, a.m., 2½, 3½, 4½, 7, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, p.m.

* On their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
 Marblehead for Salem, 7½, 8½, 10, 11-25, a.m., 2, 4½, 6½, p.m.
 Salem for Marblehead, 7½, 9½, 10½, a.m., 12½, 3½, 5½, 6½, p.m.

GLOUCESTER BRANCH.

Trains leave
 Salem for Manchester at 9½, a.m., 4½, p.m.
 Salem for Gloucester at 9½, a.m., 4½, p.m.
 Trains leave
 Gloucester for Salem at 7½, a.m., 3½, p.m.
 Manchester for Salem at 8, a.m., 3½, p.m.
 Freight Trains each way daily. Office 1 Merchants' Row, Boston.
 Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, a.m., 12.45, 3.15, 6.45, p.m.
 Salem for North Danvers at 7.45, 9, a.m., 12.45, 3.15, p.m.
 Salem for Lawrence, 9, a.m., 3.15, p.m.
 Danvers " 9.10, a.m., 3.15, p.m.
 North Danvers " 9.20, a.m., 3.35, p.m.
 Middleton " 9.30, a.m., 3.45, p.m.
 North Andover " 10, a.m., 4.20, p.m.
 South Danvers for Salem at 7.45, 8.45, 11.30, a.m., 2, 4.55, p.m.
 North Danvers " 8.20, 11.10, a.m., 1.40, 5.40, p.m.
 Middleton " 11, a.m., 4.30, p.m.
 North Andover " 10.35, a.m., 6.05, p.m.
 Lawrence " 10.30, a.m., 5, p.m.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
 Outward Trains from Boston

For Portland at 6½ a.m. and 2½ p.m.
 For Rochester at 6½ a.m., 2½ p.m.
 For Great Falls at 6½ a.m., 2½, 4½ p.m.
 For Haverhill at 6½ and 12 m., 2½, 4½, 6 p.m.
 For Lawrence at 6½, 9, a.m., 12 m., 2½, 4½, 6, 7½ p.m.
 For Reading 6½, 9 a.m., 12 m., 2½, 4½, 6, 7½, 9½ p.m.

Inward trains for Boston
 From Portland at 7 a.m., 3 p.m.
 From Rochester at 9 a.m., 4½ p.m.
 From Great Falls at 6½, 9 a.m., 4½ p.m.
 From Haverhill at 7, 8½, 11 a.m., 3, 6½ p.m.
 From Lawrence at 6, 7½, 8½, 11½, a.m., 1½, 3½, 7 p.m.
 From Reading at 6½, 7½, 9 a.m., 12 m., 2, 3½, 6, 7½ p.m.

MEDFORD BRANCH TRAINS.
 Leave Boston at 7, 9 a.m., 12½, 2½, 5½, 6½, 9½ p.m.
 Leave Medford at 6½, 8, 10½ a.m., 2, 4, 5½, 6½, p.m.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.

CHAS. MINOT, Super't.
 Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, a.m., by steamer Erie. Leave Port Jervis at 6 o'clock a.m.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock p.m.

FOR FREIGHT.

Leave New York at 4 o'clock, p.m., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, a.m., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, p.m., and Binghamton at 7 o'clock, a.m., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.

January 1st, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, a.m. 12 m., 2, 4, 4.15, 5.30, p.m.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 a.m., 12 m., 2, 4, 15, 5.30 p.m.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 a.m., 4.15 p.m.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 a.m., 3 and 4.15 p.m.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicville, Purdy's and Croton Falls, at 7.30 and 9.30 a.m., 3 p.m.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
 Morrisiana and Harlem at 7.20, 8.50, 10 a.m., 12 m., 1.35, 3, 3.45, 5, 5.35 p.m.

Fordham and Williams Bridge at 7, 8.30, 9.50 a.m., 1.15, 3.25, 5.20 p.m.

Hunt's Bridge at 8.20, a.m., 3.18 p.m.
 Underhill's Road at 8.10 a.m., 3.08 p.m.

Tuckahoe at 8.05, 9.30 a.m., 3.05, 5 p.m.
 Hart's Corners at 7.55 a.m., 2.52 p.m.

White Plains at 7.45, 9.10 a.m., 2.45, 4.40 p.m.
 Davis' Brook at 9 a.m., 2.35, 4.30 p.m.

Pleasantville at 8.49 a.m., 2.20, 4.19 p.m.
 Mount Kisko at 8.30 a.m., 2, 4 p.m.

Bedford at 8.25 a.m., 1.55, 3.55 p.m.
 Mechanicville at 8.15 a.m., 1.45, 3.45 p.m.

Purdy's at 8.05 a.m., 1.35, 3.35 p.m.
 Croton Falls, at 8 a.m., 1.30, 3.30 p.m.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 a.m., and 3 p.m. Trains from New York to Croton Falls, and the 8 a.m. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 a.m. and 1 p.m.; leave Croton Falls at 7 a.m. and 2.30 p.m., Sundays excepted.

NOTICE—On Sundays the 7 a.m. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 a.m. to Croton Falls, returning 1.30 p.m., will be omitted, and the 7 a.m. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock a.m.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, OCTOBER 2d, the

Trains will run as follows:—
 Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m., and 3½ p.m. Leave Providence at 8½, a.m., and 3½, p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10½ p.m. Leave Dedham at 7½, 10½, a.m., 1½, 4½, and 9 p.m.

Stoughton Trains—Leave Boston at 11½ a.m., and 4½ p.m. Leave Stoughton at 8½ a.m., and 2½ p.m.

Freight Trains—Leave Boston at 11 a.m., and 6 p.m. Leave Providence at 4 a.m., and 7.40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½, and 10½ p.m. Leave Dedham at 8, 10½, a.m., 1½, 4½, and 9 p.m.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.

Winter Arrangement.—1848.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 a.m., 12 m., and 2½ p.m.
 Leave Worcester at 6½ and 10 a.m., and 4½ p.m., connecting with the trains of the Boston and Worcester, and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a.m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars.

S. H. P. LEE, Jr., Sup't

S. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice. The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 9 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m. The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3 1/2 pm.
Arrives at	9 am. and 6 1/2 pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12 1/2 pm. & 8 pm.
Leaves York for Columbia at	1 1/2 pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	\$1 50
" Wrightsville	2 00
" Columbia	2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
Or via Lancaster by railroad - 10
Through tickets to Harrisburg or Gettysburg - 3
In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at - 5 1/2 pm.
Returning, leaves Owning's Mills at - 7 am.

D. C. H. BORDLEY, Sup't.
Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hogshead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton. F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, a.m., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, leaves Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, a.m.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, a.m., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, a.m., Train.

The Ohio Stage Company are running the following lines in connection with the Trains: A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, p.m. Train from Cincinnati.

The 2 1/2, p.m., Train from Cincinnati, and 2 1/2, a.m., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia - \$1 90

Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am. and 10 pm. Leave Baltimore 9 am, and 8 pm. Sunday—Leave Philadelphia at 10 pm. Baltimore at 8 pm. Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12. Wheeling, 13.

Through tickets sold at Philadelphia office only. Wilmington Accommodation.

Leaves Philadelphia at 12 m. 4 and 7 pm. Leaves Wilmington at 7 1/2 am, 4 1/2 and 7 pm.

Newcastle Line.

Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm. Fare \$3.—Second class, \$2. N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Sup't.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848. A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock a.m.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	58	2.25	and 1.90
" " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 81f.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON.

Distance 190 miles. This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50 cts.	per hundred
On measurement goods	13 cts.	per cubic ft.
On bris. wet (except molasses and oil)	1 50	per barrel.
On bris. dry (except lime)	80 cts.	per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts.	per hundred
On hhds. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN

runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily - \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculum - 22 00

The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.

This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculum, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

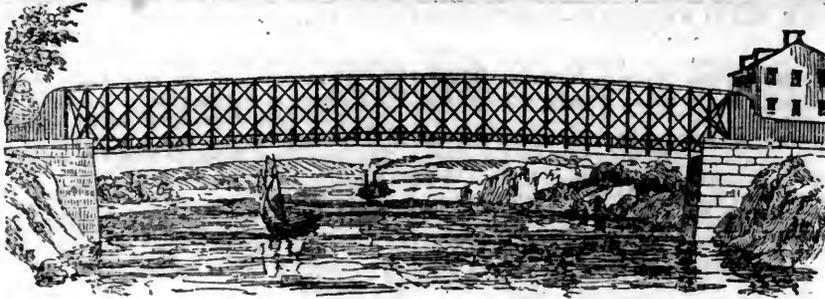
P. A. BURDEN, Agent.

Troy Iron and Nail Factory, Troy, N. Y.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

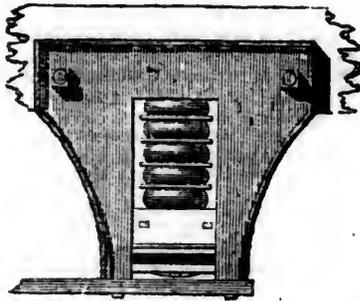
THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 53 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can affect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-Rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders. Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- Eastern Railroad.
 - Providence Railroad.
 - Western Railroad.
 - Old Colony Railroad.
 - Schenectady Railroad.
 - Balt. and Ohio Railroad.
 - Phila. & Reading Road.
 - Central (Ga.) Railroad.
 - Boston & Maine Railroad.
 - Providence and Wor. Road.
 - Concord Railroad.
 - Fitchburg Railroad.
 - Syracuse and Utica Road.
 - Baltimore and Susq. Road.
 - Schuylkill Valley Road.
 - Macon and Western Road.
 - New York and Erie Railroad.
- And other principal Railroads in the Western, Middle and Southern States.

F. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 81 Water st., N. York.

{ A. B. NORRIS, 196 Market st., Philadelphia.

April 22, 1848. ly² 17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of Twenty years has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,

Factory, 9th st., near Coates, cor. of Melon st.

Office, No. 3, North 5th street,

ly25 Philadelphia, Pa.,

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tilters, etc, by

JOHN A. ROEBLING, Civil Engineer,

Pittsburg, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.

NOS. 9 & 10 PRIME'S BUILDINGS,

(THIRD FLOOR.)

54 WALL STREET,

NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One columnn ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,

HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 16.] SATURDAY, APRIL 21, 1849. [WHOLE No. 679, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, April 21, 1849.

Railways in Canada and the Lower Provinces.

On the 31st of December, 1846, Earl Grey, the Colonial Secretary, in a dispatch to Lord Elgin, the Governor General of British North America, directed him to take measures toward effecting a more perfect union of the several North American Colonies, and suggested as a means of accomplishing it, a meeting or convention of commissioners from the different provinces, to consider the several subjects requiring concurrent legislation.

The plan of the *Zoll Verein* was alluded to as furnishing something like an example for imitation, though Her Majesty's Government, in the language of Earl Grey, merely referred to it as an illustration of the advantages of a commercial union, while political relations remained unaffected. In pursuance of this suggestion, a meeting of commissioners from the several British Provinces was held in Montreal in the fall of 1847, and certain measures concerted to ensure between the different colonies uniform rates of duties both in their commercial and postal intercourse, and such other arrangements agreed upon as could be made to promote the general welfare of the colonies. The subject of railways for the colonies was very fully considered in their discussions, and the great trunk line from Halifax to Quebec was then considered with a view to some action on the subject, when circumstances should favor the plan.

These proceedings, though attracting very little attention at the time, were highly important as a movement toward the gradual withdrawal of British influence from the legislation of the colonies.

Very shortly after this, Lord Elgin dissolved the Parliament of Canada, some eight months, only

before the expiration of the legal term of its existence, and ordered a new election. A change of ministry followed this result, and the liberal, or radical party, as they styled themselves, came into power, with a majority in the House of 60 to 24. Meanwhile a despatch of Earl Grey, originally addressed to Sir John Harvey, Governor of Nova Scotia, and afterwards communicated to Lord Elgin, announced the readiness of the Home Government to yield assent to the demand of the Legislatures of Nova Scotia and Canada, for a recognition of the principles of "Responsible Government."

Lady Elgin is the daughter of Earl Durham, and a niece of Earl Grey, and the appointment of the Earl of Elgin to Canada was regarded as an act of justice to the memory of Lord Durham, in all whose sentiments Lord Elgin is understood fully to sympathise.

The able, comprehensive and statesmanlike views of Lord Durham were carried out in part in the act of Union, and Lord Elgin has followed out the noble policy indicated by his father-in-law, in his efforts to carry forward public improvements, and promote the social and commercial condition of the colonies. The repeal of the Navigation Laws—the adoption of the principles of our Reciprocity Bill—the opening of Railway communication through Canada, and the retrenchment of public expenses, are the great measures regarded as essential to the growth and prosperity of the North American Colonies.

The Bill for the payment of the Rebellion losses, and for changing the Representatives, having given rise to much angry debate, and been disposed of, the Railway System of Canada has just been brought forward as a Government measure.

We have given the readers of the Journal information, from time to time, as to the railway movements of Canada, and they will recollect the appointment of a Railway Committee, with Sir Allan McNab as Chairman, and Mr. Steers as Secretary. In these movements, the most singular harmony and good nature are apparent among gentlemen most strongly opposed to each other politically.

Mr. STEERS, who is the Secretary and Treasurer of the Montreal and Portland Railway Company, has, as Secretary of the Railway Committee, drawn up, with singular ability and good taste, a Report on the subject of Legislative aid to Railways in the British Provinces. The report presents in so full and clear a manner the various arguments in fa-

vor of this policy, and fortifies them so completely by an appeal to facts drawn from the experience of the leading States in the Union, that we are happy to be able to present it to our readers in this number of the Journal. Any abridging it is out of the question.

OFFICE OF THE GENERAL RAILWAY COMMITTEE OF CANADA,
Montreal, 7th April, 1849.

Sir: I have the honor herewith to transmit to you for the information of His Excellency the Governor General in Council, a Report on the subject of aid to railways, compiled for the General Railway Committee of Canada, and submitted for their instructions.

I have the honor to be, Sir,
Your most obedient humble servant,
THOMAS STEERS, Secretary
General Railway Committee of Canada.
The Honorable The Provincial Secretary, }
Government House. }

REPORT:

It having been considered important that further and more detailed information should be furnished to the Government, on the subject of Public Aid to Railways, than was contained in the Memorandum transmitted for the consideration of His Excellency, the Governor General in Council, on the 9th March last, I have the honor to submit a Report for the adoption of the General Railway Committee of Canada, containing the required detail, obtained from the most authentic sources, and under the following heads:

First. As to the extent to which the scheme proposed may pledge the Credit of the province.

Secondly. The action taken by the Legislature of the United States in analogous cases; and,

Thirdly. What results have been consequent upon such aid, financially to the Revenue, and generally to the interest and prosperity of the States in which Legislative Aid was granted for the construction of Railways, and other internal improvements.

The trunk, or main track through the Province, is proposed to extend from the city of Quebec to the village of Windsor, opposite to Detroit, and is at present represented by the following incorporated companies:

1st. The St. Lawrence and Atlantic railroad Company, Incorporated by the 8th Vic. cap. 25; capital £600,000, with power to add £500,000. Total. £1,100,000

NOTE.—The Quebec and Halifax Railway is also chartered for a portion of this route from Melbourn to Quebec.

2d. The Montreal and Kingston Railroad Company, Incorporated by 11 Vic. cap. 107; capital. 1,000,000

3d. Wolfe Island, Kingston and Toronto Railroad Company, Incorporated

by 10 Vic. cap. 108; capital.....	1,000,000
4th. An Act to Incorporate a Company to extend the Great Western Railway from Hamilton to Toronto, 10 Vic. cap. 100; capital.....	225,000
5th. The Great Western Railroad Company, Incorporated by 10 Vic. cap. 110; capital.....	1,500,000

Total Capital..... £4,825,000

The approximate lengths of the Railway construction contemplated by the above corporations are—

No. 1. Taking the whole route from Montreal to Quebec.....	170 miles.
2. Montreal to Kingston.....	180
3. Kingston to Toronto.....	160
4. Toronto to Hamilton.....	40
5. Hamilton to Windsor.....	184
To which add the Branch from Melbourne to Province Line.....	58

Making a Total of..... 792 miles.

The cost of which may be approximately estimated at £5,500 per mile, and would give an aggregate total cost of construction £4,356,000.

It is proposed to modify the recommendation of the 9th March last, by limiting the demand for Legislative Aid to one-half, instead of two thirds of the amount of construction, as then advised, which would place the Government in the position, that the entire amount for which they could be called upon to pledge the Revenue of the Province, supposing that the whole of the trunk line were placed under construction, would be £2,178,000.

It is however manifest, that years must elapse before the entire line can be placed under construction, and the limits proposed, guarantee to the Government, that no immediate demand can be made for the pledge recommended, as it does not appear probable, that beyond the St. Lawrence and Atlantic, and Great Western Railway Corporations, the demand will be made for some years, by which time those roads will be completed; and no doubt can be entertained; earning a revenue which will have relieved the Government, if not from all responsibility, from all anxiety on account of the guarantee to these undertakings, for a net revenue of three per cent. on the cost of construction, will pay legal interest on the guarantee required.

If this view be correct and it appears the only one reconcilable with the present position of railway affairs in the province, the Government within the next five years, can be called upon to pledge the revenue of the Province, to the extent only, of the interest on one-half of the cost of construction of 412 miles, or of £1,133,000, amounting to £67,980 per annum, and its revenue will be increased by the direct action of the traffic of these undertakings, in a greater proportion than the interest of the sum for which the guarantee shall have been granted, and the communications will then be completed between the Western States and Lake Ontario, and between the cities of Quebec and Montreal to the Ocean, and the Canals of the St. Lawrence rendered available, to the latest moment of navigation.

The second consideration, the action of the Legislature of the United States in analogous cases may be detailed as follows:

The Legislature of New York granted to various Corporations within the State Legislative aid to the extent of—

On Railroads.....	\$4,465,700
Other Corporations.....	880,000
	<hr/> \$5,345,700

The Legislature of the Commonwealth of Massachusetts, granted Legislative aid to Railroads of.....	[56	5,019,555,
The Legislature of the State of Virginia, has granted in the late Session aid to Railroads of.....	2,370,000	
Other Corporations.....	560,000	2,930,000

Making in the aggregate..... 13,325,255-56
The States of North Carolina and Maryland, have likewise granted Legislative aid to Corporations for public improvement, the returns of which have not yet been received.

The State of New York, granted aid to the New York and Erie Railroad Company, upon a *pro rata* issue of stock as the work progressed, upon the a-

mount expended, defined in certain Acts to expedite and assist the construction of a railroad from New York to Lake Erie, passed on the 23d April, 1838, 29th April, 1840, and 18th April, 1843, and which enact, that upon satisfactory evidence being afforded to the Comptroller of the State, that certain amounts were collected by the Company from their Stockholders, and duly laid out in construction, that officer be empowered to issue State Stock to a similar amount in aid of the Company. By the Act of 20th April, 1846, an issue of stock was authorised in the proportion of two dollars to one expended, to the extent of \$400,000, and by the Act of April, 1843—The State was empowered to purchase the road within two years, at cost of construction and 7 per cent. interest thereon, less, the amount of the State Stock loaned, being three millions of dollars, and interest, and failing to purchase, the debt of three millions of dollars, which was secured by mortgage to the State, was released to the Company and the mortgage thereby cancelled.

It may not be irrelevant to state here, that it is generally understood, that this munificent gift of the State, was made with the view of the political conciliation, of the southern line of counties in the State, the inhabitants of which were dissatisfied that the Government had expended so large a sum in the construction of the Erie Canal, running through the northern counties exclusively, by which the value of property there was so largely enhanced, as to create a jealousy in the south; to conciliate which feeling the sum above mentioned was given as described, to the New York and Erie Railroad Company, to assist in the construction of that undertaking, running through the southern counties, and which bids fair in its consequences to leave no room for dissatisfaction in the increased value of property in that section by its construction.

Other Railway Companies were likewise assisted by the State of New York, but the aid was comparatively small.

The following document is submitted as the Official Statement of the Secretary of State of the Commonwealth of Massachusetts of the Legislative aid granted by that State, to Railway Companies, and likewise a letter of His Excellency Governor Briggs, expressing his concurrence in the Statement and views of the Secretary of State.

Statement from Official Records of the interest of the Commonwealth of Massachusetts in Railroads: 1st. Ten thousand shares of Western Railroad Stock (original issue)..... \$1,000,000

One hundred and thirty-four shares of the same (new issue).....	13,400
	<hr/> \$1013,400

2d. Amount of script loaned to Railroad Corporations, the payment of which is secured by mortgage on their several roads.

A. Western Railroad due in 1868-9..	\$2,100,000
Do " 1870....	1,200,000
Do " 1871....	699,555.56
B. Eastern Railroad " 1857-9....	500,000
C. Norwich and Wor. " 1857....	400,000
D. Andover & Haverhill " 1857....	100,000
E. Boston & Portland " 1859....	50,000

Making in all..... \$5,049,555.56

Note.—In addition to this there are \$163,000 of Western Railroad Stock in two of the State Funds. The Western Railroad Stock is above par and has been steadily increasing in value, the dividend of the last year was *Eight per Cent.*, no doubt is entertained of its being a very profitable stock.

The loan of the credit of the Commonwealth to this, and the other railroad corporations named is abundantly secured.

In connection with the interest of the Commonwealth in the Western Railroad, there are two Sinking Funds.

1st. The Western Railroad Stock Sinking Fund. This is the property of the Commonwealth, the purpose of it is set forth in the Act establishing it, the future purchase, or final redemption of the script issued by the State for the payment of the Stock, in the Western Railroad, and to meet the accruing interest on that stock.

This fund is derived from various sources, authorised by the laws of the Commonwealth.

The amount of this fund at the beginning of the present year was \$525,120.55.

2d. The Western Railroad Sinking Fund. This fund belongs to the Western Railroad Corporation, and is deposited with the Commonwealth as collateral security for the ultimate payment by that Corporation of the State Script.

This fund is derived from various sources designated in the Acts of the Legislature on the subject. It amounted at the beginning of the present year to \$491,000; on the delivery of script to the various Railroad Corporations, they were each of them required to execute to the Commonwealth a bond to indemnify and save harmless the Commonwealth from all liability on account of the script, to pay the interest thereon punctually, and to pay the principal sums, one year before the same shall become redeemable by the Commonwealth, and also to convey their road and its income, and all the property, and franchise in it as a pledge or mortgage to secure all the considerations of the bond.

The security of the Commonwealth is considered perfect, and by this interposition of its credit and aid, confidence has been given to the employment of private capital in the various Railroads, and the public prosperity has been enhanced and confirmed, and all the pursuits of industry and business greatly promoted.

(Signed,) W. B. CALHOUN,
Sec'y Commonwealth.

Secretary's Office, 22d March, 1849.
With the above document the following letter was received from His Excellency the Honorable Governor the Honorable Geo. N. Briggs.

EXECUTIVE DEPARTMENT, }
Boston, 22d March, 1849. }

Sir: With this you will receive a Statement taken by the Secretary of State, from Official Records of the Commonwealth, of the interest of Massachusetts in railroads made in compliance with the request contained in your letter of the 21st instant; it contains, I believe, an accurate view of the whole subject, condensed from official sources, and I concur with the Secretary in opinion as to the effects of the railroad system on the business and prosperity of the Commonwealth.

With great respect, I am, yours,
(Signed,) GEO. N. BRIGGS.

To Thomas Steers, Esq., Secretary.
Note.—The aid afforded by Massachusetts was in progressive ratio as the work advanced.

STATE OF VIRGINIA.
The following detail taken from the "Richmond Times," show the nature of the improvements to which Legislative aid has been granted in Virginia, during the last Session of the Assembly, to which is added the appropriate remarks of the "American Railroad Journal," edited by H. V. POOR, Esquire, of the 17th March, 1849, in the absence of the official account which is daily expected from the Government of that Commonwealth, and which shall then be submitted.

The Bill for the Virginia and Tennessee Railroad makes a State subscription of three-fifths of the capital of three millions or \$1,800,000.

The Bill for the "Blue Ridge Railroad" appropriates from the Treasury \$100,000 annually, for three years, for the construction of a railroad and tunnel, from the eastern base of the Blue Ridge at Rockfish Gap, to Waynesborough, in Augusta; and further subscribes three-fifths of \$150,000 or \$90,000 for the extension of the railroad to Stanton.

The Bill for the Alexandria and Orange Railroad subscribes an additional fifth, viz: \$180,000 for the construction of that work, and subscription of two-fifths having been already authorised by an act of the last Legislature.

Another Bill authorises the States guarantee to the bonds of the James River and Kanawha Company to the amount of \$350,000 for completing the connection between the Canal and Tide water, and of \$150,000 for completing the Ravanna and south side connections.

Another Bill appropriates \$160,000 for macadamizing a portion of the Staunton and Parkersbury road.

The Bills above enumerated authorise an aggregate appropriation of \$2,920,000, and besides these leading features a large number of appropriations have been made for different turnpikes, chiefly in the western part of the States.

Another Bill has passed, which transfers the whole of the States Stock in the Petersburg and Roanoke Railroad, amounting to \$323,500 to the town of Petersburg, for the purpose of enabling it to construct a railroad to some point in the Richmond and Dunville Railroad at or near Bankesville, in Prince Edward County, in which event the State will be entitled to an equivalent amount of stock in the new Company.

Amongst the Bills which have passed the House of Delegates within the last few days, is a Bill appropriating \$90,000 for the improvement of the Annotte River, a Bill guaranteeing the bonds of the Chesapeake and Ohio Canal Company to the amount of \$200,000, a Bill subscribing three-fifths of \$60,000 for a macadamized road from Buchanan to Staunton, and a Bill subscribing three-fifths of the capital for a railroad from Buchanan to the Roanoke river.

Extract from the Railroad Journal's Remarks on Railway Progress in Virginia, of 17th March, 1849.

"Since our last issue, in which we spoke of Virginia and her railway schemes, such events have taken place that we are able as well as happy to chronicle in this number, an entire change in the policy of that State.

In the earlier proceedings of the present Legislature all railway schemes contemplating aid from the State were rejected, and we regarded the policy of Virginia as fixed, as that of Massachusetts, although in an entirely different direction; an entire change has however taken place and a system of State policy has been entered upon, on a scheme of comprehensive liberality, which would do credit to any state in the Union.

The Legislature which has recently adjourned, has authorised subscriptions on behalf of the State, which it is believed will secure the construction of all the works at an early day. Virginia has thus committed herself to the work of developing her own resources by the construction of a system of railroads, designed to penetrate the most remote portions of the State, and open a market to those sections which had no suitable outlet to their productions; independently of this, the action of the other States by which she was surrounded, rendered it necessary that she should take these steps, to retain the trade and business of the State within her own limits."

Such is the superiority that railways give those states that have constructed them, that they who have thus far neglected to do so, are compelled to go into this work to maintain their equality and protect themselves.

It is this necessity which has given the great impulse we now witness in North Carolina and Virginia, States that have been the most backward in these works.

The third and not the least important consideration of governmental aid to internal improvements is, what results have been consequent upon such aid, financially to the revenue, and generally to the interest and prosperity of the States in which Legislative aid was granted for the construction of railways and other internal improvements.

In the State of New York, the official returns made to the State Engineer up to January 1849, show that upon an expenditure of \$12,419,000 being the cost of 348 miles of railway at an average of \$35,692 per mile, the net revenue has been 122-10 per cent., proving that any aid afforded by the Legislature for the construction of railways in that State must have been a safe investment. There is in operation a further distance of 697 miles, the revenues from which are not returned. Total number in the State, 1,045 miles.

By the official chronological tables of the assessed value of real and personal property in the city of New York, it appears, that since the year 1832, the period from which the construction of railroads may be dated, in the state of New York, and since when to the year 1840, 470 miles had been completed and put in operation, the value of real and personal property increased from \$146,302,616 to \$252,135,516, showing an increase between the years 1832 and 1840 of \$105,832,900. The assessed value of property in 1823 was \$70,940,820, and in 1831 \$139,280,224, showing an increase in the eight years previous to railway improvements of \$68,339,401, which shows that in the eight years previous to the railroad era, property increased about 50 per cent. while

for the eight years after the commencement of railways, the increase was about 90 per cent. difference of increase in favor of railway improvement of 40 per cent.

The assessed value of real and personal property in the State of New York—

In 1832, was \$380,693,000; in 1848 \$651,610,000—showing an increase in 16 years of \$270,926,000, or about 71 per cent in the State.

The foreign imports into New York in 1832 were \$50,995,924, and in 1847 \$96,036,257, making an increase of 45,040,333, or about 90 per cent. in 15 years.

THE STATE OF MASSACHUSETTS.

Reference is requested to the statement of the Secretary of State heretofore detailed for the Legislative aid afforded by this Commonwealth towards the construction of railways, from which it appears that those investments are considered as amply secured. The Western Railroad Company having paid a dividend during 1848 of eight per cent.

It will be found by reference to the Report of the Joint Committee on Railways and Canals for the Commonwealth of Massachusetts for the year 1848, dated 18th March, 1840,

*That thirteen roads, the aggregate length of which covers 678 miles, and which cost twenty-eight millions and one-half of dollars at an average cost of \$42,000 per mile, show a net revenue of about 7 1/2 per cent.

The remaining roads in Massachusetts are in a state of construction and do not yet return dividends; the length is 365 miles, making a total of 1043 miles in the State of Massachusetts.

The real and personal estate in Boston in 1811, when the railway system may be said first to have developed its influence upon business generally, was..... \$98,106,604

Real Estate in 1848, was..... 162,360,400

Showing an increase of..... \$64,253,996 or about 63 per cent in seven years.

The foreign imports of Boston in 1832 were \$15,670,572, and in 1847 \$47,110,761, showing an increase of \$31,350,189, or nearly 200 per cent. in 15 years.

THE STATE OF VIRGINIA.

In the absence of the Official State Documents, reference is requested to the extracts from the Richmond Times, a demi-official paper, and the Railroad Journal heretofore quoted. The result of this movement cannot be ascertained at present, except by reasoning, that in a State which has hitherto been quiescent in internal improvements, the necessities must have been pressing which have impelled the action of Governmental aid, and that the results will be in an equal ratio to the necessities which caused that impulse.

The foregoing statement of facts shows—First. That the trunk line from Quebec to Windsor, supposing it possible for the different corporations to obtain subscriptions, and payment of one-half of the necessary capital, and to outlay the same, cannot involve a guarantee from the Government beyond £2,178,000—that it is however impossible in the present position of affairs, that more than two companies can take advantage of the aid required, and it may further be stated, that a sum upwards of five hundred thousand pounds must be raised, and expended, by one of these two corporations, before the guarantee can be made available to that undertaking.—That when the two corporations have complied with the terms, the government security will not be extended beyond £67,089 per annum, being the interest upon half the cost of construction, and that 3 per cent. net income on the said cost will cover the government guarantee.—That five years will in all probability (if not a longer period) elapse, before any further demand will be made, and that the two corporations alluded to will then have completed their roads, and by their prosperous income have relieved the Government from all fear as regards responsibility.

Secondly. That it has been, and is the usage of the Governments of the United States of America, to foster, and assist undertakings, the value of which in their first stages, are not understood, or may not be appreciated by the community at large, by direct investment, and by guarantee of the state credit, and that that fostering system has been largely underta-

ken by the Commonwealth of Massachusetts, the Legislature of which State is deservedly respected throughout the Union, for the wisdom, prudence and profound judgement of its legislation, as well as for its successful issue, and in the opinion of that Government, legislative aid has produced confidence, led to the investment of private capital, enhanced and confirmed the public prosperity, and greatly promoted the pursuits of industry and business generally. It is almost needless to state, that these opinions are not hypothetical, but the result of knowledge and experience, and expressed as they are by the highest authority, entitled to the gravest consideration.

Thirdly. That the investments in railroads, when completed have been highly remunerative. In the State of New York upon an expenditure of \$12,419,000, on 318 miles, averaging £8,023 per mile, the dividend was 12 1-10 per cent., and in the State of Massachusetts upon 13 roads completed previously to 1848, the average cost of which was \$10,500 per mile, the dividend was 7 1/2 per cent., and upon the Western Railroad it was 8 per cent. during the year. That in the State of New York in the 8 years previous to the introduction of the railway system, the assessed value of real and personal estate had increased about 50 per cent., while in the 8 years immediately after railways were introduced, it increased 90 per cent., showing clearly 40 per cent. of increase in favor of the railway system. That the assessed value of real and personal estate in the State of New York in 1832 immediately before the railway system was introduced was \$380,693,000, and in 1848 \$651,610,000, showing an increase of \$270,926,000, or about 71 per cent. in the last 16 years. That in the city of Boston the assessed value of real and personal property in 1848 as compared with 1841, when the railway system may be said to have first developed its influence, shows an increase in 7 years equal to about 63 per cent. It is worthy of remark that the foreign imports of New York and Boston when compared for the 15 years from 1832 and 1847 show an increase in New York equal to 90 per cent., while in Boston it appears 200 per cent., and this may be explained by the fact, that the latter city has communication over 2,000 miles of railway with 13 States, and she expects soon to reach Canada by similar means.

Having thus summed up the evidence for the information of the Government, it only remains for me to state further, that a country holding the geographical position of Canada, the construction of railroads is indispensable, and to express a humble hope, that the Government of this country will follow the wise example of the Governments of the United States, and that by the interposition of its credit and aid, in the words of the Honorable the Secretary of State for the Commonwealth of Massachusetts: "will confidence be given to the employment of private capital in railroads, and the public prosperity be enhanced and confirmed, and all the pursuits of industry and business be greatly promoted."

All of which is humbly submitted,

THOMAS STEERS, Secretary.

Resolved, That the above Report now read be approved and adopted, and that the Secretary transmit the same to His Excellency the Governor General in Council.

- ALLAN MACNAB, M. P., Chairman.
- A. N. MORIN, M. P.
- GEORGE E. CARTIER, M. P.
- JOHN EAGAN, M. P.
- GEORGE DESBARATS.

The Report was laid before the Governor General in Council, and on the 7th inst. Mr. Hincks, the Inspector General, gave notice of his intention to introduce a Bill granting the Provincial security for the payment of the interest on the stock of certain railroads, which proposition was received with loud and repeated cheers.

The following resolutions were introduced by the Inspector General on the 11th instant, and a bill has been framed in accordance thereto.

RAILWAY COMMUNICATION.

The following resolutions were proposed in the Assembly by Mr. Hicks, in Committee of the Whole: 1. That at the present day, the means of rapid and

easy communication by railway, between the chief centres of population and trade in any country, and the more remote parts thereof, are become not merely advantageous, but essential to its advancement and prosperity.

2. That whatever be the case in long settled, populous and wealthy countries, experience has shown that in those which are new and thinly peopled, and in which capital is scarce, the assistance of Government is necessary, and may be safely afforded to the construction of lines of railway of considerable extent; and that such assistance is best given by extending to companies engaged in constructing railways of a certain length, under charter from, and consequently with the approval of the Legislature, the benefit of the guarantee of the Government, under proper conditions and restriction, for loans raised by such companies to enable them to complete their work.

3. That it is expedient to afford the guarantee of this Province, for the interest on loans to be raised by any company chartered for the construction of a line of railway not less than seventy-five miles in extent, on condition—

That the rate of interest guaranteed shall not exceed six per cent. per annum—that the sum on which interest shall be so guaranteed shall not be greater than that expended by the company before the guarantee is given, and shall be sufficient to complete their road in a fitting manner, and to the satisfaction of the Commissioners of Public Works, provided always that no such guarantee be given to any company until one-half of the entire line of road shall have been completed—that the payment of the interest guaranteed by the Government shall be the first charge upon the tolls and profits of the company, and that no dividend shall be declared so long as any part of the said interest remains unpaid—that so long as any part of the principal on which interest is guaranteed by the Government remains unpaid, no dividend exceeding six per cent. per annum shall be paid to the stockholders—that any surplus profits, after paying such dividend, shall go to form a sinking fund for the redemption of the debt, on which interest is guaranteed as aforesaid—and that the Province shall have the first mortgage and lien upon the road, tolls and property of the company for any sum paid or guaranteed by the Government.

4. That, provided the conditions mentioned in the resolutions be observed, it is expedient that such guarantee be afforded under further terms and conditions as may be deemed necessary by the Governor in Council, and agreed to by the company applying for such guarantee it being clearly understood that no enactments which the Legislature may thereafter make, to ensure the observance of such terms and conditions, or to give effect to the privileged claim and lien of the Province upon the road, tolls and property of the company, or to secure the Province from loss by such guarantee, shall be deemed an infringement of the rights of the company.

5. That if Her Majesty's Government shall undertake the construction of the railway between Halifax and Quebec, as a great national work, linking together the several portions of the British Empire on the continent of North America, and facilitating the adoption of an extensive, wholesome, and effective system of emigration and colonization, either directly or through the instrumentality of a private company,—it is right that Canada should render such assistance as her means will admit of, and should undertake to pay yearly, in proportion as the work advances, a sum not exceeding twenty thousand pounds sterling, towards making good the deficiency, (if any) in the income from the railway to meet the interests of the sum expended upon it, and should place at the disposal of the Imperial Government all the ungranted lands within the Province, lying on the line of the railway, to the extent of ten miles on each side thereof, and should further undertake the chain, pay for, and place at the disposal of the Imperial Government, all the land required within the Province for the line of the railway, and for proper stations and termini.

There seems now no doubt of the passage of the Bill.

Canada may therefore be regarded as fairly embarked in a great national scheme of Railway improvements—the influence of which on the public

prosperity will be as marked and salutary as upon any country in the world. The St. Lawrence is the most attractive river of the earth. Its series of inland seas, and the stupendous movement of its waters, invest it with a sublime and majestic grandeur, and the history of events its shores have witnessed, form one of the most interesting and romantic portion of the history of the world. Its shores are to become the route of pleasure travel, and its waters the channel of business, more sought than any other. Its people will gradually appreciate the good fortune of their condition, and it will become the home of a race as vigorous and as hardy as any the world can produce.

If the Lower Provinces are less favored, they are not behind other parts of the earth in natural advantages. We believe, however, their policy is to seek their connection with Canada, through Maine rather than along the shores of the St. John and the St. Lawrence in a distance of 635 miles.

We are favored by a note from M. H. Perley, Esq., of St. John, N. B., under date of April 9, from which we make the following extracts, explaining recent railway movements in the Lower Province.

“With reference to the Trunk railway from Halifax to Quebec, I can inform you that the Legislature of Nova Scotia has agreed to furnish the ‘breadth of way,’ and land for stations, free of expense, throughout that Province; also to grant to the Imperial Government, or to any private company which may undertake the work under Imperial authority, all the ungranted lands for five miles on each side of the line; and further, to guarantee the payment annually of £20,000 sterling (equal \$100,000) for 20 years after the completion of the line.—The Legislature of N. Brunswick, last week, agreed to do the same in every respect; and it now remains for Canada to act. The quota for Canada you will see by Major Robinson's Report, is £30,000 sterling—equal \$150,000 per annum.

“It was fully anticipated that some railway would be commenced in N. Brunswick this season, and the favorite line, from this city to Shediac on the Gulf of St. Lawrence, was that anxiously sought after.—But owing to local jealousies, the Legislature could not agree on any one line; and this Province is now agitated greatly with the railroad question—it has in fact for the time superseded all others. A RAILWAY LEAGUE has been formed, of which I am Secretary, and we shall ‘agitate’ until railways are fairly established.”

We are also indebted to Mr. Perley for several very interesting and valuable documents, including Major Robinson's Report of the Survey of the Line of the Quebec and Halifax Railway, which we shall notice more fully hereafter.

Everything connected with the British Provinces of North America, at this day, is full of interest to the whole country.

The Cumberland Valley Railroad Co.

The Cumberland Valley Railroad extends from Harrisburg, the County town of Dauphin Co., the capitol of the state on the east bank of the Susquehanna, through Carlisle, the county town of Cumberland, and several other smaller places to Chambersburg, the county town of Franklin, in the Commonwealth of Pennsylvania.

The road which crosses to the west side of the river at Harrisburg, by a bridge of nearly one mile in length, is 52 miles long, graded for a double track, almost a straight line, and very easy grades, laid with a flat bar, on wooden rails, and runs directly through the heart of the Cumberland valley, noted as being one of the richest, most fertile, and highly

improved of that state. The original cost was the sum of.....\$875,000

The real estate and other property of the Company, embraces a Bridge nearly new over the Susquehanna river, which cost about the sum, and produces a nett revenue of 7 per cent. thereon.. \$110,000
Real estate on the east side of the river at Harrisburg, that cost..... 4,000
On the west side of the river at Harris'g 1,000
An office and valuable lot at Carlisle.. 2,500
A Depot, tavern stand, machine shops, &c. at Chambersburg..... 15,000
Water stations and wood lots along the line..... 1,250
\$133,750

The running force on the road and belonging to the Company, consists of
8 locomotive engines, each worth \$3,500, \$28,000
4 passenger cars " 12,50, 5,000
4 baggage cars " 450, 1,800
12 burthen cars " 200, 2,400
8 mules..... 1,000
Machinery in shops, tools, &c. at Chambersbu g..... 3,500
41,700

The liabilities of the Company are—
Capital Stock, 94,00, shares of \$50 each is \$470,000
Less 1,700, a donation by the state of \$50 each is..... 85,000

Shares 7,700..... \$385,000
Loans decreed by mortgage, payable in the year 1849.
Bonds of the first class..... \$104,500
" second do..... 290,615
" third do..... 52,600 \$447,715
\$832,715

By a law passed at the last session of the Legislature of Pennsylvania, confers upon the Company the right of funding the entire amount of bonds,—provided the additional sum of half the amount thereof is subscribed in capital at par into an 8 per cent. preferred stock, which, with other resources at the Company's command, is sufficient to relay the road with a heavy T rail of 56 pounds to the yard, and provide the requisite running force to meet the growing demands of the business passing over the road.

The receipts of the Company since the completion of the Bridge over the Susquehanna river have been:—

	1847.	1848.	1849.
January.....	6,849 02	8,081 90	8,648 33
February.....	7,995 29	9,591 49	10,355 78
March.....	11,250 08	10,034 68	10,56 42
April.....	10,396 73	9,242 98	
May.....	9,188 42	8,130 71	
June.....	10,415 79	7,630 84	
July.....	7,786 15	7,645 77	
August.....	8,197 87	8,641,63	
September....	8,866 51	9,504 05	
October.....	10,140 61	8,788 91	
November....	9,879 14	7,597 79	
December....	7,027 82	7,575 28	

\$107,993 42 \$102,466 03
1847. 1848.
Gross receipts.....107,993 42.....102,466 03
Current expenditures. 65,900 39..... 61,534 37

Surplus.....\$42,093 03 \$40,031 66

This income of the road is derived from the passenger travel, motive power, and tolls on merchandise over it; the freighting being done by forwarding merchants, in consequence of the Company not owning any burthen cars beyond what are necessarily employed in keeping up the repairs of the road.

Comparative Abstract of Reports received from Railroad Companies, giving certain statistical information for the years 1887 and 1888, pursuant to a resolution of the Assembly of the 24th year of February, 1883.

Railroad	Miles in operation.	Cost of construction.	Expenses for repairing and running the road.	Total expenses of construction, repairing & running the road.	Number through passengers.	Number of way passengers.	Rec't from thro' passengers.	Rec'ts from way passengers.	Total income fm passengers.	Income fm freight and other sources.	Total Income.	Dividends.	No. locomotives.	No. passenger cars.	No. freight cars.	No. of mail and other cars.	No. of machine shops.	No. of horses.	Av. No. men employed by comp'y.	No. miles run by passenger trains.	No. of miles run by freight and other trains.	Total No. of miles run by passenger and freight trains.	
Albany & Schenectady	17	\$1,521,916	\$60,310	\$1,581,526	53,329,401	none	\$110,051	67	noting	\$54,325	\$164,377	10	6	1	51	2	1	5	101	49,674	22,821	72,495	
Utica & Schenectady	78	2,833,380	123,243	3,267,623	20,688,294	99,230	413,771	99	96,011	509,782	188,932	698,714	19	19	133	...	2	4	452	148,800	131,300	280,000	
Syracuse and Utica	33	1,429,442	23,531	1,554,074	19,349,939	63,512	210,348	20	45,593	243,911	64,298	320,179	91	113	113	...	2	4	250	107,000	53,000	160,000	
Albany and Syracuse	36	771,282	61,209	832,492	14,920,874	10,628	123,848	20	33,261	33,261	157,109	15	32,000	6	44	...	2	7	113	57,992	18,196	76,188	
Albany and Rochester	78	2,057,797	151,613	2,209,410	19,384	98,960	228,795	00	103,915	334,710	61,056	95	39,500	12	53	...	2	7	230	145,809	77,307	223,116	
Tonawanda	13	805,530	45,718	851,248	30,989	35,068	135,108	33	23,022	104,010	38,757	75	136,782	97	33,900	69	5	9	30	59,211	14,000	73,211	
Albany and Buffalo	31	487,543	49,000	536,543	33,115,292	15,500	96,764	09	7,216	36,301	3,915	62	15,879	59	113	...	2	3	23	59,211	17,580	76,791	
Buffalo and N. Falls	22	171,675	18,979	190,654	66,294	19,212	22,227	10	14,273	36,301	7,205	62	43,796	73	6	...	2	3	30	51,185	3,321	54,506	
Saratoga & Schenectady	22	300,000	30,298	330,298	72	24,750	28,727	...	5,410	33,232	46,121	88	21,000	00	21,000	...	2	28	28	24,726	9,418	34,144	
Schenectady & Troy	20	475,801	37,718	513,519	39	24,100	28,920	00	11,613	40,563	20,706	79	61,269	90	21,000	...	2	11	140	110,093	64,270	174,363	
Rensselaer & Sara.	25	2,045,325	142,920	2,188,245	61,191,316	39,077	114,616	93	44,088	114,616	53,820	06	none.	...	15,222	126	12	3	11	140	109,693	64,270	174,363
Long Island	98	1,789,808	44,234	1,834,042	83,106,339	39,077	36,366	74	183,227	27,462	32	53,820	06	none.	...	10	9	182	89,800	69,832	159,632		
Albany & W. Stock	38	1,390,241	42,756	1,432,997	84,198,152	1,535,892	42,378	00	63,648	225,605	29,606	05	255,211	09	none.	...	1	165	70	17,629	6,916	24,544	
Troy and Greenbush	6	1,874,892	136,368	2,011,161	53	42,378	37,342	06	58,776	22,054	76	28,827	14	none.	...	1	1	182	89,800	69,832	159,632		
Hudson River	62	2,759,835	172,970	2,932,805	95	36,506	37,342	06	63,648	100,990	153,198	34	254,119	08	none.	...	1	1	182	89,800	69,832	159,632	
N. Y. and Erie	62	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	Not in operation.	
Saratoga and N. Wash.	31	575,613	23,500	599,113	00	12,736	906	00	5,876	6,782	38	22,054	76	28,827	14	...	1	5	33	21,900	11,600	32,700	
Hudson and Berk.	31	20,000	1,825	21,825	00	20,492	3,410	62	170	2,264	47	2,364	47	none.	...	2	1	6	3	21,500	11,600	32,700	
Buffalo and B. Rock	3	18,000	2,088	20,088	03	3,456	817	43	275	3,381	03	21,252	28	3,369	88	...	2	4	32	8,330	6,760	15,090	
Cayuga and Susq.	29	28,211	2,554	30,765	84	2,598	817	43	275	1,092	43	3,369	88	815	24	...	2	6	5	8,330	6,760	15,090	
Skaneateles & Jordan	29	28,211	2,554	30,765	84	2,598	817	43	275	1,092	43	3,369	88	815	24	...	2	6	5	8,330	6,760	15,090	
Albany & W. Stock	38	\$1,924,701	\$44,045	\$1,968,746	68,120	38,079	13,000	00	\$13,000	750	40	\$13,750	00	3	6	5	1	20	52,765	135,807	189,572		
Lockport & N. Falls	23	210,000	11,000	221,000	10,000	30,000	...	...	...	...	...	...	...	3	6	5	1	20	36,000	135,807	189,572	
Hudson River	62	948,372	821	949,193	707	5,397	...	...	...	...	...	...	...	3	7	17	1	40	1,250	640	4,890	
Saratoga and Wash.	40	27,000	6,675	33,675	30,931	2,064	1,271	87	251	716	94	3,878	50	5	9	1	16	11	40	1,250	640	4,890	
Lewiston	34	27,261	2,652	29,913	4,070	2,064	1,271	87	251	716	94	3,878	50	5	9	1	16	11	40	1,250	640	4,890	
Skaneateles & Jord.	29	907,774	11,307	919,081	65	102,659	65	00	4,536	4,601	86	10,719	45	2	5	1	6	100	8,320	6,760	15,080		
Hudson and Berk.	31	1,068,068	55,783	1,123,851	114,151	102,659	290,671	25	76,160	296,831	98	380,539	46	3	2	5	1	50	100,534	103,000	203,534		
Syracuse and Utica	33	3,276,678	195,808	3,472,486	25,283,214	359,744	35,613	82	90,108	125,722	32	133,437	32	19,211	77	...	1	900	85,898	117,328	203,226		
Troy and Erie	74	273,625	47,328	320,953	3,349	2,438	35,103	37	124	35,103	37	60,055	37	3	3	19	...	2	70	50,064	9,008	59,072	
Troy and Greenbush	74	273,625	47,328	320,953	3,349	2,438	35,103	37	124	35,103	37	60,055	37	3	3	19	...	2	70	50,064	9,008	59,072	
Long Island	98	2,037,639	136,006	2,173,645	178,065	...	...	...	...	...	...	...	...	15	21	147	14	3	140	94,294	82,983	177,277
Cayuga and Susq.	29	18,000	19,206	37,206	09	2,438	10,954	66	49,134	2,375	01	15,694	21	1	3	52	...	35	26	12,190	10,484	22,674	
Albany & Syracuse	26	1,125,886	69,428	1,195,314	98,140,094	14,131	192,677	65	39,517	192,677	65	39,517	36	6	8	18	...	1	230	159,156	29,688	188,844	
N. Y. and Harlem	80	3,579,567	193,440	3,773,007	32,343	3,773,007	32,343	...	...	...	...	...	...	38	167	56	13	1	270	180,000	29,000	209,000
Albany and Buffalo	30	821,313	99,689	921,002	3,343	19,231	32,343	00	221,610	119,446	47	31,513	27	6	8	24	...	2	76	59,886	18,758	78,644	
Schenectady and Troy	20	659,668	46,717	706,385	58,222	7,492	110,743	34	8,703	119,446	47	31,513	27	3	3	24	...	2	44	55,917	13,038	68,955	
Utica and Schenectady	18	3,161,988	328,108	3,490,096	163,977	106,454	422,976	03	143,908	556,984	81	229,354	56	19	187	...	2	290	146,340	133,650	279,990		
Northern	72	781,031	98	781,129	...	...	...	...	...	...	...	...	...	3	3	...	2	3	290	146,340	133,650	279,990
Buffalo & N. Falls	22	250,396	24,225	274,621	86,049	16,094	20,256	03	13,405	55,768	22	4,246	31	4	11	...	2	32	26,456	13,792	40,248		
Rensselaer & Sara.	25	661,910	39,916	701,826	17,934	30,523	20,256	03	13,405	33,662	11	196,090	08	3	8	...	2	46	26,456	13,792	40,248		
Tonawanda	43	974,685	85,611	1,060,296	14,109,244	39,209	145,008	68	24,954	160,163	27	57,338	46	6	14	...	2	93	66,000	41,692	107,692		
Saratoga & Schenectady	32	331,036	27,116	358,152	39,185	22,932	30,860	75	12,667	38,518	40	23,500	53	2	4	...	2	30	93	66,000	41,692	107,692	
Albany and Rochester	78	2,644,520	188,927	2,833,447	11,007,782	108,477	350,794	45	107,676	358,471	30	90,250	57	4	6	...	3	287	146,042	149,329	295,371		
Buff. & Black Rock	3	20,000	2,041	22,041	06	24,650	...	...	...	...	...	...	...	3	3	...	3	3	287	146,042	149,329	295,371
Albany and Schenectady	16	1,606,196	66,345	1,672,541	25,236,889	1,538	113,741	88	63,180	113,741	88	63,180	55	175,922	43	...	4	131	41,408	36,572	77,980		

* The cars running on the roads between Albany and Rochester are owned as common stock, each company having an undivided interest in 55 passenger, 20 emigrant, 14 baggage, 4 mail & baggage cars.
 † Including the Brooklyn and Jamaica R. R. ‡ The price paid to the state by Archd. McIntyre for road, including price of locomotives, etc., to put road in operation.

For the American Railroad Journal.
Railroads in Ohio.

Enclosed, I send you a "sketch map" of Ohio, designating the Canals and Railroads, constructed, constructing and vigorously proposed.

The geographical position of Ohio in relation to the four great eastern cities, combined with her unequalled agricultural resources, render her plains a common battle field for the commercial enterprise of each city. Her present condition, and her immediate prospects as to railway communications, no being generally understood, is the apology for presenting the subject at this time.

The first and most important line now completed, is that from Sandusky to Cincinnati, 217 miles long. It is composed of two chartered companies—the Mad River and Erie company and the Little Miami company: both paying handsome dividends, and reserving funds to encourage lateral branches.

The Mansfield and Sandusky road, completed to Mansfield, and yielding 17 per cent., is now extended to Newark with the grading, and only waiting the opening of navigation to receive and lay the iron.—From Sandusky to Mansfield 56 miles, and to Newark 116 miles. From Newark to Columbus the construction of a road is almost certain, and from Columbus to Xenia a road is rapidly constructing.

From Cleveland to Columbus a road is now under contract, a portion of the iron obtained, and an early completion anticipated.

Thus, by reference to the map, you will observe there is soon to exist three main rival routes from Cincinnati to the Lake. The comparison of distance from Cincinnati to Buffalo will stand as follows:

<i>By Mad River Road.</i>	
From Cincinnati to Sandusky.....	217
From Sandusky to Buffalo.....	230
	447
<i>By Columbus and Mt. Vernon.</i>	
From Cincinnati to Xenia.....	65
From Xenia to Columbus.....	56
From Columbus to Mansfield.....	93
From Mansfield to Sandusky.....	56
From Sandusky to Buffalo.....	230
	500
<i>By Columbus and Cleveland.</i>	
From Cincinnati to Columbus.....	121
From Columbus to Cleveland.....	135
From Cleveland to Buffalo.....	190
	446

The respective claims of these routes do not require notice in this place. It is a subject of interest only to persons of particular localities, and to those about to become stockholders. Each may justly expect an immense amount of local business.

Another connection between the Lake and the Ohio river is in progress of construction from Wellsville to Cleveland, 98 miles long, and is the shortest line possible between those great water communications.

In addition to the above mentioned railroads, the Ohio canal from Portsmouth to Cleveland, 311 miles long, and the Miami canal which, joined with the Wabash and Erie canal, connects Cincinnati with the Lake at Toledo. Thus, all the State of Ohio, with the slight exception of a few river counties, pours her trade into the great basin of Lake Erie, and onward to New York and Boston. The impediment of the frozen lake during near half the year, renders these canals and roads less productive than they would otherwise be. The agricultural products accumulate upon the hands of merchants, and are forced upon the eastern market in the spring, torna

to like. The necessity of a continuous winter communication is warmly felt by every man in Ohio. Some great east and west trunk-line, passing directly through the State, and crossing all the present lines, carrying for them all their winter business to some eastern city, is at present the only great desideratum. Such a road might expect an amount of tonnage never yet equaled in the Union upon one road.

Baltimore, Philadelphia and New York are each stretching forth their iron arms to our borders, and many routes in Ohio are moving to welcome them. The Baltimore and Ohio railroad is soon to reach Wheeling, where the Ohio is spanned with a Suspension Bridge of one single arch of 1,000 feet.—Eighteen miles above this bridge is the mouth of Short Creek, which is the route of the proposed road from Pittsburg, through a part of Virginia, to Steubenville, thence to Uricksville, on the Ohio canal, along the canal to Newark, and by Columbus: here it reaches the Xenia and Columbus road, now constructing:

From Pittsburg to Steubenville applications were made for a charter through a small portion of Pennsylvania and Virginia, but being refused by the Legislature of the latter State, this route, if constructed, would look to a connection at Wheeling, and thus become the Baltimore continuation through Ohio.

Philadelphia will soon have her Central road to Pittsburg, a distance of 358 miles, without any greater grades than exist on the Boston and Albany road. To meet this, the Ohio and Pennsylvania road is chartered, the company organized, a great part of the stock subscribed by individuals, and the road in rapid progress of location. It passes thro' Canton, Massillon, Wooster and Mansfield, with authority to go to the line of Indiana at any point. A route is authorized in Indiana, from LaPort thro' Fort Wayne, to meet the Ohio road.

New York, with her canal and railroad to Buffalo, wants only the sanction of Pennsylvania to pass through Erie county, to continue her lines along the southern shore of lake Erie to the Ohio line. Along the shore of the lake, from the eastern edge of the State, a charter exists in Ohio for the construction of a road, but the want of legislative authority to pass through Erie county, destroys all present hopes of the construction of this line. From Toledo, a road is partly constructed toward the Central Michigan road, destined some day to be a connecting link from that road to the main Philadelphia road, at Mansfield.

From Bellefontaine, on the Mad River road, to Indianapolis, a road is in a flattering state of forwardness. This is destined to be the continuation of some main eastern route, on its way to St. Louis.

Omitting the unimportant lateral branches, Ohio will have main north and south railroads amounting to 725 miles. Then should New York construct the road so important to her interests along the lake shore: Philadelphia, her road directly westward from Pittsburg, on the table lands: and Baltimore, her road from Wheeling, through Steubenville and Columbus, all reaching the western side of the State—will make about 750 miles, or near 1500 miles within the State. The position of Ohio, in relation to the eastern cities and the great west, is such that she will excel any western State in the number and character of her railroad facilities, while in agriculture she is probably the first in the Union. To prove this, she looks with confidence to the coming census of 1850.

AN OHIOAN.

Providence and Stonington Roads.

We can testify from personal experience as to the excellent running condition of the roads, having made a number of trips over them recently. The sandy nature of the soil they traverse, is well adapted to a railway track, being slightly affected by frosts or rains. To the traveller, the cars seem to be passing over a continuous rail, and are remarkably free from that unpleasant jar occasioned by passing from one rail to another, which is the most annoying thing in railway travelling, and which on some roads is almost intolerable. The boats connected with these roads are of the first class. The Stonington is the shortest steamboat route between New York and Boston, and the excellent condition of the roads, and the high speed with which the cars are able to move in consequence, render this a favorite route between these great cities.

California Gold Seekers.

The principles which govern, and the passions which agitate mankind have not been much changed in their character, nor materially abated in their intensity, by the long lapse of ages. It is as true to-day as it was twenty centuries since, that those who would grow suddenly rich are apt to fall into temptations and snares, by which their reputation frequently, and sometimes they themselves, are overwhelmed and lost. We notice in the local papers that, in the little town of Falmouth, a company is set afloat to raise 7000*l.*, not to clear and to deepen the harbor—not to clean, to broaden, or illuminate the streets—not to build a corn market, by which to attract the farm produce, and much of the farming outlay tending to revive and enrich the gasping commerce of the town—not for any purposes so obvious, so imperative and so attainable as these—but to fit out and freight a ship to proceed to California for gold. We could not have believed that so wild an undertaking was sanctioned by so sober a people. They know as well as we do, that the hitch in the treaty—the little informality by which the transfer of the Californias to the United States is for the moment impeded—is on the point of removal, if not already removed; and that immediately the States will enter and insist upon its perfect sovereignty and lordship of the soil and of the treasure, known and unknown, contained within it. Until that time, they know, too, into what a perfect pandemonium the sands of San Francisco is converted, where neither law, nor morals, nor life itself, has either defence or security. They know also that, however great the quantity of gold the number of seekers, whose multitude is increasing with every morning tide, is quite as great; and that by the time the vessel, with the Falmouth pendant at her mast head, is seen in the offing, the searchers, already so numerous, will, in all likelihood, literally cover the coast. Notwithstanding these considerations, which are just so many discouragements, it is coolly proposed to drain the town of its surplus money, and sail away 4000 miles south, and the same distance north again into the Sacramento, with merchandise, with which the market will be probably glutted, and for gold, upon which the true owners will probably have laid their strict embargo. Had the 7000*l.* been for any of the important objects referred to above, or for giving additional action and impulse to the numerous mines in the vicinity, which are now fast recovering their rank and value in the commercial scale of things, or indeed for any known branch of occupation, or of productive industry, of which the county was to be the theatre, we should have held our peace. But to gather into one heap the surplus capital of a small community, and scatter it over the ocean in pursuit of an improbable, if not of an impossible object, is a measure of which we trust both the impolicy and the imprudence will appear to those who have suggested it. In the great ports of the empire, and particularly in the metropolis, where ships and money are abundant, it is no great wonder that such thoughts are entertained; but in a community, where, as in Falmouth, so many local wants are overlooked and unsatisfied, to take the hoarded earnings of the aged and the industrious to fling into the vortex of the Californias as proposed, would be a course of which we cannot say whether

AMERICAN RAILROAD JOURNAL.

Saturday, April 21, 1849.

Gold Mines in Virginia.

The existence of gold mines in Virginia has been known for a long period of time, and during the last twenty years the gold coinage of the United States, from the products of Virginia, have been 1,008,180 dollars.

A few years ago a brisk speculation was carried on in this city, in the stock of the Whitehall mine, the same one now owned and worked by Stockton, Heis, Dexter, Colby and others. The old concern blew up, and the working of the mine ceased. Recently some of the present owners bought it up for \$6,000.

This mine is in Spotsylvania Co., near Fredericksburg. There are other mines in the same neighborhood. Commodore Stockton is opening one independent of the Whitehall company, and George W. Pickering, Esq., of Bangor, Maine, a distinguished and wealthy merchant of that State, is opening another in the vicinity.

We know not how many others are now engaged in exploring the same field.

A personal friend, who from motives of general curiosity, visited this region recently, has at our request given us some account of his observations, made on the spot. He is an accurate observer of facts and localities, and fully informed upon the subject in hand, though he had no intention of writing down his observations at the time of his visit.

There is no motive that can operate to color, or influence his opinions; beside this, his character for intelligence and integrity is a guarantee of perfect accuracy. We asked, and have obtained permission to give the following note, from him to us, to the readers of the Journal. He does not state the amt of gold already obtained at the Whitehall mine.—We have reason to suppose that the owners are not inclined to give much information on this point.

Boston, April 19, 1849.

DEAR SIR: I have lately made a hasty excursion into the gold regions of Virginia, actuated by curiosity merely, to see what a gold mine was, and how the gold was got out. From Washington, we descended the Potomac in a fine steamboat, to the commencement of the Richmond railroad, and went a dozen miles on that road to Fredericksburg, where we took a wagon to Chancellorville. Chancellorville consists of one hotel, with barns and outhouses. And a very good hotel it is. On the way we called in to see two friends from the east, at the gold mine. We found them busily engaged in getting their machinery into operation for crushing and washing the ore. They had a very neat and effective looking steam engine to do their work, and expected to have it in operation in a few days. They had sunk a perpendicular shaft on the side of the hill, and were running a horizontal adit into it. They appeared to have plenty of ore—how rich it is, a few days' experiments with their machinery would soon determine. The next day, we went to see the famous mine, called the Stockton & Heis mine. We found everything there looking promising and prosperous. There was an air of cheerfulness, activity and business about it, that usually attend successful operations. We found the Commodore very busily engaged in superintending his machinery, and apparently in high spirits. The machinery is contained in a building, which is not open to visitors. The interruption they would give to business, and possibly the danger of loss of some of the valuable produce of the mine, makes it necessary to exclude

them. As we were introduced however by an owner, the Commodore admitted us into the penetralia, and was very civil in exhibiting the processes for getting out the gold. The ore, which is found in a perpendicular vein of hard quartz, and in the walls of rotten slate adjoining, is taken up from a shaft between thirty and forty feet deep, and carted or wheeled to the machine house, where it is from the outside shoveled into hoppers which carry it to the stampers within. The stampers are beams of timber standing perpendicularly with heavy iron blocks or stamps at the bottom of each. The movement of the machinery raises and drops these alternately, and their weight crushes the mineral beneath them. A small stream of water is always running upon the mineral beneath the stampers, and washes it out as it becomes fine enough, through an iron mesh work, or sieve. Thence it runs through long spouts or gutters lying nearly horizontal, at the bottom of which are skins with the hair on, and hair uppermost. The heavy sand and gold dust are collected on these skins. It is afterwards removed and put into a rocker of the form commonly used, where, by the rocky motion and the inclination of the machine in the usual mode, the gold is farther separated. In that machine, the gold, with the remaining sand is passed into quicksilver, with which all the gold amalgamates, leaving the sand entirely free. The amalgam is afterwards squeezed in buckskin leather, and the greater part of the quicksilver passes through. To separate the remainder, the mass is put into a furnace, where the quicksilver is sublimated and passes off, leaving the gold free. The machinery is carried by water power, they having here the advantage of a good stream. The shaft from which they were raising the ore is in a low piece of ground, resembling a piece of wet meadow. There are one or two shafts sunk in the hill which rises with a moderate swell to a considerable height above the meadow and stream. A horizontal shaft was likewise in progress through the hill, and had already passed at right angles through several veins. There are a large number of veins of quartz on the estate. I understood that gold had been found in some nine or ten of them. Their course is about southwest. The surface of the ground, both on the hill and in the lowland, had the appearance of having been dug all over in surface washing. A good deal of gold had been obtained in this way; but it does not seem to have been very profitable, as the former owners sold the estate containing about 1000 acres for \$6000. They either were ignorant of the existence of the veins, which seems hardly possible, or too unskilful and faithless to undertake the working of them. If we could judge from what we saw and heard, it would seem to require the proceeds of but few days' works, as productive as when we saw it, to pay off the original purchase money. We understood that about 38 negroes were employed on the works. They are hired by the year at about 60 dollars a piece; by the month at seven dollars.—There are about a dozen white people likewise employed. We left the estate much gratified with our visit. The next day we visited another about the same distance, in a different direction, from our hotel. This exhibited a melancholy monument of mismanagement. There were good buildings, and expensive machinery upon it, standing idle, and with the air of neglect and decay upon them. They had not been used for five or six years, and yet this mine had and has the universal reputation of being the richest mine in the region before the Stockton mine was worked. We requested the former owner of the property to show us the place, and give us

some information about it. He described it as being very rich. The veins had been probed to the depth of 130 to 160 feet, and the ore was very productive. On the surface he said there was gold everywhere. We asked him to show us some in the soil directly at our feet. He sent his boy into the house for a small pan. This he filled with earth from the spot where we stood, and told his boy to wash it. This the boy did by holding it in a pool of water at hand, and agitating for about three minutes very carelessly, so as to get rid of all the soil but about a tea cup full. This he held up to us, and we perceived in it a number of specks of the gold. He picked up likewise pieces of quartz that had come from the vein, and showed us specks of gold in that. This owner was now poor, notwithstanding the richness of the mine. Some years ago a company was formed to purchase the place, and work the mine. They agreed to give him \$100,000 for the soil, and they paid him part of it. They put up the buildings and machinery, and carried on operations for some time. Now you will of course wonder how, if the mine was so rich, it came into its present dilapidated condition, and the owner into his dilapidated state. The answer is contained in two words—run and law. The owner retained one-quarter of the mine, lived on the spot and directed the operations. He was dissipated, and gave way to all the vices consequent upon extreme dissipation. Of course, under such management, no profits could be expected. He quarrelled with the other owners, they got into lawsuits, and the final result was that the whole property was sold by the sheriff for a trifle. This was the account we got in the neighborhood. We visited some other mines the next day—but I have given you enough for the present.

Manufactures at the South.

The early settlers of New England, from their bleak climate and hard and comparatively unproductive soil, were led from necessity to engage in manufacturing and commercial pursuits, while those occupying the more fertile soil and genial climate of the south devoted themselves mainly to the pursuits of agriculture. The causes which thus early gave different directions to the industry of these sections, have continued to operate to the present time, and exhibit their natural and appropriate results.

Agriculture is the simplest form of labor, and man individually can accomplish nearly as much in tilling the soil as when associated with his fellow men; consequently competition in this pursuit is much greater than almost any other, and from its know results it is as easy to determine the value of such kind of labor. Commerce and manufactures require skill, associated with labor and capital. These pursuits therefore encounter much less competition than agriculture, and those engaged in them are able to a certain degree to put their own price upon their products. Hence the superiority in wealth of commercial and manufacturing communities over these purely agricultural; of the Northern states over the Southern. In manufacturing communities labor is more diversified, and is less subject to fluctuation than where a whole people are engaged in one pursuit. Take in illustration a manufacturing town in New England, where the inhabitants are engaged in twenty different kinds of manufacture. While one branch is suffering from overproduction or from other causes, all the others may be doing a profitable business, and be in condition to extend the necessary aid to the suffering interest, and the business of the place appears to suffer no check or disturbance. Having different pursuits each branch is led from interest as well as from sympathy and good feeling, to sustain the others. All

combined, they constitute a balance wheel in business, securing order and regularity of movement, and play a part similar to a balance wheel in machinery; where on the other hand a whole community have but one pursuit those revulsions which seem to be a necessary law of trade, will for a time completely overwhelm it in ruin. No man can aid his neighbor. All are alike involved in the catastrophe. Again, as a general rule the amount produced regulates the price. The southern states seem peculiarly adapted to the production of cotton. The culture of this plant has been pushed to an extraordinary extent. The consequence is that the price falls just as the production is increased. A crop of 2,400,000 bales will realize but little more to the planter than one of 1,600,000. It is admitted that the south must furnish the greater part of this article for the manufacturing world. If the production was kept within the demand for consumption, the producers could regulate the price; but as it exceeds this demand they are completely in the power of the domestic and foreign manufacturer. The remedy for this is in the hands of the planter, and can be applied at will; let them devote one-third of their labor in the production of what they purchase from abroad, and the cotton that the other two-thirds could produce would realize them nearly as much as the whole does now; and they could retain at home the large sums that they now send to the north and to Europe for so many of the necessaries of life.

In connection with these remarks, we are happy to transfer to our columns the following article from the Baltimore American, on this subject; we are indebted to this paper for much valuable matter presented to our readers. We read no paper among all our exchanges with more pleasure, and know of no one which contains so much interesting matter in the same line of pursuit as ourselves:

It is only within the past two or three years that the idea of manufacturing their own cotton into fabrics for home consumption, instead of sending it abroad, was entertained by the people of Georgia. Experience had proved that they could grow cotton to greater advantage, perhaps, than any other people in the world. In times past, when their staple brought twenty-five and thirty cents per pound, fortunes had been made by producing the raw material, and they still hoped that prices would again go up, and that their cotton fields would again yield the rich return of former years. They thought of many schemes to bring about this desirable result; conventions were held, and vain attempts were made to "legislate on the price of cotton." In their disappointment, they attributed the depression of their agricultural interests to the protective policy of the General Government, which their own statesmen had been the first to recommend; and by a system of reasoning more ingenious than sound, they constructed the tariff laws, by which the national revenue was derived from duties on imports, into a system of favoritism and robbery—favoritism to the manufacturers of the north, and robbery of the planters of the south. For many years the people of Georgia, and we may say of the whole cotton growing states, have steadily and obstinately resisted a policy which they believed to be unjust, and many of them have been carried by their zeal into the extreme theories of free trade, as offering the only relief to the cotton growing interests of the south. But it is, as we have said, only within the past few years that the planters of the Southern States have dreamed of the practicability of becoming manufacturers themselves, and thus availing themselves of the protection against which they have so long and so loudly complained. The experience of those few years has dissipated their long cherished doubts and prejudices, and we have abundant evidence in the manufacturing enterprises now going on, to convince us that the day is not far distant when the south will have her Lowells and her Manchesters, and when the outcry of her politicians against the tariff will be hushed in

the hum of her millions of spindles. She will be indifferent to, and independent of, all protection. With the cotton fields within sight of her mills, and a great home market for the consumption of her manufactured goods, what manufactures, at home or abroad, can successfully compete with her? Can Lowell, in New England, or Manchester, in Old England, send to the south for her cotton, transport it to and fro, with all its accumulating "costs and charges," and then enter into competition with the southern manufacturer, in his own or any other market? Already the southern manufacturer is beginning to supply the home market with his heavy fabrics, and it is well known that northern manufacturers are in the habit of purchasing the yarns of the southern mills, which are afforded to them cheaper than they can spin them.

The southern manufacturer will perhaps never be able to compete with the east in the manufacture of prints and the finer fabrics of cotton goods, nor will it be to his interest to attempt it. But in heavy goods, yarns, &c., in which the material consumed is the chief value, he can have no formidable competition, and while he will have no longer any cause to complain of a moderate protective policy, in the benefit of which he will be a joint participant, he will be better able than his eastern competitor to live without it.

The planter will be benefited by the investment of capital in home manufactures, not only by the diversion of it from a competition with himself in the production of cotton, thus increasing the amount and depreciating the value of the article at the same time, but by the market which the factories will afford for the consumption of the various products of the farm. With such a division of capital and enterprise, matters will from time to time adjust themselves. The capitalist will have his opinion of the investment and if it be true that manufactures fostered as they have been, are more profitable than agriculture, he may invest in manufactures. Should, however, manufacturing be overdone, as the protection of cotton has been, the advancing price of the latter would soon divert the surplus capital from the mills to the field.—*Baltimore American.*

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON, 54 Pine street, New York.

Sole Agents for the New England States and State of New York. ly14

To Railway Companies and Principal Engineers.

AN ENGINEER and Land Surveyor, of standing and good references, is prepared to conduct surveys, or take charge of work. Address MR. DANGERFIELD, Lithographer, 241 1/2 Wall street, New York.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Jones C. F.,

South Oyster Bay, L. I.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Aandroscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac K.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
 139 Greenwich street.
 New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
 22 South William street,
 February 3, 1849. New York.

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturer's name, and inspected before shipment at the works in Wales. For sale by
DAVIS, BROOKS & CO.,
 68 Broad street.
 March 13, 1849. 2m.11

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
 Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
 November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
 45 North Water St., Philadelphia.
 March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN,
 41 Broad street.
 March 29, 1849. 3m.13

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsbronic.
100 Tons Welsh Forge Pigs.
 For Sale by **A. & G. RALSTON & CO.**
 No. 4 So. Front St., Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by
A. & G. RALSTON,
 4 South Front St., Philadelphia.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE Undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
 Willow St., below 13th,
 Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE Undersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.
A. TIERS,
 Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.
A. T.
 Kensington, Philadelphia Co., }
 March 12, 1848. }

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, etc.
 Sandusky City, Ohio, March 15, 1849. 2m.13

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass.

Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the *most improved Freight Cars*. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

SCHENECTADY LOCOMOTIVE WORKS
 SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch. Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.

April 11, 1849.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section st. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 23 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections between those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed from the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 28th of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
 Baltimore, March 14, 1849 5t.12



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the *STOCK OF THE UPPER CANADA MINING COMPANY*—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the *First Day of April* next, and the other half on the *First day of July* next ensuing. By order,
J. D. BRONDELET,
 Secretary U. C. M. C.

Hamilton, 24th February, 1849. 12t

WILLIAM JESSOP & SONS'
 CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes" L Bliester Steel.

Best English Bliester Steel, etc., etc.

All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
 91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex' Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

**Direct Action Engines
FOR STEAMBOATS.
THE PATENT DOUBLE CYLINDERS,**

AND ALSO
THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, **STEEL SPRINGS** of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } **SPRINGFIELD, MASS.**
ISAAC MILLS, } ty48

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive **LOCOMOTIVE ENGINE** department, and are prepared to execute orders for **Locomotive Engines** of every size and pattern—also **Tenders, Wheels, Axles,** and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving **Cotton, Woollen, or other Mills,** can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849.

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS BROTHERS.

For sale by **ALLEN & NEEDLES,**
22 & 23 South Wharves,
Philadelphia Pa.

144f

**LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,**

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del. Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steam-boats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for Cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

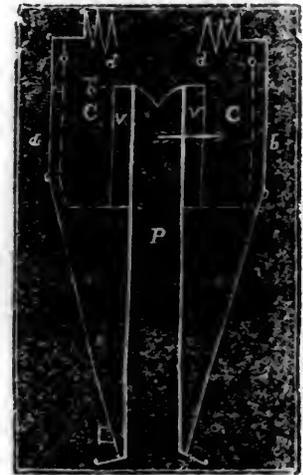
IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. **STARKS & PRUYN,** of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	} Canal Commissioners of the State of New York.
Nelson J. Beach,	
Jacob Hinds,	
Willard Smith, Esq.,	} Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris,	
Mr. Wm. Howe,	} Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,	
January 1, 1849.	} Engineer & Bridge Builder, Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

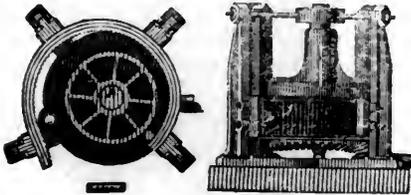
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent, Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

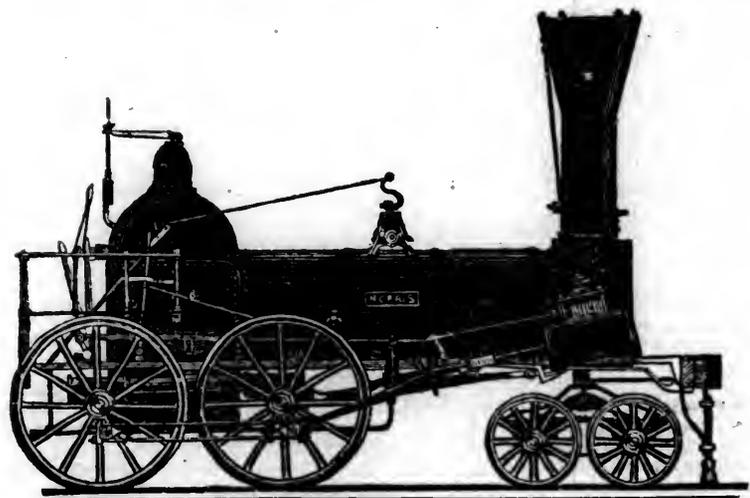
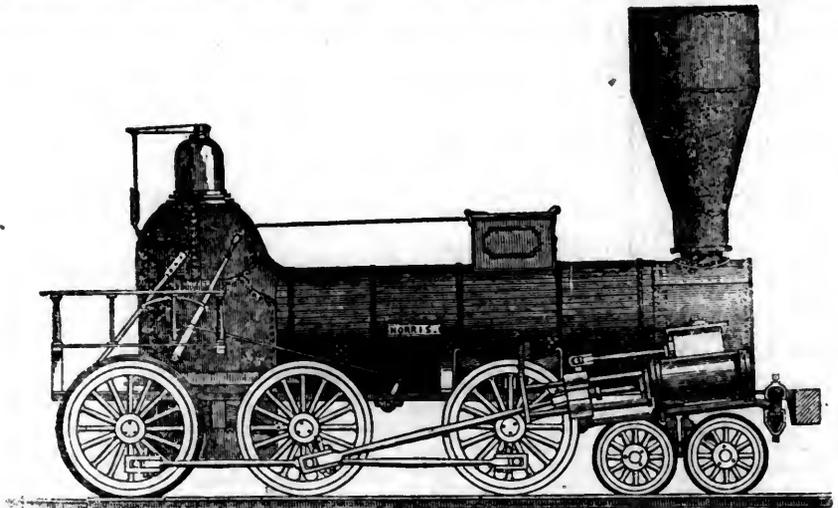
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



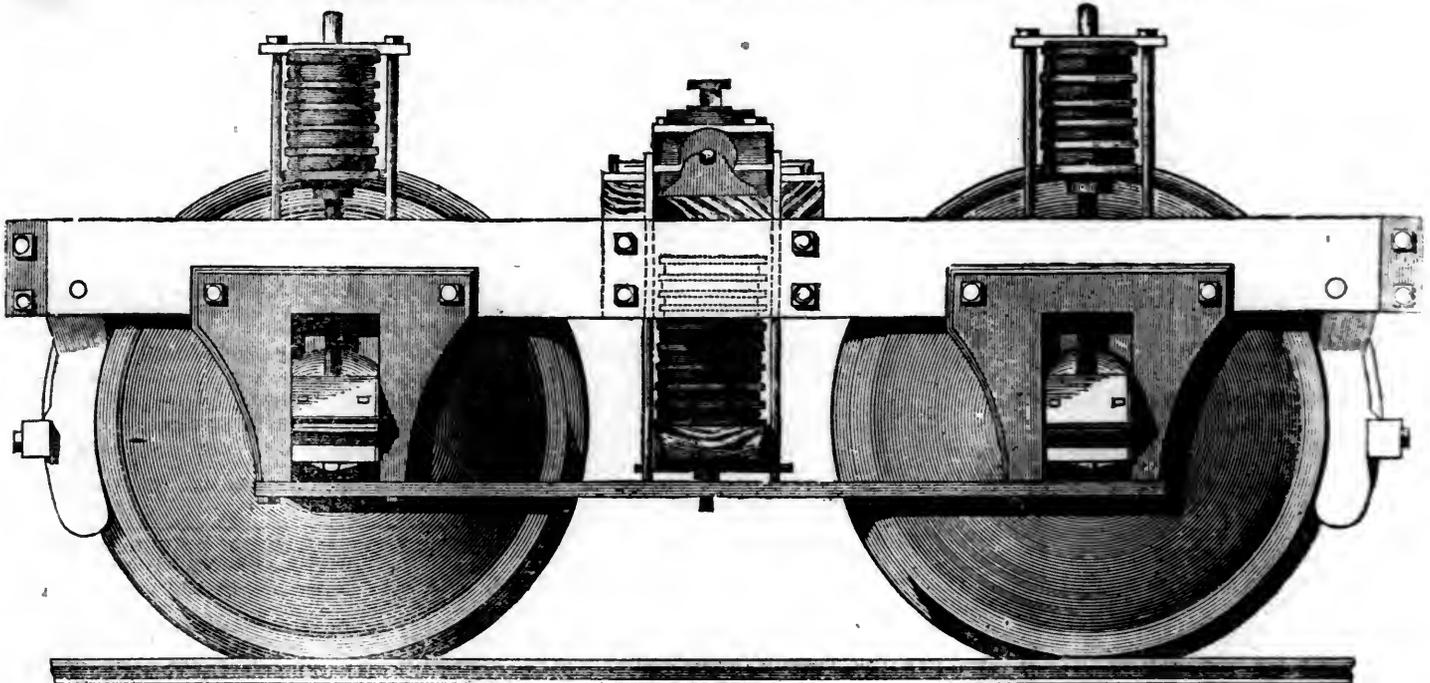
THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside. Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with **WM. RIDER & BROTHERS,** No. 58 Liberty-street, New York, or with **F. M. RAY, Agent,** 100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.
For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,
Surviving partner of **STANCLIFFE & DRAPER.**



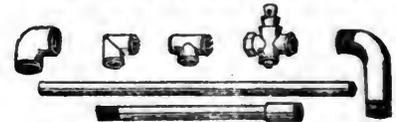
No 23 Pear street, below Walnut, Philadelphia, 10 near Third.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

MASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 feet in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by **MORRIS, TASKER & MORRIS.** Warehouse S. E. Corner of Third & Walnut Street, PHILADELPHIA.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt, & Co., New York; E. Pratt & Brother, Baltimore, Md.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

Norwich Car Factory, NORWICH, CONNECTICUT.

AT the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of

RAILROAD CARS, OF EVERY DESCRIPTION, VIZ: PASSENGER, FREIGHT AND HAND CARS, ALSO, VARIOUS KINDS OF ENGINE TENDERS AND SNOW PLOUGHS. TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice. Orders executed with promptness and despatch.

Any communication addressed to JAMES D. MOWRY, General Agent, Norwich, Conn.,

Will meet with immediate attention.

1y8

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, APRIL 2d, the

Trains will run as follows:— Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8 1/2 am., and 4 pm.

Dedham Trains—Leave Boston at 8 1/2 am, 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7, 9 1/2, am., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5 1/2 pm. Leave Stoughton at 1 1/2 am., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm. Leave Worcester at 7 1/2 and 10 1/2 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.) For Lynn, 7, 9 1 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Salem, 7, 9, 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Manchester, 9, a.m., 3 1/2, p.m. Gloucester, 9, a.m., 3 1/2, p.m. Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m. Portsmouth, 7, am., 2 1/2, 4 1/2, pm. Portland, Me., 7, am., 2 1/2, pm.

And for Boston, From Portland, 7 1/2, am., 3, pm. Portsmouth, 7, 9 1/2, am., 5 1/2, pm. Newburyport, 7 1/2, 10 1/2, am., 2, 6, pm. Gloucester, 7 1/2, am., 3 1/2, pm. Manchester, 8, am., 3 1/2, pm. Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40*, am., 2 1/2, 3, 4 1/2, 7, pm. Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55*, am., 2 1/2, 3 1/2, 4 1/2, 7 1/2, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am. 2, 4 1/2, 6 1/2, pm. Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9 1/2, am., 4 1/2, pm. Salem for Gloucester at 9 1/2, am., 4 1/2, pm. Trains leave Gloucester for Salem at 7 1/2, am., 3 1/2, pm. Manchester for Salem at 8, am., 3 1/2, pm. Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848.

Trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm. Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm. Salem for Lawrence, 9*, am., 3.15*, pm. Danvers " 9.10, am., 3.15, pm. North Danvers " 9.20, am., 3.35, pm. Middleton " 9.30, am., 3.45, pm. North Andover " 10, am., 4.20, pm. South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.55, pm. North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm. Middleton " 11, am., 4.30, pm. North Andover " 10.35, am., 5.05, pm. Lawrence " 10.30*, am., 5*, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent. Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6 1/2 am. and 2 1/2 pm. For Rochester at 6 1/2 am., 2 1/2 pm. For Great Falls at 6 1/2 am., 2 1/2, 4 1/2 pm. For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2 pm. For Lawrence at 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm. For Reading 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2 pm.

Inward trains for Boston From Portland at 7 1/2 am., 3 pm. From Rochester at 9 am., 4 1/2 pm. From Great Falls at 6 1/2, 9 1/2 am., 4 1/2 pm. From Haverhill at 7, 8 1/2, 11 am., 3, 6 1/2 pm. From Lawrence at 6, 7 1/2, 8 1/2, 11 1/2, am., 1 1/2, 3 1/2, 7 pm. From Reading at 6 1/2, 7 1/2, 9, am., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS. Leave Boston at 7, 9 1/2 am., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2 pm. Leave Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 5 1/2, 6 1/2, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later. CHAS. MINOT, Super't. Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am. An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges. The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted. H. C. SEYMOUR, Superintendent. January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morrisiana and Harlem at 7.20, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm. Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm. Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm. Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm. Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm. Mechanicville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm. Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8.10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street. Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dl

S. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8 1/2 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leaves Baltimore at 9 am. and 3 1/2 pm.
Arrives at 9 am. and 6 1/2 pm.
Leaves York at 5 am. and 3 pm.
Arrives at 12 1/2 pm. & 8 pm.
Leaves York for Columbia at 1 1/2 pm. & 8 am.
Leaves Columbia for York at 8 am. & 2 pm.

Fare:

Fare to York \$1 50
" Wrightsville 2 00
" Columbia 2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg \$9
Or via Lancaster by railroad 10
Through tickets to Harrisburg or Gettysburg 3
In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5 1/2 pm.
Returning, leaves Owing's Mills at 7 am.
D. C. H. BORDLEY, Sup't.
31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton. 271 miles.	Between Charleston and Dalton. 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hoghead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.
F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.

Gn and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.

Returning, leaves Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towas, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2, pm., Train from Cincinnati, and 2 1/2, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia \$1 90
Do do Springfield 2 50
Do do Sandusky City 6 50
Do do Buffalo 10 00
Do do Columbus 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2, and Cumberland at 8 o'clock

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7; and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.

April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm.
Leave Baltimore 9 am., and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" Baltimore at 8 pm.

Trains stop at way stations.
Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.
Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.
" Wheeling, 13.

Through tickets sold at Philadelphia office only.
Wilmington Accommodation.

Leaves Philadelphia at 12 m. 4 and 7 pm.
Leaves Wilmington at 7 1/2 am., 4 1/2 and 7 pm.

Newcastle Line.

Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm.
Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.
I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares. Miles. No. 1. No. 2
Between Phila. and Pottsville, 92 \$3.50 and \$3.00
" " Reading 58 2.25 and 1.90
" Pottsville 34 1.40 and 1.20
Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 81f.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight

Rate of Passage \$8 00. Freight—
On weight goods generally, 50 cts. per hundred
On measurement goods 13 cts. per cubic ft.
On brls. wet (except molasses and oil) 1 50 per barrel.
On brls. dry (except lime) 80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery 40 cts. per hundred
On hhd. and pipes of liquor, not over 120 gallons \$5 00 per hhd.
On molasses and oil \$6 00 per hhd.
Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,

Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroad—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.
On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,

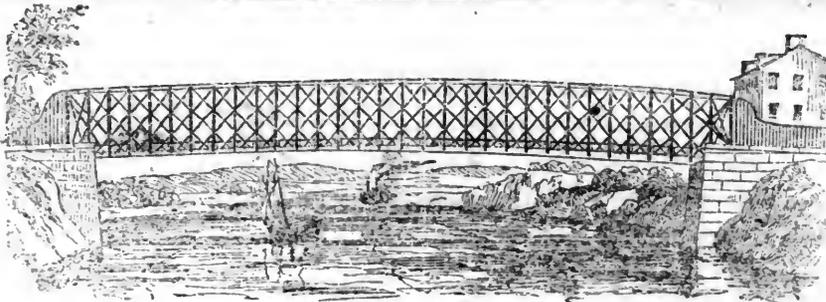
Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.
Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent.
Troy Iron and Nail Factory, Troy, N. Y.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets, Philadelphia.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

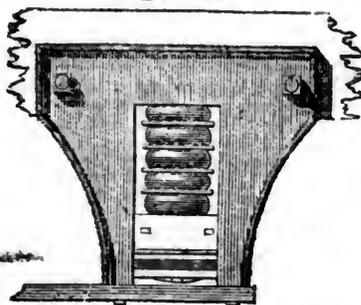
THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 53 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-Rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.
Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- Eastern Railroad.
- Providence Railroad.
- Western Railroad.
- Old Colony Railroad.
- Schenectady Railroad.
- Balt. and Ohio Railroad.
- Phila. & Reading Road.
- Central (Ga.) Railroad.
- Boston & Maine Railroad.
- Providence and Wor. Road.
- Concord Railroad.
- Fitchburg Railroad.
- Syracuse and Utica Road.
- Baltimore and Susq. Road.
- Schuylkill Valley Road.
- Macon and Western Road.
- New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents, } FAIRBANKS & CO., 81 Water st., N. York.

April 22, 1848. } A. B. NORRIS, 196 Market st., Philadelphia.

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RAILROAD SCALES.—THE ATTENTION

of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of Twenty years has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and futerums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,

Factory, 9th st., near Coates, cor. of Melon st.

Office, No. 3, North 5th street,

ly25 Philadelphia, Pa.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plaque No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO.

NOS. 9 & 10 PRIME'S BUILDINGS,

(THIRD FLOOR,)

54 WALL STREET,

NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,

HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 17]

SATURDAY, APRIL 28, 1849.

[WHOLE No. 608, VOL. XXII.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, April 28, 1849.

Railways in Canada and the Lower Provinces.

We have just been favored with an elaborate and highly interesting Report on THE ST. LAWRENCE AND ATLANTIC RAILROAD, its influence on the trade of the St. Lawrence, laid before the Legislative Assembly of Canada on the 7th instant, and printed by order of the House, by A. C. Morton, Esq., Engineer.

Mr. Morton's labors, as Chief Superintending Engineer of the entire line from Portland to Montreal, are well known to our readers, and his report recommending the gauge of five feet six inches, has been published in full in the Journal.

This Report has been regarded as fully stating all the advantages that can be urged towards establishing the superiority of the medium gauge, and received the highest commendation from the Governor General of Canada.

The St. Lawrence and Atlantic Railway Co., in aid of their application to the Government of Canada for assistance, have invited the labors of Mr. Morton's pen in presenting the claims of the enterprise to the confidence of capitalists, and to the favorable consideration of the Government.

After giving a history of the enterprise, and of its chartered rights—the survey and characteristics of the route—the estimated cost of the road—the report goes into a full examination of the advantages of the road—its connections, and sources of business.

The navigation of the St. Lawrence from tide water to the great Lakes is now perfected by the completion of a magnificent series of ship canals, and vessels carrying three thousand barrels of flour, may receive their cargoes at Chicago, or any of the

western ports, pass expeditiously and safely to tide waters, and thence to the ocean, without breaking bulk.

The principal objection urged against this route as a great thoroughfare, is the difficulties arising from the severity of the climate which renders the season of navigation short and at times unsafe. At certain of these periods, there is little or no competition and freights and insurance are high.

Under these circumstances, all that is necessary to give the St. Lawrence route the superiority in every respect, is a short, cheap and expeditious communication between Montreal and the seaboard.

This, it is maintained, will be accomplished in an eminent degree by the completion of the Portland railway, which, from its favorable position, reaches the Atlantic coast by the shortest feasible route, with gradients and curvature equal or superior to most of the great leading lines which are striving for the western trade.

The first and most important connection of your road, therefore, is with the extended natural and artificial navigation opening to the vast and fertile regions of the west, and securing to it in a great degree the immense trade which will descend through the St. Lawrence to an eastern market.

From the St. Lawrence, your road pursues an easterly course until it reaches the St. Francis Valley, where an important line or branch railway will diverge passing down the valley of the St. Lawrence to Quebec. This will concentrate and draw the trade to your main line, whether it is destined for an eastern or western market, or to or from Quebec.

Thus, your main line, while it accommodates and will secure the local trade of the country, and that between the cities of Montreal and Quebec, will still be the great thoroughfare between both cities and the Atlantic seaboard.

This will inevitably be the result, simply because it is the shortest and cheapest channel through which this trade can flow for a large portion, if not the whole year.

But in addition to these considerations as connected with the trade of the Quebec branch, there is still another advantage which greatly enhances its value.

When the great system of railways for the Province shall have been carried out, this branch and a large portion of your main line will then form part of the grand trunk line from Halifax to Lake Huron.

After attaining this important point of divergence on the St. Francis, your road bears a more southerly course, following the fertile valley of this stream for a distance of 30 miles, when it arrives at the point of divergence of another important and long line of railway communication extending to the cities of New York and Boston, and all the principal manufacturing towns of New England.

The construction of 100 miles on the part of American corporations will complete an uninterrupted line to both of these cities, which probably will be

done as soon as your line is constructed to the boundary.

But without at present further tracing these connections and the benefits flowing therefrom, we return to the main line, which from this point to the boundary is but a continuation of the same general course, followed through the St. Francis Valley.

Arriving at the boundary, your line is taken up by the American corporation and extended to Connecticut river, thence down its valley to the vicinity of Guildhall, Vermont and Lancaster, New Hampshire, when it will connect with the proposed railroad passing down through Meredith and Concord to Boston, and affording another line of communication with central New Hampshire and that city. From the point of divergence near Lancaster, the main line in continuation of your road is extended to tide waters, Portland Harbor, forming in its course several important connections, not only with branches contemplated and in progress, but with main trunk lines extending eastward.

One of these lines may be regarded as an extension of your road through the heart of the State of Maine to the Province of New Brunswick. It diverges from the Atlantic and St. Lawrence railway 27 miles from Portland, and extending through a rich and populous district, reaches Waterville, a flourishing town on the Kennebec river, in a distance of 55 miles.

A portion of this line is already in operation, and the whole road is expected to be completed and opened for business to Waterville next autumn.

From that place to the city of Bangor the road will be constructed by another corporation, and as there is a favorable charter it will no doubt soon be commenced.

Bangor is a flourishing city, situated at the head of ship navigation, on the Penobscot river, which, with its other advantages, renders it an important point on the great Eastern line of railways.

In considering the question of the traffic of your road, we must have reference to not only the number of inhabitants immediately along the line, who make up its way business, but embrace the population of large districts of country, which, owing to their position, will be furnished with their supplies and a choice of markets for their productions, through your road, at less cost than by any other means of communication.

Your road having its terminus at an Atlantic port, and forming one of the great outlets of the western trade, may justly claim a large traffic from breadstuffs to be exported to Europe, South America and the West Indies, and from imports of merchandise, etc., for Canada and the Western States.

The great sources of wealth of the New England States are commerce, manufactures and the fisheries.

The soil is better adapted to grasing and the growing of some of the coarser agricultural products, consequently they do not produce sufficient breadstuffs for their own consumption.

The State of Maine, with which the trade of your road is more intimately connected, possesses unlimited advantages for manufacturing which are now about to be brought into extensive use.

Her large rivers and numerous harbors, give great value to her navigation and fisheries, and facilitate those valuable branches of her trade, lumbering and ship building, in which she exceeds any other State in the Union.

The lumber which she annually produces amounts to 650 millions of feet, and the tonnage of the vessels which she annually puts afloat amounts to 25 per cent. of the whole tonnage of vessels built by all the States in the Union, and exceeds that of N. York by 21,000 tons. In the amount of tonnage of her shipping she is the third State in the Union.

It is ascertained from undoubted authority that the State of Maine now draws annually from the cities of Boston, New York and other places, 500,000 barrels of flour, over 1,000,000 bushels of Indian corn and 75,000 barrels of pork.

The State of Maine is largely engaged in the West India and South America trade, supplying those markets with her lumber, fish, etc.

Western produce arriving at tide water through this channel would give employment to a large amount of shipping, and by adding breadstuffs to her other exports, would render this trade still more valuable, and probably open other and more extensive markets for these products.

It would also enable traders to import West India products on more favorable terms, as the northern and western markets for these articles would be extended by this new channel of trade, and vessels would probably have full freights in both directions.

These products delivered at Portland Harbor, would find their way to the west over your road, and through the St. Lawrence, at probably less expense than by any other communication through New England.

The soil and productions of the Provinces of New Brunswick and Nova Scotia are similar to those of the State of Maine, and they import their supplies of breadstuffs from the United States.

It is stated in the able Report of the Commissioner of the Halifax Railway, that New Brunswick annually pays to the United States upwards of £200,000 for provisions and other articles—that Nova Scotia does very nearly the same thing—that flour is imported from New Orleans—and wheat grown in the Mississippi valley is shipped at St. Louis for New Brunswick, and ground into flour at the mills of St. John.

Looking at the favorable position of your road, connecting the Atlantic with the western waters by the shortest practicable route, and extending down into the heart of the country requiring their breadstuffs, there does not appear to be any doubt that a very large portion of the supplies of the State of Maine, New Brunswick and Nova Scotia, and parts of Vermont and New Hampshire, will be transported over your road, and its branches, by which it will be delivered almost at the doors of the consumers.

The St. Lawrence river, with its ship canals, and the great lakes, open an inland navigation, which, for its extent, capacity and economy of transportation, is not surpassed by any in the world.

The total distance through the St. Lawrence and the lakes to Chicago, from Montreal, is 1330 miles, and in this distance there are but 66 miles of canal navigation.

If we include the navigation of Lake Superior, and Strait St. Mary's which require but about one mile of Canal to perfect the navigation, and which will soon be completed, we have a total extent, including the distance laterally to Chicago, of 1726 miles, having only 67 miles of canal navigation.

The Welland Canal is destined for vessels of 400 tons, and the St. Lawrence canals for vessels of much larger tonnage.

These improvements are completed, and were first brought into use last year.

The channel of trade, therefore, is not yet fully known or appreciated, and there has not yet been time to realise the benefits which will result from experience and improvements in the manner of conducting the business of transportation and the effects of competition in lowering rates.

The amount of up trade has an important bearing on the cost of down freight; and this being,

largely increased by the completion of your road will doubtless still further reduce the rates of transportation.

The following table exhibits the leading features of the route from Cleveland to Boston via the Erie canal and Western railroad and the St. Lawrence route, from the same point via the Portland railway to Portland.

ROUTES.	Length of lake and river navigation—miles.	Length of canal navigation—miles.	Tonnage of vessels. Tons.	No. of transshipments.	Length of railway—miles.	Maximum grade—ft. per mile.	Time occupied in reaching seaboard—days.
To Boston, via Erie canal and Western railroad.....	200	363	*80	2	200	83	14
To Portland, via St. Lawrence river & Portland railway..	534	66	400	1	275	50	8½
Difference.....	334	297	320	1	75	33	5½

The following statement exhibits the cost of transporting flour per barrel, on these routes:

ERIE CANAL ROUTE.	
From Cleveland to Buffalo.....	12 cents.
" Buffalo to Albany.....	.70 "
" Albany to Boston.....	.30 "
Total to Boston.....	112 cents.
If carried thence to Portland.....	10 cents.
Total to Portland.....	122 cents.
ST. LAWRENCE ROUTE.	
From Cleveland to Montreal.....	40 cents.
" Montreal to Portland.....	.54 "
Total to Portland.....	85 cents.
If carried thence to Boston.....	10 cents.
Total to Boston.....	95 cents.

From this it appears that adopting the average rates of transportation on the Erie Canal of the lowest month in each year, for a number of years, which is 7 cents per barrel less than the average of 1847, and the lowest summer rates on the Western railroad, the cost of delivering flour at Boston is 112 cts. per barrel, and if forwarded to the State of Maine, an addition of 10 cents, making a total of 122 cents per barrel.

By the St. Lawrence route the cost of delivering a barrel of flour, allowing the charge on the Portland railroad to be 44 cents per barrel, and taking the actual rate at which it has been carried from Cleveland to Montreal (40 cents,) we have a total charge of 85 cents, making a difference in favor of the route via Montreal and Portland road, to the Seaboard, of 27 cents per barrel.

If however, we make the charge on the Portland road, without reference to the difference in grades, the same in proportion to its length, as is charged on the Western railroad, the cost will be reduced to about 41 cents, or a total from Cleveland to Portland of 81 cents per barrel in favor of the St. Lawrence route.

Making Boston the terminus of both routes, there is still a difference of 17 cents per barrel in favor of the St. Lawrence route via Portland to Boston.

The difference in time required to perform a passage from Cleveland to the Seaboard is 5½ days in favor of the St. Lawrence and Portland route.

The greater extent of canal navigation, and an additional transshipment, add not only to the time required, but materially increase the cost of transportation on the Erie Canal route over that of the St. Lawrence.

* Taking one of the heaviest laden boats per day which arrived at West Troy from Black Rock, the average for the year 1848 was 71 1-2 tons. Canal Commissioner's Report, January, 1849.

The former has 363 miles of canal navigation, while the latter has only 66 miles, and most vessels navigating the St. Lawrence pass down the river instead of the canals, so that in the downward passage there are but about 36 miles of canal navigation.

The Erie Canal is navigated by vessels of small tonnage, drawn by horses at the rate of 2½ miles per hour, while the Welland and St. Lawrence Canals are navigated by steam vessels which pass through the lakes and the river to Montreal, without breaking bulk, in half the time, and with about four times the number of tons in each cargo. The vessels on the former route can carry from 700 to 800 barrels of flour, but those of the latter carry 3000 barrels.

These disadvantages of the Erie Canal route cannot be overcome by the enlargement of the canal or other improvements.

The Ogdensburgh and Lake Champlain route to Boston may be said to come into competition with your road, and that its tendency will be to divert the western trade from the St. Lawrence above Montreal.

It remains to be considered whether you will be able to compete successfully with this line.

The distance to the Seaboard by this route to Boston and the distance via the St. Lawrence and your road to the Seaboard at Portland, are very nearly the same.

By that route, the transportation will be for the whole distance 397 miles by railways, which are to be operated by six and perhaps seven different corporations, each having a separate organization and management.

The freight is landed on the west side of the city of Boston, much of which must be trucked across the town for shipment or storage at an expense for flour of 4 cents per barrel.

By the Montreal route, the vessels which bring cargoes from the upper lakes will continue down the river, descending the rapids or passing through the canals, at their option at Montreal, a distance of about 120 miles, where cargoes will be transhipped and transported on a superior railway of 275 miles in length, directly to vessels in the harbor of Portland.

As it regards the time of reaching the Seaboard by these routes, there will probably be but a trifling difference. If a bridge is not constructed across the outlet of Lake Champlain, for the Ogdensburgh line, there would be another transshipment, or so much delay as to occasion an additional disadvantage.

With reference to the cost of transportation, there appears to be little doubt as to the superior economy of the Montreal route.

Vessels arriving at Ogdensburgh with full cargoes, may, in a few hours more, and with but very trifling expense, descend the St. Lawrence to Montreal; and as the facilities for obtaining return cargoes from that place will be far greater than at Ogdensburgh, forwarders will probably find it greatly to their advantage for their vessels to go through the former place rather than to discharge at Ogdensburgh.

But the amount of up freight will have a tendency, as before stated, to modify the prices of down freight, and the superior advantages of Montreal in this respect will hold out strong inducements to continue down the river to that point, at perhaps less proportional charges than Ogdensburgh.

The cost of transporting flour from Montreal on the St. Lawrence and Atlantic railroad to Portland, has been placed at 45 cents per barrel.

If we make the same proportional charges on the Ogdensburgh line, the cost of transporting flour from that place to Boston will be 65 cents per barrel.

If it can be done for less than this sum on that line, it certainly can be reduced, at least proportionally on your road, where the facilities and capacity of transportation are greater and the first cost of the road much less. If we assume the low charges on the Western railroad, and apply it irrespective of any supposed advantages of grades and first cost of construction to these lines, the charge on the Ogdensburgh line will then be 59 cents per barrel.

Portland line 41 cents per barrel.
Difference 18 cents per barrel in favor of the Portland line.

Mr. Morton then goes into elaborate extracts as to the probable business of the road, and sums up the same as follows:

PROBABLE RECEIPTS OF THE ROAD

400,000 Barrels Flour to the New England States, New Brunswick and Nova Scotia at 1s.....	£20,000
400,000 Barrels Flour for shipment to Europe, West Indies, and South America at 1s.....	20,000
Corn and other descriptions of Grain equal to 100,000 Barrels at 1s.....	5,000
40,000 Barrels Pork, Beef, &c. at 1s. 6d....	3,000
Through and Way Freight of all other descriptions equal to 80,000 tons at 20s.....	80,000
Passengers, Through and Way, equal to 60,000 over the whole road at 15s.....	45,000
Mails.....	2,000
Total Receipts.....	£175,000
Deduct for expenses 50 per cent.....	87,500
Net Revenue.....	\$87,500

which is equal to 10 1/2 per cent on £850,000, or if the final cost of the road should amount to £1,000,000, the net revenue is 8 1/2 per cent on that sum.

This estimate applies only to the Canadian end of the line, or one half the distance from Montreal to Portland.

Mr. Morton furnishes a series of most valuable tables, showing statistics of the cost and traffic of the New York, Massachusetts and English railways. He also presents a mass of facts, showing the connection of this road with the future business of the Atlantic cities and the west.

The whole report embraces some 50 pages, and want of room alone prevents our giving it entire. It is written in a style remarkable for its clearness and brevity, as the quotations from it show. It is by far the most full and satisfactory statement yet published, as to the prospects of the Portland and Montreal railway; and is the best arrangement for the purpose of establishing the necessity of railways in Canada, that could be addressed to the Government.

His concluding remarks, upon the progress of the trade of the west, we give entire.

The astonishing increase of trade on the western lakes within a few years, is such as to render it difficult to assign any proper limits to its future advances.

In 1835 the State of Ohio was the only exporting State on the Lakes, and during that year there arrived at Buffalo 86,000 barrels of flour, and 98,000 bushels of wheat.

The following statement shows the amount of the principal productions of the Western States which arrived at the same port in 1845 and 1847, and the increase.*

Year.	Flour. barrels.	Pork & beef bbls.	Staves. M.	Wheat. bushels.	Rye, oats & corn. bushels.	Butter. kegs.
1817.	1887000	30000	8500000	6189100	3379087	101594
1845.	746750	72060		1170740	78470	19975
Inc't	110250	22940		4718360	3300617	81605

The above is exclusive of the large amount of lake trade which went through the Welland canal.

In 1837, the wheat and flour passing lakes Erie and Ontario to be forwarded to market, through the Erie canal, amounted to only about 35,000 tons—while in 1847 the amount was 486,000.

By referring to the amount of shipping on the lakes at various periods, its tonnage and value, and the value of the commerce, we may perhaps form a more just appreciation of its importance, and the astonishing increase of trade within a few years.

In 1835 there were but 30 or 40 small craft and one steamboat of 350 tons burthen on lake Erie, and the first steamboat passed through lake Michigan in 1826 or 1827.

In 1845 there were at the lakes, above Niagara *Compiled from the Report of the Commissioner of Patents, to Congress, 1847.

Falls, 60 steam vessels, having an aggregate tonnage of 23,000 tons, and 320 brigs and schooners of 53,000 tons, the whole costing \$4,600,000.*

The shipping of all the lakes in 1846 amounted to 136,836 tons, and was valued at \$6,000,000. The amount of merchandise transported that year was 3,861,088 tons, while that of 1841 was 2,071,892 tons—showing that the trade had nearly doubled in five years. The number of passengers transported in 1846 was 250,000, and the value of this business was estimated at \$1,250,000.†

The value of lake commerce in 1847, according to the report of the Hon. Washington Hunt, made to Congress, was over 141 millions of dollars, or only 13 millions less than the value of all the exports of the United States in 1848, and nearly double the value of all the products received at New Orleans in 1846 and 7 by the Mississippi river.

In all the immense territory which surrounds the great lakes, and which now produce this surprising amount of commerce, there was in 1818 but one organized State, and the total population did not exceed 500,000 souls.

At the present time, there is a cluster of six large States about these waters, containing a population of between four and five millions of inhabitants.

Embracing the States and Territories whose trade will float over these lakes to an eastern market, we have an area of nearly 300,000 square miles, or an extent of territory three times as large as the kingdom of Prussia, and nearly twice as large as France.

Examine the position and advantages of this favored region, which is almost encircled by those great inland seas, possessing an exuberant soil, a genial climate, and all the elements of national greatness—survey these magnificent lakes, with their five thousand miles of coast, their numerous harbors, the flourishing towns and cities which already stud their shores, and the thousands of miles of natural and artificial channels of communication collecting the rich products of the soil from every point of the compass, and pouring its treasures into these great national reservoirs—trace that noble river, the St. Lawrence, which forms the outlet to the ocean for these illimitable waters, and which seem designed by nature as the great highway of nations—consider the rapid progress of this country within a few years past in population, in improvements, in commerce and wealth—and picture its state a few few years hence, when these fertile plains will team with an active and enterprising population, when railways will spread a net work of iron lines over the whole length and breadth of the land, when the vast agricultural and mineral resources of the country shall be developed and the western lakes be covered with innumerable fleets, bearing these exhaustless products—do all this, I say, and then estimate, if you can properly, the extent and value of the commerce of the mighty west.

There is one other consideration which I cannot omit to notice, notwithstanding the great and perhaps unreasonable length of this communication.—It is this. By the completion of your road, an immense trade will be drawn down the St. Lawrence, and through your canals, which otherwise will pass through other channels.

As an enterprise which will largely increase the revenue of these works, the value of lands, public and private, and the wealth of the whole country, it cannot, I believe, be questioned that it is pre eminently deserving of the favorable consideration and encouragement of government.

You will, I trust, excuse the liberty I have taken in addressing to you these views, which I have been led to entertain of your great enterprise, and after the most careful examination and investigation of its merits in all its details, I feel the utmost confidence in stating, as my deliberate judgment, that if this undertaking is carried out on its original plan and principles, no work in this Province or the U. States of a similar character, will exceed it in the magnitude and importance of its results.

With sentiments of great respect
I have the honor to be, sir,
Your obedient, humble serv't.
A. C. MORTON.

* Letter on Lake Commerce, 1846, by James L. Barton, Esq.
† Report to Congress by J. J. Abert, Col. Corps Top. Engineers, 1848.

Worcester and Nashua Railroad.

We understand that the receipts on this road the last week exceeded \$2600; which is \$135,000 a year; and yet the travelling season has scarcely commenced; and the company's arrangement for freight are far from being perfected.—*Wor. Palladium.*

Statistics of the United States.

The Appendix accompanying the Report of the Hon. Richard M. Young, Commissioner of the General Land Office, gives the following interesting table:

STATEMENT

Of the areas of the thirty States of the Union, in square miles and acres; the population of each according to the United States census of 1840; the number of Senators and Representatives in Congress to which each was entitled; the number of Presidential Electors, etc.; also a comparative view of the difference in the population, etc., of the slave and free States, separately stated, from the most authentic sources:

Free States.	Area.		Population.		Total.	Slave States.*	Area.		Population.		Total.
	Square miles.	Acres.	No. free white persons.	No. free colored persons.			Square miles.	Acres.	No. free white persons.	No. of colored slaves.	
Maine.....	35,000	22,400,000	500,438	1,314	501,753	Delaware.....	2,120	1,356,800	58,561	16,919	78,085
New Hampshire.....	8,000	5,120,000	291,218	730	291,948	Maryland.....	11,500	7,010,000	317,717	62,020	379,737
N. Vermont.....	8,030	5,139,200	284,036	537	284,574	Virginia.....	61,352	39,265,280	740,858	49,852	790,710
Massachusetts.....	7,250	4,630,000	729,030	8,669	737,699	N. Carolina.....	45,500	29,120,000	484,870	22,732	507,602
Rhode Island.....	1,200	768,000	105,587	3,238	108,825	S. Carolina.....	28,000	17,920,000	259,084	8,276	267,360
Connecticut.....	4,750	3,040,000	301,856	8,105	309,978	Georgia.....	58,000	37,120,000	407,695	40,685	448,380
New York.....	46,000	29,440,000	2,378,890	50,927	2,429,817	Kentucky.....	37,680	24,115,200	590,233	5,324	595,557
New Jersey.....	6,581	4,384,640	351,588	21,014	372,602	Tennessee.....	44,000	28,160,000	440,657	25,502	466,159
Pennsylvania.....	47,000	30,080,000	1,502,152	17,551	1,519,703	Mississippi.....	47,147	30,174,840	158,457	1,366	160,223
Ohio.....	39,964	25,576,960	1,676,115	7,345	1,683,460	Alabama.....	60,722	32,462,080	335,185	2,039	337,224
Indiana.....	33,809	21,637,760	678,698	7,165	685,863	Missouri.....	67,380	43,123,300	323,888	1,574	325,462
Illinois.....	55,405	35,459,200	412,254	3,598	415,852	Arkansas.....	52,198	33,406,720	77,174	465	77,639
Michigan.....	56,233	35,995,520	211,560	707	212,267	Florida.....	59,268	37,931,520	97,913	817	98,730
Iowa.....	50,914	32,581,860	42,934	172	43,106	Texas.....	323,920	208,332,800	140,000	30,657	170,657
Wisconsin.....	53,331	34,511,360	220,671	185	220,856	D. of Col.....	50	32,000	30,657	8,361	39,018
Total.....	454,310	290,777,600	9,746,987	170,928	9,917,915	Total.....	936,368	599,275,520	4,772,043	215,821	5,025,144

* According to the State census of 1847.

The free States have 30 Senators, 139 Representatives, and 169 Presidential Electors.
The slave States have 30 Senators, 91 Representatives, and 121 Presidential Electors.

TERRITORIES OF THE UNITED STATES.

The estimated surface of the Territories of the United States, north and west of the regularly organized States of the Union, and distinguishing the former from the newly acquired Territories, and the portions thereof situated north and south of the parallel of 36 30 deg. north latitude, in the Appendix to the same Report, is as follows, viz:

Former Territories, east of the Rocky Mountains.	Sq. miles.	Acres.
<i>Northwest Territory, west of the Mississippi River.</i> —Bounded on the north by 49 deg. north latitude, east by the Mississippi river, south by the State of Iowa and the Platte river, and west by the Rocky Mountains, (all north of parallel 36 30).....	723,248	462,878,702
<i>Wisconsin Territory.</i> —Balance remaining of the old Northwest Territory, east of the Mississippi river, and northwest of the State of Wisconsin (north of 36 30).....	22,336	14,295,010
<i>Indian Territory.</i> —Situated west of the States of Missouri and Arkansas and south of the Platte or Nebraska river, held and apportioned in part for Indian purposes (north of 36 30, 190,505 square miles and 121,923,200 acres—south of 36 30, 58,346 square miles and 37,341,440 acres).....	248,851	159,264,640
Total of old Territory.....	994,435	646,438,400
<i>Newly Acquired Territories west of the Rocky Mountains.</i>		
<i>Oregon Territory.</i> —Bounded on the north by the parallel of 49 deg. north latitude, south by the parallel of 42 deg. north latitude, east by the Rocky Mountains, and west by the Pacific ocean (all north of 36 30.	341,463	218,536,320
<i>Upper California and New Mexico.</i> —Bounded on the north by the parallel 42 deg. north latitude, east by the Rio Grande from its source to the parallel of 42 deg. north latitude, south by the Gila river from its source to its mouth, thence by a line to a point one marine league north from the southernmost point of San Diego and west by the Pacific ocean (north of 36 30 deg. 321,695 sq. miles, and 205,884,800 acres, south of 36 30 deg., 204,883 sq. miles, and 130,805,130 acres).....	526,078	336,689,920
Totals of new Territory....	867,541	555,226,240
Making together of former and newly acquired territory, 1,861,976 1,191,664,640		
<i>Texas</i> , including the three divisions, viz: Texas proper, the country between the Nueces and the Rio Grande, and the Santa Fe country, (north of 36 30 deg. 43,537 sq. miles, and 27,863,680 acres—south of 36 30 deg. 281,923 sq. miles, and 180,469,120 acres).....	325,520	208,332,800
Grand total of the Territories of the United States, including Texas.....	2,187,490	1,399,997,440
Newly acquired Territory lying north of 36 30 deg.....	1,599,247	1,023,518,080
Texas.....	43,537	27,863,680
Total north.....	1,642,784	1,051,381,760

Newly acquired Territory lying south of 36 30 deg.....	262,729	168,146,560
Texas.....	281,983	180,469,120
Total south.....	544,712	348,615,680

LENGTH OF SEACOAST OF UNITED STATES.

From the same report we obtain the data for the following statement, exhibiting the length of the seacoast of the United States:

From the northern limits of the U. States to the Cape of Florida on the Atlantic ocean.....	1,900 miles.
From the Cape of Florida to the mouth of the Rio Grande on the Gulf of Mexico.....	1,600 miles.
From the boundary point one league south of the port of San Diego on the Pacific, along the coast of Oregon and the Straits of Fuca to the boundary point, 49 deg. north latitude.....	1,620 miles.
Making together the length of seacoast on the Atlantic, Gulf and Pacific.....	5,120 miles.
Or a "shore line" following the irregularities of the shore and sea islands, according to an estimate of the Superintendent of the Coast Survey, of.....	33,063 miles.

The Protective Policy.

Continued from page 247.

According to Professor Tucker, a good free trade authority, the products of the U. States in 1840 amounted to \$1,092,134,000. The natural increase of population and productiveness would swell this amount at the present time to \$1,310,000,000. If we should deduct from this six per cent. as the interest of capital which goes into the product, which would be a very liberal allowance, it would reduce the annual worth of labor to \$1,231,000,000. Any financial system which should add six per cent. to the value and productiveness of labor would increase the wealth of the nation \$73,884,000 annually, being more than twice the amount which any one would think of obtaining from customs. Or, if we adopt the estimate of Mr. Secretary Walker, and set down the production of labor at \$3,000,000,000, and go through the same process, it would give us \$169,000,000 as the annual increase of wealth; being more than five times the amount of revenue ever collected from the customs in a single year. A judicious tariff, therefore, would protect labor, stimulate industry, and so develop the resources of the country as to increase the wealth of the people, while it should meet all the demands of the country.

The committee cannot agree with the honorable Secretary of the Treasury in his annual report, that a protective tariff is of necessity a tax upon the labor of the country, and that it tends to reduce the wages of labor. On the contrary, we are satisfied that a wise imposition of duties, by turning industry into new channels, will create a greater demand for labor, and the rate of wages will rise with the demand; and that the capital thus accumulated will seek investments in new enterprises, and that the laborer will reap his full share of the advantages. Equally unsound in his position that true economy in all cases requires us to buy in the cheapest market. The cheapest market for purchase may be the poorest for sale, and these may counteract each other. The terms of payment may also render the price the most economical in many cases. The hardy pioneer in the west would prefer to give fifty per cent. more for an implement of husbandry, or an article of clothing, if he could pay in produce at his own door, than if he was required to pay in specie. The homely adage of our farmers and mechanics—"that they must get things in their own line," contains more sound political economy than many of the positions of our free trade writers. The farmer or mechanic by getting things in his own line can turn many articles to a good account which would otherwise be useless, and give a value to a portion of time which would, under other circumstances, be lost: and though the articles thus obtained may nominally cost him more than the cash price at the mart of trade, yet to him it is an economical arrangement, and one which contributes to his wealth.

The same principle applies to rations.—The cheapest market is not always the most advantageous in the end. What we produce by extra labor, or by

converting materials which would otherwise be lost into valuable commodities, is much addition to the wealth of the nation. The principle may be illustrated by many examples which actually exist. Take the article of *straw goods*, of which we imported more than \$1,091,000 the last year. Admit, if you please, that we can purchase hats, bonnets and flats ten per cent. cheaper at Leghorn or Florence, or in any foreign country, than they can be manufactured in this, still it would be good economy to encourage this species of industry at home. This department of manufactures gives employment to thousands of women and children, and so converts labor, which would be otherwise lost, into capital, and thus adds to the national wealth, while it gives a comfortable support to a class of our population which might otherwise become paupers. Ready-made clothing and hosiery, of which we imported last year \$3,197,000, furnish another example in point. If a suit of clothes made in this country costs the wearer ten per cent. more than they could be procured for abroad, he himself may be remunerated by the employment given to the poor and destitute of our own country, which save them from pauperism and crime. Any policy which gives employment to the poor, not only contributes to their comfort, and saves the public from a pauper tax, but actually increases the wealth of the country. It is a narrow and mistaken policy which would procure every thing from Abroad, because its first cost might be a fraction less than it could be obtained for at home. If the farmer upon the rugged soil of New England should refuse to plant and sow, because grain could be produced cheaper on the fruitful prairies of the west, he would soon find that his inability to purchase would place even those cheap products beyond his reach. Such a policy is as ruinous to a nation as to an individual.

Nor is it a hardship of which the citizen has any reason to complain, that he is deprived of the benefits of a market in which he can purchase cheapest. There are considerations of a national character, objects of state, to which all good citizens are bound to submit. A merchant might obtain his goods at a lower rate if he could smuggle them into the country, or by false invoices evade the payment of one-half the present duty. But he has no legal or moral right to do it, because it would be defrauding the government and inflicting an injury upon the people. In time of war it might be profitable to an individual to trade with the enemy; but as this might tend to prolong the war, he has no right to do it. This is well understood and will be readily admitted by every intelligent citizen. Now this principle applies in all its force to the subject before us. If the protective policy gives employment to our own people, adds to the wages and productiveness of labor, and enhances the wealth of the nation, an individual has no more reason to complain that he is cut off from the the cheapest market for his purchases than he would have that he is prevented from trading with the enemy in time of war. In both cases, what might be a privation for the time being would prove a national blessing on the whole, of which he and all others would partake.

The first object in providing for the wants of the government, should be to adopt a system of revenue which will be most productive of the prosperity of the country. In such a system, no one calling should engross the fostering care of the government; but every interest should be provided for as far as possible. The capitalist should be protected in his property, and the laborer in his wages. As the wealth of a nation consists, in a great degree, in its labor, the toiling millions merit the special care of the government, and their prosperity, above all things should be sought. Upon their prosperity the welfare of the country mainly depends. But though labor in every department of industry merits equal attention, its claims can best be examined and its wants provided for when considered in classes. A great error prevails in the community in relation to the effects of a tariff upon the different classes of laborers. Some have vainly supposed that none but manufacturers' property had any interest in the protective policy. If the committee entertained this idea, they would abandon that policy altogether.—Though the manufacturers are a large and respectable class of our citizens, we would countenance no policy which would build them up upon the ruins or to the injury of other and more numerous classes.—

We believe that the common mechanics and the artisans, who are dispersed over the whole country, and whose labors are required in every village in the land, have as vital an interest in the American system as the manufacturers. In fact, we believe that the mining and navigation interests, and the far more numerous class which are engaged in agriculture, the parent calling of our race, demand a modification of our present revenue system. There is, we believe, such a community of interest among those engaged in the different industrial pursuits in this country, that whatever promotes permanently the interests of one class will redound to the benefit of all; and, on the other hand, any policy which tends to depress any one great interest will, in the end, prove injurious to every other. It is as true in the body politic as in the human body, "if one member suffers, all the members suffer with it."

To adjust a revenue system to the wants of all these classes—to protect the labor and encourage the enterprise of the whole people, requires the utmost care, and merits the most discriminating attention. A broad and liberal view should be taken of every interest; the wants of the government should be carefully considered; the direction and tendency of trade; the policy of the nations with which we are commercially connected; their internal condition; the worth of their capital and the wages of their labor; and whatever else distinguishes each country—all this should be carefully considered in adjusting a revenue system. The committee need not say that the multiplicity of their labors and the shortness of the session prevent their giving to this subject, at this time, the examination its importance demands.—We have time only to submit some brief considerations which naturally present themselves to our minds. While it is admitted that each of the great industrial classes in the community is equally entitled to the parental regard of the government, each should be fostered in a manner suited to its condition. The shipping interest should be encouraged by giving a preference to American bottoms, and by increasing as far as possible the coasting and internal trade of the country, where foreign shipping is entirely excluded. A judicious imposition of duties tends to promote the prosperity of the navigating interest. While the duty on coal, for example, is low, as it is at present, and a considerable portion of our supply, especially in our northern cities, is obtained from British provinces, the carrying is divided between our own and British shipping; but with increased duties our whole supply upon the Atlantic would be obtained from Pennsylvania, Maryland, and Virginia; and this would not only give employment to our own miners, but secure to our shipping the carrying, and thus a double advantage would be secured to our own citizens. And what is true in this case will be found true in many others. A liberal encouragement to our manufacturers would promote the navigation interest in a variety of ways. By reducing the duty on raw materials used in manufactures you not only increase our imports of these articles, but, as the raw materials are more weighty and bulky than the manufactured goods, you also increase the freight, and thus give employment to our shipping. Nor is this all: many of these articles thus brought into the country, when manufactured, are exported; and in this way a double advantage is secured to our commerce. During the last year we exported manufactured articles to the amount of \$12,981,000—being more than one-tenth of our entire domestic export—and the greater part of this consisted of goods made wholly or in part of materials brought from abroad. Encouraging domestic production and an interchange of commodities between the states adds greatly to our coasting and inland trade. The hides which are sent down the Mississippi to New Orleans, and thence conveyed coastwise to Massachusetts, where they are tanned with the bark from Maine, and then returned in the form of boots and shoes to New Orleans, furnish one among a thousand instances that could be named, in which our own carriers reap an advantage from domestic manufactures. The importance of our coasting and internal trade is too frequently overlooked when speaking of the interest of navigation. Mr. Walker, in his annual report, submitted December 9, 1847, estimates the interchanges between the states at \$500,000, a large share of which is the result of domestic manufactures. This part of the subject is so well understood by the

intelligent, far-seeing individuals engaged in commerce and navigation, that you will find our largest ship owners, and most of our intelligent merchants, advocates of the protective policy. The only exception to this general rule is found to exist in our great commercial emporium; and this is easily accounted for from the fact that three-fourths of the commerce of New York, from this side of the Cape of Good Hope, is on foreign account.

Any system which encourages labor and promotes the prosperity of the country must increase the exchanges between the different sections of the Union, and hence contribute to commercial prosperity. The sail could not be spread were not the hemp manufactured; the ship could not be freighted if the furrow were not turned.

The great interests of agriculture should by no means be overlooked. But the protection here is not so direct as it is with reference to some other interests. Some of the products of the soil, however, require as much protection as many other articles. Hemp is an important product of the soil, and one, too, which is ultimately connected with one arm of our national defence; and its production should be encouraged not only for purposes of state but for the benefit of the grower, and for the convenience of our commercial marine. Cotton, the great staple of the south, may not require any protection for its own sake; but any system which encourages manufactures in this country creates a greater demand for that article, and so tends to enhance the price; besides encouraging manufactures and the mechanic arts diversifies labor, and calls off thousands from the cultivation of cotton. The low price of that article shows most conclusively that too large a share of the southern population is engaged in that employment; and any system which should withdraw a portion of the labor from growing cotton, would make their labor more productive, and enable them to realize more profits from a less amount of cotton. Again, a suitable encouragement held out to the sugar planter, would naturally convert some of their cotton fields into sugar plantations; and not only the sugar, but the cotton interest, would eventually be benefited thereby.

A protective duty upon wool operates directly in favor of sheep husbandry; and as the mountain ranges through our whole country, and the vast prairies of the west, are admirably adapted to the growing of wool, this interest, which is destined to be one of great importance to the country, should be carefully cherished.

The agricultural interest is also promoted by a reasonable duty upon iron and coal. These articles in the bowels of the earth are of no possible value to the country; but when they are brought out by human skill and labor, they become valuable to the nation in a great variety of ways. Iron has always been regarded as an article indispensable to national defence: and in the present state of steam navigation, coal is scarcely less so. For those purposes alone, these interests commend themselves to public consideration. In connection with the farming interest they are equally important. Iron and coal are frequently found at a distance from the market, in regions where the price of land is low and provisions cheap. The opening of these mines creates a new and important demand for agricultural products, and so enhances the value of real estate in those regions. The importance of the proximity of a market can hardly be overrated. We have lands in our country of the same intrinsic worth for agricultural purposes, which will sell from \$2 to \$200 per acre, simply with reference to the nearness of the market. But the great value of manufactures to the agricultural interests consists in the market they open for the products of the soil. Taking the census of 1840 as the basis, and allowing for the national increase of manufactures and population, those at the present day engaged in manufactures, mechanic arts and mining, cannot be less than 1,100,000, and to this number we may safely add 10 per cent. for domestics, for laborers employed about the establishments, and for those engaged in transporting their commodities. This would make 1,210,000; and if we allow that three-fourths of these laborers have families, we would, on a fair estimate, have at least 4,000,000 of our population connected with manufactures and mining. These must be supplied with agricultural products; and as five bushels of wheat per head would be but a reasonable allowance, they

would consume 20,000,000 bushels annually, which would be one-fifth of the entire wheat crop of the country, after deducting the quantity required for seed. The same principle will apply to other articles of food. Those engaged in these employments must have meat as well as bread; and being about one-fifth of the population of the country, they will require one-fifth of the provisions of all kinds consumed in the country. Such a market is all important to the tillers of the soil.

We are aware that much is said, at the present day, of the great demand abroad for our agricultural products, and the idea seems to be entertained by some that the domestic market is of but little account of the grain growing portion of the country. But all such impressions grow out of a limited and partial view of the subject. It we take the export of wheat and wheat flour, for the last eighteen years, (see appendix A,) to all foreign countries, it will average only 7,527,400 bushels, and its value will average \$674,700 a year. And this includes the year 1847, when, by the unprecedented famine abroad, we exported more than four times the average quantity. If we exclude that year, the average since 1830 would be only 6,419,300 bushels, at a value of \$7,147,000. Even in the year ending the first of July last, the first five months of which reached back upon the period of scarcity in Europe, we exported but 12,631,300 bushels, valued at \$15,863,000—being less than half the quantity and value of the preceding year. In 1847, we exported 26,312,400 bushels of wheat in the form of wheat and flour; but that being the year of famine abroad, it cannot be safely taken into the account in our calculations for the future. We have already seen that in the year 1848 the export fell off more than one-half. When the famine and other causes of an artificial character shall have passed away, our export of wheat and flour will probably return to near the former average. At any rate, we know that those engaged in manufactures and mining in this country consume five times as much agricultural produce as the whole amount sent abroad. If we allow but ten cents per day for agricultural products consumed by each of the 4,000,000 of inhabitants connected with those callings, it will give a grand total of \$146,000 annually; being \$108,275,457 more than the whole amount of animal and vegetable food sent abroad last year, when our export of those articles was unusually large. These facts show most conclusively the importance of the home market to the cultivators of the soil.

Another great advantage of the domestic market over the foreign, is its permanency. A glance at our export will show the fluctuating, unstable character of the foreign market. In 1838, we exported 1,319,000 bushels of wheat; 1839, 4,670,000 bushels; and in 1840, 11,106,000 bushels; in 1845, the export fell down to 6,356,000 bushels; the next year it rose to 13,060,000 bushels; the year following it went up to 26,202,000 bushels; and last year it came down to 12,561,000, being a falling off of more than one-half in a single year. Such is the character of the foreign market for bread stuff. When the crop is good on the eastern continent, they want little comparatively from us; but when their crops fail, they look to us for a considerable portion of their supply. While an uncertain, fluctuating market is injurious to every class of producers, it is peculiarly so to the agriculturalist. Grain is the product of a year, and the farmer must make his calculations for the amount of his supply when he sows his seed. If he sees, two or three months before harvest, that the demand will be great or otherwise, he cannot increase or diminish his crop. If the demand be great, he has not a sufficient quantity to meet it; if it be small he may have a surplus left upon his hands, which will reduce the value of his whole crop. Many articles of agriculture like the potato, are perishable in their nature and will last but a single season; and hence the necessity of a constant, certain market. Many articles of manufacture may be the product of a month or a week; and hence the manufacturer can, at short notice, increase his production to meet the demand; and his products being more imperishable than provisions, can be kept longer, in case there is no ready sale. But the farmer must depend in a great degree upon the demand of the year; if he looks abroad for a market, he never knows, at seed time, what will be the demand at harvest.

But while the foreign market is thus fluctuating

and uncertain, the home market is constant and sure. The four millions in the midst of us, engaged in manufactures and mining, will want their supply annually, and they look to the American farmer alone for that supply. Suppose that the manufacturers at Lowell or Pittsburgh, should require 50,000 barrels of flour annually, and certain manufacturing districts in Great Britain should require the same average amount of American flour. The county in Ohio, for example, which should supply Lowell or Pittsburgh, would have a certain market; the growers would know, before they sowed their seed, what quantity of land to put under wheat culture. They could calculate with a good degree of certainty, and shape their means to their ends. But the county which should supply the manufacturing districts in Great Britain would never know beforehand how much to sow. Though that district might, in a given number of years, take the same amount of flour as Lowell or Pittsburgh, yet as their wants would depend upon the crops of Europe, they might take but 25,000 one year and 75,000 the next, so that the grower in Ohio could make no safe estimate in advance how much seed to commit to the earth. If he should sow the usual or average quantity from year to year, he would, in one instance, have a surplus of 25,000 barrels, and in the other a deficit of the same amount. Every practical man will see at once that the county which should supply Lowell or Pittsburgh would enjoy a decided advantage over the country which should depend upon the manufacturing districts in Great Britain. In fact, every view we can take of the subject shows the advantage of the home over the foreign market.

The abandonment of the protective policy would inflict a deep injury upon the farming interest, of the country. It would not only destroy or greatly impair this valuable home market, but, by breaking down our manufactures, thousands upon thousands of those now engaged in that great branch of industry would be driven into agriculture; and so, instead of being consumers, would become producers of agricultural products. Thus, by reducing the demand and increasing the supply, the price of agricultural produce would be reduced, and a deep injury would be inflicted upon the calling. Another important consideration presents itself in this connection. As all manufactured goods contain a portion of agricultural products, there is this remarkable difference between American and foreign fabrics; the former, as far as agricultural products are included, are wholly American, while the latter are mostly foreign. The farmer in Tennessee or in Ohio, for instance, when he buys a suit of clothes manufactured in this country, knows that the wool of which it is composed was grown in his own state; that the laborer, when manufacturing the cloth, was subsisting upon the meat and bread of the west; and that by patronising domestic fabrics, he is creating a market for his own staples. But if he buys a suit of foreign cloth, he knows that the wool was grown in Europe, and that at least nine-tenths of the provisions consumed by the laborers are the product of foreign soil; and that by patronising foreign fabrics, he virtually brings foreign provisions into this country to compete with our own. This consideration alone should teach the American farmer the impolicy of suffering our own manufacturers to languish.

North Carolina.

This State is at last thoroughly aroused to the great work of internal improvement. We are happy to see that in this movement she has acted entirely independent of party and local considerations. The necessity of doing something to maintain her relative position in the Union—to retain her population and trade within her own limits—has forced her into the construction of railroads. The cost of transportation has just as much to do in regulating the price of agricultural products, as cost of production; and those occupying a poor soil may, from this access to a market, have a great advantage over the most fertile districts having no outlet for their staples. North Carolina, with an immense line of sea coast, and an area equal to almost any State in the Union, has remained stationary for

nearly twenty years. Her increase in population, from 1830 to 1840, numbered but a few thousand, and we presume that the next census will not show a greater gain. Massachusetts, with a poorer soil, and with only about one-seventh of territory, will in 1850 number nearly if not quite 100,000 more inhabitants than the great State of North Carolina! Think of this, ye people of the old North State. Massachusetts has expended \$50,000,000 upon railroads within her own borders, besides vast sums upon those in other States. She has left nothing undone which could develop her resources; while North Carolina has done nothing to develop hers. Here lies the difference. The following extracts show that the right kind of feeling is abroad, which cannot fail of producing the best results:

Extract from a communication in the Raleigh Star.

From the commencement of the road at Goldsborough, there is easy and direct water navigation, at all seasons of the year, to Newbern, and thence to the ocean. The waters of the Tarr and Roanoke rivers are readily approached through the present Wilmington and Raleigh road; they being in a few hours travel of Goldsborough. Passing above the Capitol of the State, the proposed road will cross the Deep river at some point not far from the place to which it is contemplated to make it navigable, and if above it, not too far to render the advantages of both works available. When it arrives at Salisbury, it then has two other important works to increase its prospect of being useful to the whole State, viz: the plank road to Fayetteville and the western turnpike; and in addition to this, the waters of the Yadkin will be rendered navigable—thus opening a direct channel of communication between the extreme west and north-west and the eastern section of the State.

This plan carried out, in connection with others which will necessarily result from its completion, will give the citizens of the State a choice of markets, and free them from the commercial vassalage under which they have been groaning for many years. Instead of depending upon other States for a mart to which to send the produce of our farms, our manufactures and our mines, we could create interests which would soon erect places of extensive trade and valuable traffic in our own borders. We may be called visionary, but it does not seem to us that we would as easily make Wilmington, Beaufort, Newbern, Washington and other towns in our borders, as prominent in the world of trade as many cities in the Northern and Western States which cannot boast of half their natural advantages. See what one road running directly across the State has done for Wilmington. Since its completion, she has more than doubled in population, in value of real estate and in commerce. What might we not expect, if instead of building our public works so as to tend to, and terminate in the seaports of other States, we were to make them all centre in some of our towns, as Massachusetts has done in Boston?

She has built seven roads all more or less coming into competition with each other, and all centering in the city of Boston; and they yet are all flourishing, and the State prospers greatly. But, it may be said that North Carolina is too poor to undertake such wild schemes. Yes, and she will be too poor until the day of judgement, if she does not commence some improvement in a short time. Massachusetts would never have been of one-tenth the importance she now is, had not the liberality and public spirit of her citizens contributed to break those fetters of commerce and agriculture which Nature had thrown around her.

Look at the example of Virginia even. With a heavy public debt of eight or ten millions of dollars, she, every session of the Legislature, is appropriating hundreds of thousands of dollars to works of internal improvement which an inhabitant of any State would consider perfectly chimerical; and yet she prospers under it. But it will be said that will burden us with a debt, and consequently tax us like the Virginians are. Our reply would be, far better to incur double the debt and taxation than to remain in this state of destructive and debasing inactivity. What matters it with a people, if you double their taxes, provided you give

them thrice the ability to pay? Would we not all be willing for the State to increase the debt in proportion as she increases our ability to pay—to carry out some work that will aid us to raise from the lethargy we are in? Who would not be proud to see North Carolina rank foremost among her neighbors in commerce and trade, even if she were five or ten millions of dollars in debt? And yet she can never expect to gain any eminence in the commercial world, in her present situation—as well might you expect a sandy waste to bloom like a garden.

From the Greensborough Patriot.

Our eastern fellow citizens must come up to the help of the great work of the Central Railroad, if they do indeed desire to establish the bonds of interest and of social regard with the west forever. It will require a union and cordial co-operation of the east and the west to effect this glorious object. The west alone cannot do it without an extraordinary concentration of capital and labor such as we seldom find in a large and sparse community of people. Many of our moneyed men will continue their capital, from the mere force of habit, in other investments which are yielding them a small but steady income. True, the labor power of the country is fast arousing to the importance of the work, and only requires direction and proper development to make it efficient in the accomplishment of any practical human undertaking. But we must have money too, and more of it than can be raised on the immediate line of the road. If the men of the east and west be brethren, and desirous of cultivating the sentiment of filial regard, they will unite heart and soul in this undertaking. Without such union, effected at this time and upon the contemplated scheme—they are dissevered forever! Their interests and intercourse will inevitably be in different directions, and their councils will be a continual scene of wrangling and bitterness, worse if possible than has hitherto retarded improvement and disgraced our attempts at liberal legislation.

From the Hillsborough Democrat.

INTERNAL IMPROVEMENT MEETING AT ORANGE.

Some four hundred citizens of western Orange assembled at New Providence on Saturday, the 17th instant, pursuant to previous appointment, for the purpose of making some demonstration of popular anxiety in regard to the completion of the great system of Internal Improvement, adopted by our last Legislature. It was auspicious of a better day, dawning on North Carolina, thus to witness the intelligent and patriotic farmers of our country—the strife and contests of party forgotten—assembling in one common brotherhood, endeavoring to forward by their co-operation a work so eminently calculated to develop and promote the wealth and prosperity of our good old State.

The meeting was organized by the election of Gen. Benjamin Trolinger, President, Col. Wm. A. Carrigan and Dr. P. A. Holt, Secretaries. The President entertained us with a short and practical address, in which he happily alluded to the unfortunate political acrimony heretofore existing between the two parties, preventing our Legislature from doing anything to develop the resources of the State. Dr. Michael Holt, J. Gant, George Hurdle, D. A. Montgomery, Thomas Sellars, Wm. Tarpley, John Holt, Esq., Bennet Hazel and Isaac Holt, were appointed a committee to prepare matter for the consideration of the meeting.

After retiring a short time the following preamble and resolutions were presented and adopted.

Whereas, the last Legislature by the united wisdom of the members of both political parties have passed various bills of Internal Improvement, viz: To open Cape Fear and Deep rivers; to construct a plank road from Fayetteville to Salisbury; and to build a railroad through the State, from some point on the Wilmington road via Raleigh to Charlotte, all of which, if successfully completed, will not only stay a rapid tide of emigration from the old North State, but will in our opinion, by affording facilities to trade and commerce tend to build up her citizens in prosperity and wealth.—Therefore,

Resolved, That this meeting, being deeply impressed with the fruitful results that would likely grow out of the Acts passed by our Legislature devising a system of Internal Improvement, especially the one authorising a Central Railroad, do cordially approve the same, and should it pass through Or-

ange, we pledge our best efforts for its successful construction.

Resolved, That the people having assembled together in various sections of the State, and approved of the plan of said Central road, is evidence that the work will be accomplished.

Resolved, That Samuel L. Holt, Thomas Sellars, George Hurdle, John Holt, W. M. Tarply, George Freeland, Bennet Hazel, Jesse Grant, P. A. Holt and D. L. Ray, be appointed delegates to attend a convention to be held at Salisbury, in June next, to represent this section of the country, and urge upon said convention the advantages of running said railroad through the county of Orange.

Resolved, That John Trolinger, Peyton Moore, and Giles Mebane, be appointed a committee to visit, correspond or inquire of resources necessary to obtain all adequate information relative to the coast, and best plan of executing and grading, and report the same through the medium of our public papers in this county, at the earliest period practicable.

The meeting was favored with several addresses by gentlemen present. Amongst others by our late Representative, Giles Mebane, Esq. He gave us much valuable statistical information in regard to the probable benefits growing out of the construction of the road; more especially those accruing to the great agricultural interests in its vicinity. Everything passed off in harmony and good order—every one present evincing a disposition to listen attentively, and weigh well everything said concerning a subject of so much magnitude and importance.

BENJ. TROLINGER, Pres.

WM. A. CARRIGAN, } Secretaries.
P. A. HOLT, }

The St. John and Shediac Railway.

The House of Assembly of New Brunswick, on motion of Mr. Ritchie, have re-considered the St. John and Shediac railway, and passed a resolution in favor of this line. The Province is to take \$150,000 of the stock, and guarantee £150,000 for a term of years, at an interest of 6 per cent. per annum, leaving the remaining £200,000 to be taken up by individual subscription. The resolution passed 19 to 12.

Pittsburgh and Wheeling.

The Pittsburgh Chronicle, of Saturday, has the following article. The scheme of a railroad to unite the two points, heretofore regarded by many as irreconcilable rivals, is here presented in a chartered form:

The Pittsburgh and Wheeling Railroad—We are gratified to learn that during the recent session of the Pennsylvania Legislature, an Act was passed authorising the construction of a railroad from Pittsburgh to Wheeling. The Legislature of Virginia we believe has not yet acted in the matter, but it is quite certain that it will soon pass a similar bill.

In a commercial point of view, the advantages of such a work to our city cannot be over estimated.—Commanding as it would the trade of Ohio and Western Virginia, it would greatly increase the business of Pittsburgh, and add immensely to our wealth. There is no reason why we should not reap the benefits of that trade. Pittsburgh, from its position and importance, ought to possess all the advantages that can be derived from it, and to secure this important matter, it is only necessary for our citizens to act promptly and in concert.

Another important consideration is the vast number of merchants and others that it would attract to our city. At present a portion of the travelling public take the stage at Wheeling, and by way of Washington and Brownsville, pass on to the eastern cities. Now, by the construction of the contemplated railroad, Pittsburgh would be visited by all or nearly all of our western and southern merchants, and the business of the city would be vastly increased.

With such incentives to action it cannot be that our citizens will remain indifferent. It is a subject that affects their interests and touches their pockets. As a matter of course they will act immediately and vigorously, and secure the completion of a work that will increase the value of their property, and add to the wealth of Pittsburgh.

Special thanks are due to Major William Larimer, Jr., for the active part taken by him to advance

this important measure. With his characteristic energy and enterprise, he urged upon our Representatives the propriety and necessity of passing such a measure, and we trust the day is not far distant when he will see his hopes realized, by the construction of a railroad from Pittsburgh to Wheeling.

Debts of the States.

The following may prove interesting to most of our readers:

	Debt.	Pop.	P. head
Maryland.....	\$12,000,000	405,000	\$30
Pennsylvania.....	41,000,000	2,125,000	20
Louisiana.....	9,500,000	470,000	20
Alabama.....	9,000,000	690,000	13
Ohio.....	19,000,000	1,850,000	10½
New York.....	24,000,000	2,750,000	9
Massachusetts.....	6,200,000	850,000	7½
Virginia.....	7,900,000	1,260,000	6
Kentucky.....	4,200,000	850,000	5
Tennessee.....	3,200,000	950,000	3½
Illinois.....	21,000,000	750,000	29
NON-PAYING STATES.			
Michigan.....	7,500,000	370,000	20
Mississippi.....	10,500,000	640,000	17
Indiana.....	9,500,000	690,900	5½

The Florence Gazette, "after much research and investigation," gives the following as the actual liabilities of Alabama:

Amount in 1850.....	\$1,113,000 00
" 1852.....	300,000 00
" 1858.....	1,043,555 54
" 1863.....	3,475,000 00
" 1865.....	959,000 00
" 1866.....	2,317,000 00
Total.....	\$9,207,555 55

From this it deducts the good assets of the Bank, valued at \$2,207,534—leaving a balance of \$7,000,021 55.

The interest on the state bonds, as above given, is payable at New York and London at the following periods, annually:

Amount due 1st January.....	\$71,513 90
" " 1st April.....	3,000 00
" " 1st May.....	105,850 00
" " 1st June.....	85,780 00
" " 1st July.....	71,513 90
" " 1st October.....	3,900 00
" " 1st November.....	105,850 00
" " 1st December.....	25,000 00
Total each year.....	\$471,507 80

ILLINOIS.—The aggregate debt of this state is set down in the Governor's message at \$16,661,795 37. Of this, \$8,042,622 is canal debt, and is amply provided for. For the remainder, the Legislature has to make provisions.

The Naumkeag Mill.

GEN. CHARLES T. JAMES.

This cotton mill is beautifully located at Salem, Mass. It is the largest in the United States, and is believed to be the largest in the world in which the entire process of converting raw cotton into cloth is carried on under one roof. The mill is an elegant structure, something more than 400 feet in length, and about 65 feet in width. It is four stories high, and contains 31,232 spindles, (Mason's self-acting mules) 650 broad looms, and the other requisite machinery. The machinery is driven by a steam engine of 400 horse power. The consumption of anthracite coal is 6½ tons per day, to generate steam for the engine for the mill and machine shop, to warm the mill and offices for drying, making sizing, and all other purposes. The arrangement of the machinery is made on the most simple and economical principles, and the whole is geared from one upright shaft, which takes its motion directly from the main wheel. On the side of the street opposite the factory are two beautiful blocks of brick houses for the accommodation of the operatives. They are together, of the same length of the mill, and cost the company about \$35,000, exclusive of the land. The entire establishment, including these dwellings, the machine shop and three or four wharf lots, cost the company nearly \$600,000. Yet such is the quality

of the goods and the reduced cost of manufacturing, that the mill has run at a handsome profit during the late hard times.

This mill was planned and constructed by our fellow townsman, Gen. Charles T. James, and has been in full operation since February, 1847. Though in the prime of life, Gen. James is a veteran in his profession. He has devoted more than twenty years to it, and with the aid of a first rate genius of his own for mechanical and mathematical science, has labored most assiduously to perfect himself in a knowledge of its scientific and practical departments. He has been eminently successful, and as, emphatically, a self-made mechanic, manufacturer, and engineer, deserves much credit. In proof of this, we will adopt the rule he uniformly practices on, when applications are made for his services, that is, refer all inquiries to his past employers and to the works of his hands. Another rule to which he uniformly adheres, may also be recommended to every good mechanic. To have nothing to do with what is called a *cheap establishment*; as a good reputation can never be established on the basis of bad work. His caution to the mill owners is, and to which they would do well to take heed, that the ultimate loss of thousands frequently results from the incipient saving of hundreds.

During the period which Gen. James has devoted to his profession, he has constructed, either wholly or in part, more than twenty cotton mills, and put in operation two hundred and thirteen thousand spindles. Some idea may be formed of the extent of his business and its arduous character, from the fact that, for some three years past, he has paid out for contracts he has personally made with machinists, builders, &c., for machinery, materials, labor, &c., on an average of about \$500,000 per annum; and besides which, he has constantly had on his own hands the business agency and general supervision of two or three cotton mills. Added to this is the fact that the mills he has had in hand during that period, some of which are completed and others of which are now in progress, are situated, some in Massachusetts, some in Connecticut, one in New York, some in Pennsylvania, one on the Ohio, 130 miles below Louisville, Ky., and one in Charleston, S. C.—*Providence Journal*.

In addition to the above, we are happy to state that Gen. James is about publishing a work upon the cotton manufacture, and the influence it does now, and may be made to exert, on the political economy of the country. We have had the privilege of a hasty glance at its contents, and we shall be much surprised if it does not exert a powerful influence upon the minds of our southern brethren in relation to the question of domestic manufactures, and confer great advantages upon them, in pointing out the only way by which their great staple may again be made to command a remunerating price. We hope, in our next number, to be able to bring some portion of it before our readers.

The Coal Trade.

The meeting of our colliers held at the American House, in this borough, on Saturday last, was well attended and exhibited a spirit of determination which to our mind is equal to the present emergency.

The meeting was addressed in an able and highly satisfactory manner by Joseph S. Silver, Esq., on behalf of the Committee previously appointed to confer with dealers in coal, and others interested, in the Atlantic cities, and to report on the general state of the trade. He was followed by Benj. Haywood, Esq., who traced the history of the coal business for a series of years past, affording a clear, practical view of the causes which have led to our present embarrassments, and concluded by exhorting his fellow operators to act as one man in the present just and honorable movement, as the only means left of saving themselves from utter bankruptcy and ruin.

The following resolution was offered and adopted by acclamation:

Resolved, That the suspension of our coal shipments be continued until the Committee on the state of the Trade recommend a resumption of the same.

On motion, the meeting then adjourned to meet again on Saturday next.

An immense mass meeting of the citizens of

Schuylkill county, was held at the America House, on Monday afternoon, to encourage and sustain the operators in their manly effort to obtain something like a fair equivalent for their capital and labor. Several able addresses were made and resolutions adopted with great unanimity. The proceedings as officially reported for the Emporium, will be found in another column.—*Pottsville Emporium.*

Meeting of the Coal Shippers.

We learn from the *Ledger*, that a meeting, fully represented, of the coal shippers, was held at the Office of the P. & R. Railroad, Philadelphia, on Monday evening, at which John Tucker, Esq., presided. It was resolved that the price of coal for shipment, should be \$4 for Red Ash, and \$3 62½ for White Ash—corresponding to the prices fixed by the operators here. A Committee was appointed to confer with the Committee appointed by the operators, and who proceeded to the city on Tuesday.

This is certainly encouraging, and looks as though some great good may grow out of it—particularly if the railroad and canal companies can be induced to come promptly to the rescue.—*Ibid.*

AMERICAN RAILROAD JOURNAL.

Saturday, April 28, 1849.

Railways in New Brunswick and Nova Scotia.

In another part of this week's paper will be found a report submitted to the Canadian Legislature, showing the capacity of her public works already constructed, in connection with those proposed, to draw a portion of the western trade and travel over them through the city of Montreal to the Atlantic. Similar views in relation to the trade of the west have been engaging the attention of the Provinces of New Brunswick, Nova Scotia, and they are still seriously proposing to draw a portion of this trade still further east, and place themselves in the great line of communication between that section and Europe, by a railway from Quebec to Halifax, a distance of 635 miles, through the eastern part of these Provinces.

We have before us the Report of Major Robinson, of the Royal Engineers, of the survey of this route, which embraces an elaborate argument in favor of its construction, drawn from political considerations, and proposing it as the means of reviving the depressed condition of business in those Provinces, and as furnishing an Atlantic outlet to the trade of the St. Lawrence.

We should be very sorry to see these Provinces embark in the construction of this road. In the first place, if commenced, there is not strength enough in the Provinces to complete such a road, estimated by Major Robinson to cost twenty-five millions of dollars, & it would not do business enough to pay its running expenses if constructed. The political reasons that led to the selection of the route, the furthest removed from our territory, to avoid interruption in case of war, and which appear to have exerted great influence, seems to us of very little weight. War between this country and Great Britain is now hardly within the bounds of possibility. But in case of a war does any person suppose that this latter power could retain possession of all parts of this road at the same time? All her military force directed to this one object could not protect it. Again, the continuance of the connection between the mother country and these Colonies is becoming every day more problematical. They must by this time see that the mother is gradually weaning her children, and preparing the way for their final emancipation. She is adopting a new line of policy. She believes that she possesses within herself more of the elements of commercial and manufacturing greatness than any other nation; that, with univer-

sal free trade she can distance in the race all other competitors, and her motto is, or will soon be, "*rich customers, not poor Colonies.*" Even if they are not annexed to this country, there is every probability that the present commercial restrictions between these Provinces and the United States will be removed. A project having in view the removal of many restrictions between this country and the Canadas, was very favorably entertained by the last Congress, and will undoubtedly pass at its next session. So that all arrangements based upon the idea of war, or upon the continuance of the present state of things are most dangerous expedients.

The political reasons for the route selected being disposed of, the next question is, whether its trade and traffic will justify its construction.—For the first 200 miles from Quebec it runs along the bank of the St. Lawrence, through a territory containing a population of 75,000 Canadian French only. So far, it runs parallel with, and must encounter the competition of water carriage, and could not successfully compete with it in heavy transportation. Again, this French population are as a class miserably poor, producing nothing, or next to nothing for export, of course are able to import nothing of consequence. Railroads derive their best support from manufacturing and commercial towns. From the St. Lawrence to Bathurst, a distance of 164 miles, the whole population in striking distance of the road will not exceed 10,000! From thence to Bay Verte the counties in New Brunswick, through which it passes, contain a population of 67,391. These people can import but little; and if they have anything to export, they have a water communication at their own doors; from which they can as well forward as from the termini of the road. Nova Scotia offers no better inducements for railway construction than her neighbor. She enjoys better facilities of transporting all her products in the excellent harbors with which her whole territory is penetrated, than a railroad can offer. We cannot find in the local business of the line any encouragement for the building of this road. The great object of railroads is to open communications to sections that enjoy no suitable natural avenues through which to receive and forward their articles of consumption or exportation. These avenues the inhabitants of these Provinces already enjoy to a remarkable degree.

The through business, as it is called on this route, offers as little encouragement as the local traffic. The exports of the St. Lawrence, with the exception of timber, which this road does not propose to carry, are the products of Upper Canada. No one for an instant can suppose that the produce of this Province would seek the Atlantic, via Quebec, and a railway of 635 miles, when on their passage through Lake Ontario they pass within 189 miles, by railway, of tide water at Albany. Even after they reach Montreal they can reach the Atlantic coast by the St. Lawrence and Atlantic road, in a distance of 275 miles. We must take into account too, that from its high northern latitude, the proposed road would be blocked with snow for that part of the year when its services would be most wanted; and from which, from the few inhabitants along the line, it would be impossible to keep it clear.

To us it seems that the true cause of the present depressed state of these Provinces is the want of a suitable market for their productions. She has lost the advantages she once enjoyed from the connection with Great Britain; at the present time a railroad would bring no relief. They find no difficulty now in bringing their products to tide water. They are produced at the water's edge. Their na-

tural and appropriate market is the United States, and if they enjoyed free and unrestricted commerce with us their trade and business would at once revive, and they could not fail of becoming, from the great commercial advantages, and from their great mineral and agricultural resources, one of the most flourishing portions of North America.

In our judgment, the only hope of the people of these provinces for the obtaining of a connection by railway with the trade of the west, is by extending a line in the direction of Bangor, Maine. From Bangor to Montreal an uninterrupted line of road will in a very few years be completed; and from the city of St. John to Bangor, the distance by railway may be probably reduced to *one hundred and fifty miles.* But allowing fifty miles more for deflection of the line, it will then require but 200 additional miles of road to complete the connection with Montreal, the most important point in the west for them to reach, in a distance of about 550 miles. Whereas to reach this point by the way of Quebec from Halifax, the distance is over 800 miles. If, therefore, the Province of New Brunswick would extend a line of railway from the city of St. John to Bangor, and a line was extended from St. John east to the Bay of Shediac, and from that point to Halifax, or on the shortest practicable line between the two cities, around the Bay of Fundy, both Provinces would be sufficiently well accommodated for all the great purposes of business and travel.

Foreign News.

The *Cambria* reached Halifax on Wednesday last. The news to April 14 forwarded by telegraph is of the most interesting character.

War is going on in various parts of Europe.—The money market in England was unsettled. Cotton has slightly declined. Breadstuffs are advancing. The disturbances on the Continent are affecting all branches of trade.

Population of Canada.

The official estimates make the present population of the two Canadas very near a million and a half of people—in actual figures, 1,891,421; of whom 768,334 resides in Lower, and 723,087 in Upper Canada.

Each of these colonies sends 42 members to the provincial parliament.

The Cumberland Valley Railroad Co.

The Cumberland Valley Railroad extends from Harrisburg, the county town of Dauphin county, the capital of the State, on the east bank of the Susquehanna, through Carlisle, the county town of Cumberland, and several other smaller places to Chambersburg, the county town of Franklin, in the Commonwealth of Pennsylvania.

The road which crosses to the west side of the river at Harrisburg, by a bridge of nearly one mile in length, is 52 miles long, graded for a double track, almost a straight line, and very easy grades, laid with a flat bar on wooden rails, and runs directly through the heart of the Cumberland valley, noted as being one of the richest, most fertile, and highly improved of that state. The original cost was the sum of.....\$875,000

The real estate and other property of the Company, embraces a Bridge nearly new over the Susquehanna river, which cost about the sum, and produces a nett revenue of 7 per cent. thereon.. \$110,000
Real estate on the east side of the river at Harrisburg, that cost..... 4,000
On the west side of the river at Harrisg 1,000

An office and valuable lot at Carlisle ..	2,500
A Depot, tavern stand, machine shops, &c. at Chambersburg	15,000
Water stations and wood lots along the line	1,250
	<hr/> \$133,750
The running force on the road and belonging to the Company, consists of	
8 locomotive engines, each worth \$3,500,	\$28,000
4 passenger cars " " " "	1,250, 5,000
4 baggage cars " " " "	450, 1,800
12 burthen cars " " " "	200, 2,400
8 mules	1,000
Machinery in shops, tools, &c. at Chambersburg	3,500
	<hr/> 41,700

The liabilities of the Company are—

Capital Stock, 9,400 shares, of \$50 each is	\$470,000
Less	1,700 " a donation by the state, of \$50 each
	<hr/> 85,000
Shares	7,700
	<hr/> \$385,000

Loans secured by mortgage, payable in the year 1859; bearing six per cent. interest per annum.

Bonds of the first class	\$104,500
" second do	290,615
" third do	52,600
	<hr/> \$447,715
	<hr/> \$832,715

A law passed at the last session of the Legislature of Pennsylvania, confers upon the company the right of funding the entire amount of outstanding bonds, provided the additional sum of half the amount thereof is subscribed in capital at par into an 8 per cent preferred stock, which, with other resources at the Company's command, is sufficient to-relay the road with a heavy T rail of 56 pounds to the yard, and provide the requisite running force to meet the growing demands of the business passing over the road.

The receipts of the Company since the completion of the Bridge over the Susquehanna river have been:—

	1847.	1848.	1849.
January	6,849 02	8,081 90	8,648 33
February	7,995 29	9,591 49	10,355 78
March	11,250 08	10,034 68	10,156 42
April	10,396 73	9,242 98	
May	9,188 42	8,130 71	
June	10,415 79	7,630 84	
July	7,786 15	7,645 77	
August	8,197 87	8,641,63	
September	8,866 51	9,504 05	
October	10,140 61	8,788 91	
November	9,879 14	7,597 79	
December	7,027 82	7,575 28	
	<hr/> \$107,993 42	<hr/> \$102,466 03	

	1847.	1848.
Gross receipts	107,993 42	102,466 03
Current expenditures	65,900 39	61,534 37

Surplus

\$42,093 03	\$40,031 66
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This income is derived from the passenger travel, motive power, bridge tolls, and tolls on merchandise passing over the road; the freighting being done by forwarding merchants, in consequence of the Company not owning any burthen cars beyond what are necessarily employed in keeping up the repairs of the road.

At present this road has an outlet to the seaboard by a connection with the Harrisburg and Mount Joy railroad leading from Harrisburg to Lancaster and thence by the State road running to the city of Philadelphia.

Philadelphia. Recently the stock to a company for making a road from York to Harrisburg, along the west bank of the Susquehanna, to connect with the Cumberland Valley road, has been subscribed, and already the line is under location, and proposals for its construction within eighteen months invited; on the completion of which, and by its connection with the Baltimore and Susquehanna road, running from York to Baltimore, the Cumberland Valley railroad will enjoy the advantage of a double connection, and a choice of routes for its trade and travel either to the commercial metropolis of Philadelphia or Baltimore.

A part of the above article was inserted in our last issue. By request we give it another insertion. Our readers will notice some corrections in, as well as additions to, the original article.

Canadian Affairs.

The New York papers of Friday morning furnish telegraphic reports from Montreal, giving the particulars of a serious riot in that city. On Wednesday afternoon, Lord Elgin went down to the Legislative Council, and gave his assent to a large number of Bills, including that for the payment of the rebellion losses, whereupon a very serious riot took place in this city that evening. The enraged Tories fired the Parliament Buildings, which were burnt down, and the Legislative Records of Upper and Lower Canada, with one of the most valuable and extensive Libraries on this continent, and the Furniture, Pictures, etc., entirely consumed.

Hon. George Moffatt, member of the Legislative Council, and President of the British American League, has been arrested on a charge of Treason, connected with the riots.

The windows of Mr. Hincks' house were broken. The Governor General and family came in from Monklands, and are at Donegana's Hotel; military guards were placed over the houses of all the ministers.

One hundred and forty-eight warrants for arrests have been issued.

P. S. DEVLAN & CO'S Patent Lubricating Oil.

THE Subscribers invite the attention of Railroad, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON, 5 1/2 Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

ENGINEERS.

- Arrowsmith, A. T.,**
Buckfield Branch Railroad, Buckfield, Me.
- Berrien, John M.,**
Michigan Central Railroad, Marshall, Mich.
- Clement, Wm. H.,**
Little Miami Railroad, Cincinnati, Ohio.
- Fisk, Charles B.,**
Cumberland and Ohio Canal, Washington, D. C.
- Felton, S. M.,**
Fitchburgh Railroad, Boston, Mass.
- Ford, James K.,**
New York.
- Gzowski, Mr.,**
St. Lawrence & Atlantic Railroad, Montreal, Canada.
- Gilbert, Wm. B.,**
Rutland and Burlington Railroad, Rutland, Vt.

- Grant, James H.,**
Nashville and Chattanooga R. R., Nashville, Tenn.
- Holcomb, F. P.,**
Southwestern Railroad, Macon, Ga.
- Higgins, B.,**
Mansfield and Sandusky Railroad, Sandusky City, O.
- Johnson, Edwin F.,**
New York and Boston Railroad, Middletown Ct.
- Jones C. F.,**
South Oyster Bay, L. I.
- Latrobe, B. H.,**
Baltimore and Ohio Railroad, Baltimore, Md.
- Morton, A. C.,**
Atlantic and St. Lawrence Railroad, Portland, Me.
- McRae, John,**
South Carolina Railroad, Charleston, S. C.
- Nott, Samuel,**
Lawrence and Manchester Railroad, Boston,
- Reynolds, L. O.,**
Central Railroad, Savannah, Ga.
- Roberts, Solomon W.,**
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.
- Robinson, James P.,**
Aandrosoggin & Kennebec Railroad, Waterville, Me.
- Schlatter, Charles L.,**
Northern Railroad (Ogdensburg), Malone, N. Y.
- Stark, George.,**
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.
- Trimble, Isaac R.,**
Philad., Wil. & Baltimore Railroad, Wilmington, Del.
- Tinkham, A. W.,**
United States Fort, Bucksport, Me.
- Thomson, J. Edgar.,**
Pennsylvania (Central) Railroad, Philadelphia.
- Whipple, S.,**
Civil Engineer and Bridge Bullder, Utica, N. Y.
- Williams, E. P.,**
Auburn and Schenectady Railroad, Auburn, N. Y.
- Williams, Charles H.,**
Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m°

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Pig and Bloom Iron.
THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street.
New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

English Railroad Iron.

3000 Tons H pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturers' name, and inspected before shipment at the works in Wales. For sale by
DAVIS, BROOKS & CO.,
68 Broad street.
March 18, 1849 2m.11

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Allegheny county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by 1 Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartschorie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TYRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE Undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE Undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.
A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.
A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road. Proposals will be received until May 15, addressed (under seal) to me, at this place. Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.
B. HIGGINS, Superintendent, etc.
Sandusky City, Ohio, March 15, 1849. 2m.13

T. & C. Wason,

MANUFACTURERS OF EVERY STYLE OF Freight and Baggage Cars—Forty rods east of the depot Springfield, Mass. Running parts in sets complete. Wheels, axles, or any part of cars furnished and fitted up at short notice and in the best manner. N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Massachusetts, Railroads, where our cars are now in constant use. SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent,
Albany Iron and Nail Works.

SCHENECTADY LOCOMOTIVE WORKS

SCHENECTADY, N. Y. THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron. Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch. Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron. Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.
April 11, 1849.

Extension of the Baltimore & Ohio Railroad.**TO CONTRACTORS FOR GRADUATION AND MASONRY.**

PROPOSALS are invited for the Graduation and Masonry of the following described sections of this road—the sections averaging a mile in length—commencing in the town of Cumberland; Sections 1, 2, 6, 7, 8 and 10, will be let, embracing considerable rock work along the Potomac river bluffs, and the masonry of several bridges on Section st. Also all the sections from 30 to 45 inclusive, (excepting sections 43 and 44) beginning 28 miles from Cumberland, about a mile below the mouth of Savage river, and terminating at the summit of the mountain. The work upon these sections is heavy, containing much rock excavation and 2 tunnels, each about 600 feet in length, and a stone bridge of considerable size. The whole number of sections now to be let is 20. In the course of the spring and summer upwards of 30 more heavy sections will be put under contract between Cumberland and Three Forks Creek. The remaining sections be tween those points, and other work beyond the latter, will be let in the spring of 1850.

Specifications of the work on the 20 sections now to be let, will be ready by the 25th of March current.—They will be distributed through the company's offices in Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. The proposals will be directed to the undersigned, at No. 23 Hanover street, Baltimore, and will be received until Saturday, the 28th of April, inclusive. Before making bids the line should be thoroughly examined, and the resident engineers will be in attendance thereon to give information. The most satisfactory testimonials will be demanded. The payments will be made in cash, reserving the usual 20 per cent until the completion of the contract. The most energetic prosecution of the work will be required. By order of the President and Directors.

BENJ. H. LATROBE, Chief Engineer.
Baltimore, March 14, 1849 5t.12



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CERRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDEEST,
Secretary U. C. M. C.
Hamilton, 24th February, 1849. 12tf

WILLIAM JESSOP & SONS'**CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps. Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc. All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtis & Hand, 47 Commerce street, Philadelphia. Alex'r Fullerton & Co., 119 Milk street, Boston. Stickney & Beatty, South Charles street, Baltimore. May 6, 1848.

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,
AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt Street, New York.

May 6, 1849.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1½ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,
Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

a45

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tyres; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tyres. Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,
Nelson J. Beach,
Jacob Hinds,
Willard Smith, Esq.,

Messrs. Stone & Harris,
Mr. Wm. Howe,

Mr. S. Whipple,

January 1, 1849.

Canal Commissioners
of the
State of New York.
Engineer of the Bridges for
the Albany Basin.
Railroad Bridge Builders,
Springfield, Mass.
Engineer & Bridge Builder,
Utica, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fish, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

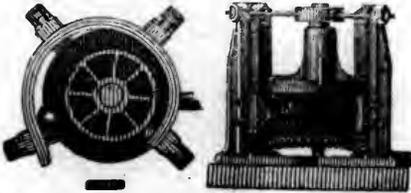
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

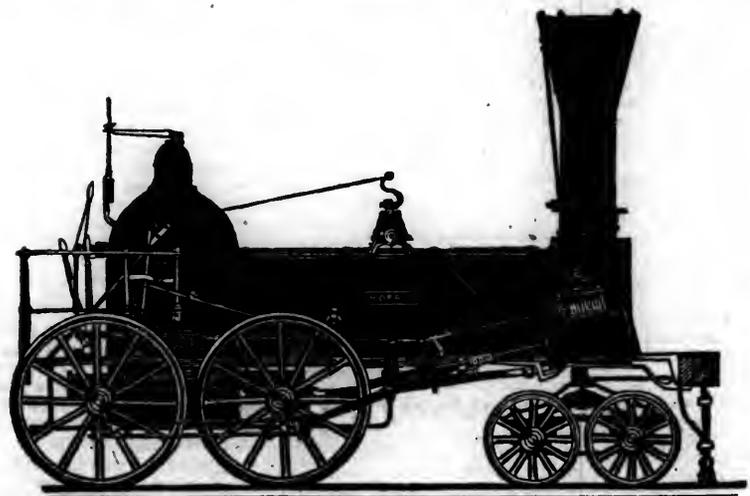
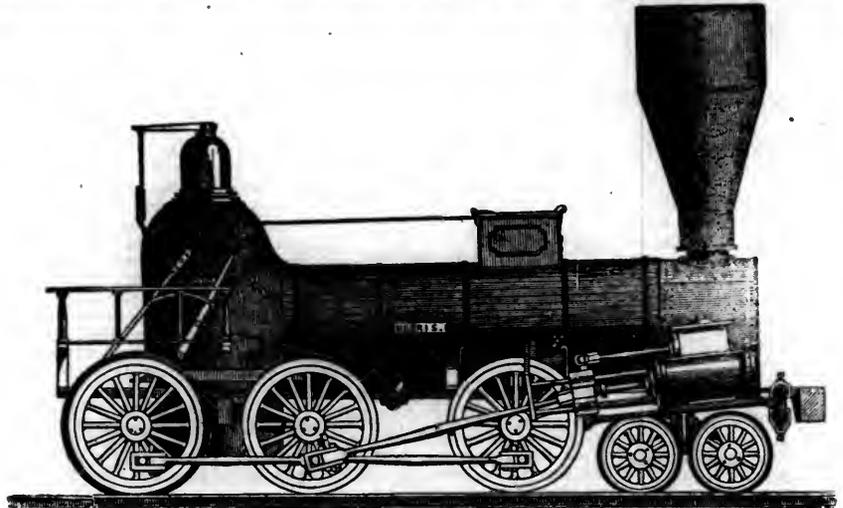
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS. BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

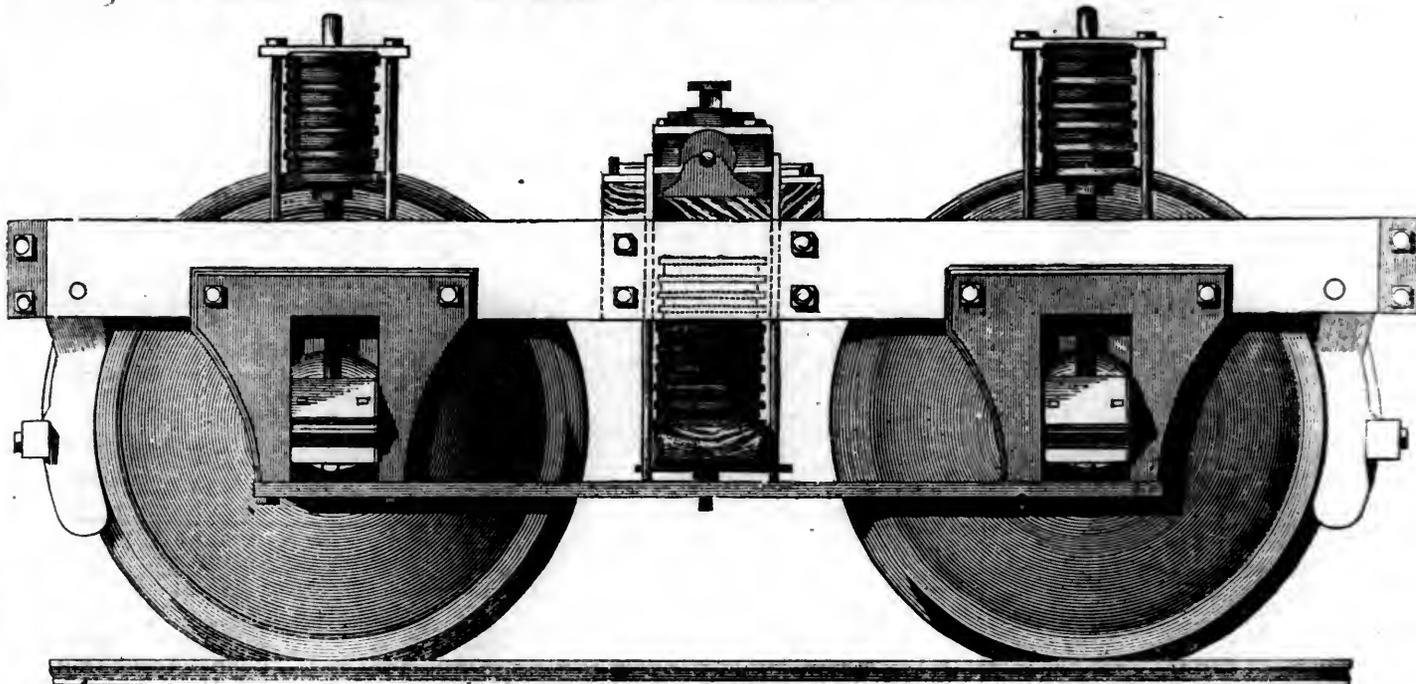
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS' BROTHERS.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.— They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.

Orders may also be left with WM. RIDER & BROTHERS, No. 58 Liberty-street, New York, or with F. M. RAY, Agent, 100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.— During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.



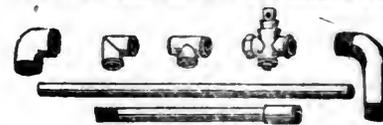
No 23 Pear street, below Walnut,
y10 near Third, Philadelphia.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

MASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L. and other fixtures to suit. Fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



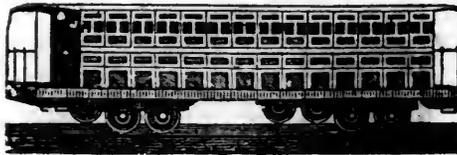
Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Street
PHILADELPHIA.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.— The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent,
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally. Cincinnati, Ohio, Oct. 2, 1848.

Norwich Car Factory, NORWICH, CONNECTICUT.

At the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ: PASSENGER, FREIGHT AND HAND CARS, ALSO, VARIOUS KINDS OF ENGINE TENDERS AND SNOW PLOUGHS. TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to JAMES D. MOWRY,

General Agent, Norwich, Conn.,

Will meet with immediate attention.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, APRIL 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8 1/2 am., and 4 pm.

Dedham Trains—Leave Boston at 8 1/2 am, 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7, 9 1/2, am., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5 1/2 pm. Leave Stoughton at 1 1/2 am., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm.

Leave Worcester at 7 1/2 and 10 1/2 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are less when paid for Tickets than when paid in the Cars.

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On, and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Salem, 7, 9, 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m. Manchester, 9, a.m., 3 1/2, p.m. Gloucester, 9, a.m., 3 1/2, p.m. Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m. Portsmouth, 7, am., 2 1/2, 4 1/2, pm. Portland, Me., 7, am., 2 1/2, pm.

And for Boston, From Portland, 7 1/2, am., 3, pm. Portsmouth, 7, 9 1/2, am., 5 1/2, pm. Newburyport, 7 1/2, 10 1/2, am., 2, 6, pm. Gloucester, 7 1/2, am., 3 1/2, pm. Manchester, 8, am., 3 1/2, pm. Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40, am., 2 1/2, 3, 4 1/2, 7, pm. Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, am., 2 1/2, 3 1/2, 4 1/2, 7 1/2, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, pm.

Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am. 2, 4 1/2, 6 1/2, pm. Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9 1/2, am., 4 1/2, pm. Salem for Gloucester at 9 1/2, am., 4 1/2, pm. Trains leave Gloucester for Salem at 7 1/2, am., 3 1/2, pm. Manchester for Salem at 8, am., 3 1/2, pm. Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm. Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm. Salem for Lawrence, Danvers, North Danvers, Middleton, North Andover, South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.5, pm. North Danvers, Middleton, North Andover, Lawrence * These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent. Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6 1/2 am. and 2 1/2 pm. For Rochester at 6 1/2 am., 2 1/2 pm. For Great Falls at 6 1/2 am., 2 1/2, 4 1/2 pm. For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2 pm. For Lawrence at 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm. For Reading 6 1/2, 9 am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2 pm.

Inward trains for Boston From Portland at 7 1/2 am., 3 pm. From Rochester at 9 am., 4 1/2 pm. From Great Falls at 6 1/2, 9 am., 4 1/2 pm. From Haverhill at 7, 8 1/2, 11 am., 3, 6 1/2 pm. From Lawrence at 6, 7 1/2, 8 1/2, 11 am., 1 1/2, 3 1/2, 7 pm. From Reading at 6 1/2, 7 1/2, 9 am., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS. Leave Boston at 7, 9 1/2 am., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2 pm. Leave Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 5 1/2, 6 1/2, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later. CHAS. MINOT, Super't. Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent. January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm. Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm. Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm. Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm. Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm. Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm. Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am. dl

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8 1/2 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leaves Baltimore at	9 am. and 3 1/2 pm.
Arrives at	9 am. and 6 1/2 pm.
Leaves York at	5 am. and 3 pm.
Arrives at	12 1/2 pm. & 8 pm.
Leaves York for Columbia at	1 1/2 pm. & 8 am.
Leaves Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	\$1 50
" Wrightsville	2 00
" Columbia	2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
Or via Lancaster by railroad - 10
Through tickets to Harrisburg or Gettysburg in connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5 1/2 pm.
Returning, leaves Owing's Mills at 7 am.

D. C. H. BORDLEY, Supt.

31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton, 271 miles.	Between Charleston, and Dalton, 408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class Boxes and Bales of Dry Goods, Sadlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hoghead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.

Returning, leaves Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2, pm., Train from Cincinnati, and 2 1/2, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia

Do do Springfield	\$1 90
Do do Sandusky City	2 50
Do do Buffalo	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 9 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for immediate distances.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm. Leave Baltimore 9 am., and 8 pm. Sunday—Leave Philadelphia at 10 pm. " Baltimore at 8 pm. Trains stop at way stations.

Charleston, S. C. Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling. Through ticket, Philadelphia to Pittsburg, \$12. " Wheeling, 13.

Through tickets sold at Philadelphia office only. Wilmington Accommodation. Leaves Philadelphia at 12 m. 4 and 7 pm. Leavea Wilmington at 7 1/2 am., 4 1/2 and 7 pm.

Newcastle Line. Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm. Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m. The Train from Pottsville arrives at Reading at 10 43 am.

Fares. Miles. No. 1. No. 2

Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	58	2.25	and 1.90
" Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8 1/2.

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight

Rate of Passage - \$3 00. Freight—

On weight goods generally,	50 cts. per hundred
On measurement goods	13 cts. per cubic ft.
On brls. wet (except molasses and oil)	1 50 per barrel.
On brls. dry (except lime)	80 cts. per barrel.

On iron in pigs or bars, castings for mills, and unboxed machinery - 40 cts. per hundred

On hhds. and pipes of liquor, not over 120 gallons - \$5 00 per hhd. On molasses and oil - \$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, Gen'l Supt Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—

and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily - \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia - 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent.

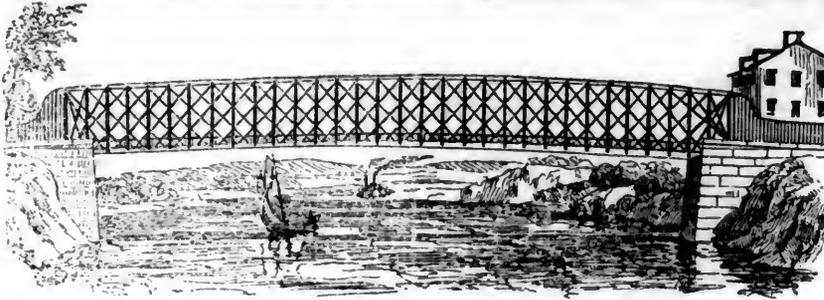
Troy Iron and Nail Factory, Troy, N. Y.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut streets, Philadelphia.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

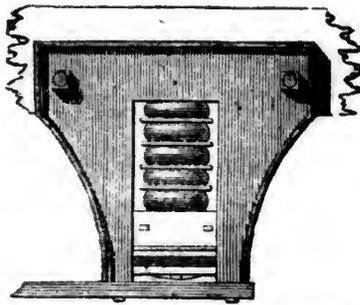
THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

Fuller's Patent India-Rubber Springs.



THERE can not be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an Indiarubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.
Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.
"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- | | |
|--------------------------|-----------------------------|
| Eastern Railroad. | Boston & Maine Railroad. |
| Providence Railroad. | Providence and Wor. Road. |
| Western Railroad. | Concord Railroad. |
| Old Colony Railroad. | Fitchburg Railroad. |
| Schenectady Railroad. | Syracuse and Utica Road. |
| Balt. and Ohio Railroad. | Baltimore and Susq. Road. |
| Phila. & Reading Road. | Schuykill Valley Road. |
| Central (Ga.) Railroad. | Macon and Western Road. |
| | New York and Erie Railroad. |

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.
Agents, } FAIRBANKS & Co., 81 Water st., N. York.
} A. B. NORRIS, 196 Market st., Philadelphia.
April 22, 1848. ly*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of Twenty years has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,

Factory, 9th st., near Coates, cor. of Melon st.
Office, No. 3, North 5th street,
Philadelphia, Pa.,
ly25

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
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One square ".....	2 50
One page, single insertion.....	8 00
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Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor,
HENRY V. POOR, 54 WALL ST.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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ASSISTANT EDITOR,
J. T. HODGE, *For Mining and Metallurg.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, May 5, 1849.

Mining.

BY J. T. HODGE.

Having taken charge of the department of this Journal devoted to the Mining interest, I propose to occupy the space weekly allotted to this subject with an account of the various mining districts and smelting operations of the United States. And while I shall discuss the subject somewhat in detail, including geological descriptions of localities, as well as accounts of actual mining operations and treatment of ores, my aim throughout will be to give that strictly *practical* character to the articles, which alone is suitable to this Journal. Inquiries into the origin and mode of formation of rocks and minerals will therefore find a place here, only so far as these questions bear directly upon the extent and permanence of mines.

Our *Iron Mines* ranking first in importance, and most closely connected with the Railroad interest, will receive the first and most particular attention. Every week a page or more will be given to this subject; taking it up State by State, describing the mines of each, the different kinds of ores, the number of furnaces, the quantity and quality of iron made by each, with particular notice of its cost and expenses of delivery at its markets. Particularities of forms of furnaces and modes of running them in

different districts, or by different individuals, will be described and explained by the aid of plans. Maps and sections of mining districts and mines are also at hand ready for publication, should it be found expedient to engrave them. For the sake of comparison, notice of foreign processes may occasionally be introduced.

The materials for these descriptions will be furnished in great part from my own observations. These have already provided me with a large amount of matter; and probably this will go on accumulating from the same source. The State geological surveys, in two of which I have heretofore been engaged, have presented in their reports no little matter of practical utility; but this being buried among a great deal that is of no particular interest to the man of business, he is discouraged from the task of culling what he wants. This I shall undertake where my own data are deficient.

From individuals I shall be happy to accept notices which commend themselves for their reliability and interest. Many have already placed me under obligations on this account. Where particular data are wanting, I may from time to time propose through the columns of the Journal inquiries, which those familiar with their subject may do me the favor to reply.

Descriptions of the Lead and Copper mines of the United States are written out, those of Lake Superior being treated with considerable detail, employment for two summers in this region having given me a favorable opportunity for becoming acquainted with its resources. In this connection I shall have the pleasure of presenting to the readers of the Journal a beautiful steel engraving of the Cliff mine, for which I am indebted to the liberality of the directors of the Boston and Pittsburg Co.

By those engaged in extracting ores—reducing them—buying and selling and consuming the metals, it is hoped that these articles will be found to possess a practical interest, and serve for reference to all inquirers into the actual mineral resources of our country, and the amount of industry and capital they employ.

Iron Ores and the Iron Manufacture of the United States.

No metal presents a greater variety of valuable ores than iron, and none is so universally diffused through all rock formations, and through all districts of country. The United States is particularly favored in the abundance of its iron mines.—

There is not one of the States, and not a very great number of counties even, where the manufacture of iron might not be carried on, if necessary.

The ore occurs as a magnetic and specular oxide in the granite hills of New England, New York, New Jersey, Pennsylvania, Maryland, Michigan, Missouri, North Carolina, Georgia and Tennessee; as a hematite in the metamorphic rocks of New England, Middle and Southern States; as an argillaceous ore and a carbonate in the rocks of the tertiary, carbonaceous, and lower New York groups of the Middle, Western and Southern States; and as a bog ore scattered here and there from Maine to Georgia. This last is sometimes extracted from the bottoms of ponds, which renew their supplies every fifteen or twenty years; and sometimes from more ancient deposits, long since left dry by the waters, that brought together their materials.

The ores of New England and Eastern New York are principally found in the granitic formations and those most ancient stratified rocks, which occur next above them. The few exceptions worthy of note, will be described in the account of the ores of the particular state to which they belong. It will be well, however, to present here a general outline of the great geological group of strata, containing the principal primary ores and hematites of the United States.

Including the whole of the New England States and the northern and eastern parts of New York, this group extends to the southwest, in a narrow strip of country, crossing the Hudson near West Point, through New Jersey, widening out in Pennsylvania to a width of about fifty miles, and through Virginia and the Carolinas, attaining a still greater extent, till it finally ends with the termination of the Allegheny range in Georgia, Alabama and Tennessee. Its eastern boundary is a line connecting the first or lowest falls of all the rivers, which line passes by the cities built at the head of navigation. At these points the waters fall off from the upper granitic platform to the less elevated one occupied by the comparatively recent tertiary strata. The western line of the same belt of country is along some of the eastern spurs of the Allegheny Mountains in Pennsylvania, their continuation, the Blue Ridge, in Virginia, and the same under other names in North Carolina, Tennessee, Georgia and Alabama.

The hematite ores of this group occur principally along or near its contact with the stratified rocks lying next west in the metamorphic slates and quartz

rocks; while the magnetic and specular ores are found in veins in the granites and porphyries.—Among the metamorphic rocks limestones, well adapted as a flux for the hematites, universally occur near the beds of these ores, and near the beds of primary ores some isolated development of the same rock does not fail of being found, or else some other flux as massive garnet rock, or calcareous clays well suited to the peculiar character of the ore—a provident arrangement, which it will be seen is by no means limited to the ores of this group.

Through Canada these granites and metamorphic rocks, as the talcose, mica and clay slates, quartz rock and limestone, continue far west encircling Lake Superior; and on the south side of the lake they are again found productive in the ores, which characterise them at the east.

The Iron Mountain and Pilot Knob of Missouri, are in what appears to be an isolated group of these rocks, which extends back to the Ozark Mountains, and is remarkable for the development of its iron ores.

MAINE.

The first beds of iron ore, we find within the limits of the United States, are near the boundary line to the extreme northeast. One locality on the Aroostook, about fifty miles above its mouth, is in the lower calcareous slates, all which in this region are highly metamorphic. The ore is a compact red hematite, and lies in an enormous bed, which like the beds of brown hematite in Berkshire county, Mass., is included in the strata and pursues the same course with them, which varies little from north and south. The thickness of the bed, which I had an opportunity of examining when assistant on the geological survey of the state, is in one place full thirty-six feet, and the ore throughout this thickness is remarkably compact, and free from foreign admixture. Its per centage of iron is stated by Dr. C. T. Jackson to be about fifty-three. It occurs close by the river, in a well wooded country, where limestone is abundant, and good materials for building furnaces are at hand. From its abundance, its composition—remarkably free from all noxious ingredients—its favorable position for mining, and the other circumstances already alluded to, this ore would be of very great value, if at any point available to tide water. But situated in a region so difficult of access, and where the winters are so long and severe, it will long lie comparatively useless. For, as will be seen further on, it is not the abundance nor the excellence of iron ores, that will ensure to them a high value; but this depends upon a multitude of circumstances, which must be weighed and compared, one with another, with the greatest caution before a correct judgment on this point can be formed. The expense of shipping the ore from the Aroostook to furnaces on the coast, as in Boston harbor, and there smelting it with anthracite, has been calculated, and found to be too great to warrant farther attention.

Another similar bed of this ore, situated in the same geological position, occurs over the line in New Brunswick, near the town of Woodstock. It may be contained in the same metalliferous range with the other bed, and this range be found continuous thro' the intervening country of some seventy to eighty miles in extent. If so, the resemblance to the position of the ores of western New England, before referred to, would be greatly increased. This ore in New Brunswick, lying nearer the coast than that of the Aroostook, has the advantage of it as to position, and being, beside, in a well wooded district, and near the St. John river, arrangements have been

made to work it—a company having commenced to build a blast furnace in the summer of 1848. Its situation is on the river near Woodstock, where boats can come directly to the works. The ore bed is only half a mile distant, and so situated that it is an uniform down grade from the bed to the furnace. The ore is estimated to cost, delivered, only thirty cents per ton, and charcoal only four to four and a half cents per bushel. The furnace is about thirty-eight feet high and twenty four feet square at the base, and otherwise of the usual proportions of the hematite furnaces of New England. It is to run by steam power.

Magnetic and specular iron ores occur at various points along the coast of Maine in the granite, trap and porphyry rocks, particularly near Mount Desert, but the veins for the most part are thin at the surface. One, however, on Marshall's Island, is about three feet thick. The ore is highly magnetic, and judging from my remembrance of the vein and from the specimen I have, it is likely some time or other to receive further attention, for it is directly on the coast, the ore is of the richest character, and the vein can very probably be followed back on the Island, and is likely to be found sufficiently large to render it an object to mine the ore for sale. The expense of mining such ore in large veins at established works, is seventy-five cents to a dollar and a half per ton. Should it cost here the latter sum to mine it and put it on board of vessels, the business would pay well if a considerable amount could be procured, for such ore is worth about four dollars per ton delivered to furnaces on the coast. Bog iron ores are also found in the same vicinity, and these would be serviceable to mix with the other ores of more difficult reduction.

In the interior of Maine, magnetic iron ores are of frequent occurrence, but the veins have been little explored. Good specimens have been found in the towns of Phillips, Farmington, Raymond, Buckfield, etc. There was one furnace in Shapleigh, that did a very small business. Another was in operation near Eastport, at a town called Pembroke, which run on ores brought from Nova Scotia. This, too, has been abandoned; though the forges that were built in connection with it were re-established in 1847, and greatly increased, and a rolling mill erected capable of turning out a large amount of railroad iron. These have now all suspended work, and are now lying idle.

Little attention has however been directed to the smelting of iron ore. At present there is only one blast furnace in the state. This is in a wild, wooded district, about fifty miles back from Bangor, on the head waters of the Piscataquis. The furnace, which has been built about four years, belongs to the *Katahdin Iron Company*. It is supplied with an ochreous bog ore, which is found in immense quantity close to the site of the furnace. This ore covers the surface of a large dry knoll, lying just beneath the soil; as this is removed, the great deposit of yellow ochreous ore is exposed to view, appearing as one mass of ferruginous matter. When broken into, the pieces of ore are found in the form of roots, limbs, twigs and leaves of trees, the ligneous matter of these having been replaced by oxide of iron without change of form. So easily is it quarried, that its cost on the furnace bank is only forty cents per ton.

It was analysed by A. A. Hayes, Esq., state assayer, of Massachusetts and found to consist, in 100 parts of—*per-oxide of iron* 75.6; *water* 20; *sulphuric acid* 3. This is equivalent to 52.9 per cent. of metallic iron. By roasting, the water is expelled, leav-

ing the ore nearly a pure per-oxide of iron. It has proved, however, a difficult ore to work, probably from its too great richness and want of an earthy gangue in combination with the oxide of iron, which might readily form a fluid cinder. For a long time disastrous results attended every attempt to reduce it, no suitable flux being found to work with it. Finally, by the use of a siliceous limestone of poor quality, the ore was made to smelt readily—to produce a fluid cinder, and a tolerably good yield, running about five tons per day. The stack is 34 feet high and 9 feet across the boshes, and is blown with hot blast.

When working hot the furnace makes very soft iron, and of rather peculiar character. When this is mixed with hard iron it has a remarkable tendency to soften the whole. A considerable portion is of the quality called "*Extra No. 1*," a variety of iron but little known even among those in charge of the furnaces producing it. It resembles closely hard iron, and is generally thrown among the forge pig, the reputation of which it is not a little calculated to injure; for it is in fact a good foundry iron, and works with difficulty in the puddling furnace. A further notice of this will be given in the description of the Crown Point Furnace of New York.

Running cold the furnace makes high iron; but little, however, that is suitable for forge use.

Hard wood is abundant all around the works.—Charcoal is valued at only the expense of preparing and delivering it. Estimating this at 4½ cents the bushel, the ton of iron will cost as follows, no allowance being made for the uncertain additional expenses attending the remoteness of the locality from settlements, nor for those resulting from the difficulties attending the reduction of the ores.

Ore, 2½ tons at 40 cents.....	\$1 00
Charcoal, 150 bushels at 4½ cents.....	6 75
Flux, say 50—Labor, 2 50.....	4 00
Interest, Superintendence and Repairs.....	3 00
	\$13 75

The cost of transportation to Bangor varies with the season and the state of the roads from \$6 to \$8 per ton. As the quality of the iron is not superior, even for foundry purposes, it is not carried to the great markets of the country. For supplying the demand in the immediate region of the works its manufacture on a moderate scale may be profitable.

Were the furnace steadily run, its capacity might be estimated at 1500 tons per annum; which would represent the production in pig iron of the whole State.

NEW HAMPSHIRE.

The ores of New Hampshire, like those of Maine, are generally so situated that the expenses of transportation have rendered them of little value. Only one furnace is in operation, that at *Franconia*, which was established as long ago as the year 1811. The ore is the magnetic oxide, yield sixty per cent. The furnace does but a small business, making only two and a half tons of iron a day. Charcoal is abundant, that made from hard wood costing only four cents per bushel. One hundred and sixty bushels are consumed to the ton of iron. Dr. Jackson states in the Geological Report, that the ore costs six dollars per ton, of which the extraordinary sum of \$5 is for mining. The furnace works with cold blast, and is estimated to be in operation from sixteen to twenty-six weeks per annum. The statistics do not indicate a very skillful management, and it is probable that the remoteness of the site from any large market would not warrant a more vigorous prosecution of the work. There are several veins of the ore, but the largest do not seem to average more than

three feet in thickness; being situated, however, on the side of a mountain, the expense for drainage has been little. The wall rocks are gneiss, to the stratification of which the veins conform.

It may be interesting to note here the process as conducted in the year 1830, described by Professor C. U. Shepard in the XVIII vol. Silliman's Journal. The works were situated 140 miles northwest from Boston. The two manufactories then in operation were each about four miles from the mine. Ore cost delivered and cleaned, \$4 75 per ton; yield of pig iron 50 per cent; of bar iron, made directly from the ore in a Catalan forge, 33 per cent. The annual product of the works was 300 tons bar iron and 300 to 350 tons pig. Principally consumed in the country, and the balance transported to Boston, at an expense down the Connecticut River of \$12 per ton, or over land \$25. At Franconia bar iron sold for \$112 and pig iron for \$40 per ton.

Other localities of iron ore are at *Piermont* on the western border of the state, where beds of an excellent micaceous specular ore are represented to occur of sufficient capacity for working. And again at *Bartlett* on the eastern border of the state, where are found inexhaustible beds or veins of the mixed specular and magnetic oxides. Both these localities possess great facilities for the manufacture of iron; but the disadvantages of a long inland transportation to any large market, which with those consequent to the severities of a high northern latitude, increased not a little by the great elevation of the country above the level of the sea, will probably long render them comparatively unavailable. Railroads, however, have now been commenced from the coast, which will pass—one of them within a few miles of *Piermont*—and the other to *Conway*, within twelve or fifteen miles of the mines of *Jackson* and *Bartlett*, so that the objection arising from expense of transportation will soon be in a degree overcome.

Hot Blast Patent Suit.

A suit was tried before the Circuit Court of the United States, at Trenton, New Jersey, Judge Greer of Pennsylvania presiding, in the first week in April, of some interest to iron manufacturers. It was brought by Charles C. Alger, Esq., of Stockbridge, Mass., against the Hon. Joseph E. Edsell, of Hamburg, for an infringement of the patent granted the former for his peculiar arrangement of the blast pipes leading from the heating oven at the tunnel head to the tweres. Instead of bringing down the air in pipes placed outside the stack, where they are subject to changes of temperature, induced by the weather, the evaporation of rain, and accumulation and melting of snow, a patent was granted in 186 to Mr. Alger for placing the pipes in the body of the stack, between the lining and the stone work. There the great supply of air, the most weighty of all the materials introduced into the furnace, is kept at an equable temperature, tending greatly to the equable running of the furnace.

Mr. Edsell soon after adopted this arrangement, adding to it a capacious box or pipe of cast iron, behind the lining of the bashes, through which also the air passed on its way to the tweres. This he continued to use for 15 months, having made with it 1,390 tons of iron, when this suit was brought.

The testimony on the part of the plaintiff went to show a considerable saving of stock by the use of this arrangement, and an addition to the production of the turnacés using it; but from the complexity of the subject, it was found difficult to define these with exactness. On behalf of the defendant, it was contended by Gov. Haynes and the late Gov. Vroom,

that the arrangement was original with him, and moreover was not Mr. Alger's, in consequence of the box behind the bashes; that it was an injury rather than a benefit, the furnace making a poorer quality of iron with greater consumption of stock than before introducing it.

On the other side, S. P. Staples, Esq., of New York city, assisted by E. N. Dickerson, Esq., of Paterson, N. Jersey, showed that the peculiarity of the arrangement secured to the plaintiff was in actual use in the blast furnace of the defendant;—that adding to this did not alter it;—that the degree of usefulness only could affect the amount of damages;—that continuing to use it when by merely shutting the valve into the oven, the air would pass through cold to the tweres, was *prima facie* evidence and admission of its importance. And, moreover, that the arrangement of the plaintiff was in use at the Franklin Furnace, only three miles from Hamburg, to which the workmen of the defendant went for suggestions relative to the blast pipes before putting in their own.

Before submitting the case to the jury, the court charged first on the general ground of the importance of sustaining the integrity of the patent law. Reference was made to several great discoveries and inventions, which, but for the encouragement and security this law afforded, might have still remained unknown. Publicity being given to all grants of patents, it is to be presumed that one engaging in any manufacturing process would first make himself acquainted with the various improvements of others, recorded in the Patent Office; and that consequently ignorance is no excuse. As to the amount of damages, the jury were to take into consideration the actual benefit derived by the defendant and the injury sustained by the plaintiff, in setting at defiance his patent rights, in the event of their finding for the plaintiff.

The jury after a short absence returned with a verdict for the plaintiff of \$350 damages; which is equivalent to 25 cents on the ton of iron made, while in the use of the patent arrangement. Another suit, it is understood, is already entered against the same defendant for the use of this arrangement for two years longer than the time recorded in the above trial.

Gold in Canada.

The existence of gold in Canada has been known for several years past to those familiar with its local history, and some months ago the scientific world was made acquainted with the fact through Silliman's Journal of September 1848, (page 375) communicated for publication by Mr. Hunt, connected with the Geological Survey of Canada. The information thus given was comparatively meagre in its details, serving only to put the public mind upon inquiry.

We have just been favored with a very interesting document on the subject of this Canada gold, in the form of an extract from the "REPORT OF PROGRESS of the Geological Survey of Canada for 1847-'48," by W. E. Logan, Esq., Provincial Geologist. This Report has just been laid before Parliament by the Governor General, and ordered to be printed.—We are enabled, through the kindness of a friend, to present our readers with the extracts in question, in advance of its publication in Canada.

The Geological Survey of Canada has been several years in progress, and we have been enabled to procure, as they were issued, several most valuable and interesting Reports from Mr. Logan, detailing the result of his labors in the years 1844, 1845, 1846 and 1847, including a special Report on the Copper Mines of Lake Superior. His reputation as a ge-

ologist in England, particularly his labors in examining the coal fields of Great Britain, are well known to scientific men the world over, and are referred to in a complimentary manner in Murchison's great work on the Silurian system.

Mr. Logan has, we believe, in progress an elaborate work on the Geology of this continent, in which he is bringing together all the geological facts yet ascertained, with a view to something like a comprehensive statement of the geological structure of the whole region east of the Rocky Mountains. The Parliament of Canada have made liberal appropriations annually from the public Treasury, to enable him to successfully prosecute the survey of Canada. Having seen many of the specimens of his cabinet, and read his several reports, we have felt the liveliest interest in everything connected with his labors.

After speaking of some localities in Canada where gold had been discovered, and giving certain analyses, showing that the quantity found was too insignificant to justify working, he says:

"It is unnecessary to mention that these results are valueless in an economic point of view, and no illusion to them would have been made beyond a passing notice in stating the produce of the copper, did not the presence of the precious metal in a vein come in aid to illustrate the general character of the region, and in particular an alluvial auriferous deposit, where the quantity may probably prove of more importance. This deposit is in the Seigniorie of Rigaud Vaudreuil, the property of the heirs of the late Charles Etienne Chaussegros de Lery, Esq. The spot is on a small stream called the Touffe des Pins, a tributary, falling in on the right bank of the Chaudiere, about 58 miles from Quebec. Mr. C. de Lery, one of the present proprietors, who six years ago exhibited to me the specimens of gold he had obtained, has informed me that the first piece of the metal was discovered about thirteen years ago, by a daughter of one of the *seignieurs*, and the fact coming to his knowledge, he himself made search, and found another piece in the bed of the stream. The discovery was communicated to the public, through Silliman's Journal, vol. 28, p. 112, in April 1835, by Capt. F. H. Baddeley, of the Royal Engineers, whose zeal in Canadian geology is well known in the Province and elsewhere. The weight of the piece is stated in the Journal to have been 0.63 grains, but this was only a fragment separated from one of the pieces, the remainder of which now weighs 1056 grains. Subsequently to this, Mr. de Lery, from time to time, continued to meet with small lumps and grains, in and about the same spot in the channel of the brook, and up to the autumn of 1846, the value of the whole he had collected by hand, without any process whatever of washing, may have amounted to \$130. The largest three pieces have been weighed by Mr. Hunt, and their weights are 1048 grains, 1056 grains, and 744 grains. Since that period, a slight examination has been made of the deposit, and last season, previous to my visit to the locality, which was late in the autumn, the alluvium had been washed experimentally in small quantities in several places along the banks of the stream with more or less success. But owing to freshets and other circumstances, the amount of work done was insignificant. One washing (the only regular day's work) of sixty bushels by means of a rocker, or species of shaking table, in common use in the southern states, produced 440 grains of gold, which would be equal to about 7.3 grains to a bushel, the weight of which bushel would be about 100 pounds. About 75 pounds of gravel, washed in my presence by one of my own men, produced a quantity equal to about two grains to a bushel.—The metal however is so unequally distributed, and so little has been done, that it would be premature to consider the above an average return. I am informed by Mr. de Lery that it has been ascertained by the examination, that the deposit, in parts close upon the brook, presents indications of being auriferous for nearly two miles up the valley, which for that distance has a bearing to the northeast, coincident with the general strike of the stratification, and that in one place near the spot where the first dis-

coveries were made a few particles of gold were found on the south side of the valley, about fifty feet above the bed of the stream, and about 100 yards removed from it. He informs me also that a few particles were met with near the road, which is on the right bank of the Chaudiere, on a small tributary brook, called the Ruissseau Lespard, also running with the stratification, about two miles below the Touffe des Pins, and one piece is reported to have been found higher up on the Chaudiere beyond the Seigniorie. The total quantity obtained from the first discovery up to the end of October last year, equals a value of about \$300. In an assay of a small piece of the gold obtained from Mr. de Lery, Mr. Hunt finds it to contain 13.27 per cent. of silver—so that the fineness of the gold would be 20 19-24 carats.

Distinguishing between the vein mines and the deposit mines of Virginia, Professor Silliman remarks:

'The latter contain only alluvial gold, or gold at least disengaged from rock or vein stones; it is obviously not in its original connection; it has doubtless proceeded from the destruction of regular veins or beds, and of the rocks which contained them;—the gold has either remained mixed with the ruins of the rocks and of the veins, or has been transported and scattered, sometimes far and wide, by the moving power of water, and buried at depths more or less considerable, in loose materials. Sometimes the gold is found immediately under the turf or sod; this happens most frequently on hills, but more commonly it is in lower situations, under several feet, or even yards, of soil, clay and gravel, and it is most abundant next the slate which underlies the whole of the loose materials, and which slate is sometimes soft, being in a state of decomposition. When the slate rocks are solid, and their strata stand nearly perpendicular, the gold has been sometimes found in the crevices between natural layers of the rock: at the Whitehall mines, in Spotsylvania Co., the gold extended downwards in this manner, sometimes to the depth of three feet.' * * * 'The largest masses of gold have been discovered near rivulets, or brooks, or runs of water, called in the language of the country branches. In such situations, pieces have been found weighing several ounces, and in North Carolina, several pounds. On a branch at the Whitehall mines, gold to the value of \$10,000, was found in the course of a few days, in a space of twenty feet square, and \$7,000 value of gold was found in Tinder's mine, in Louisa county, in the course of one week. It happens not unfrequently that the vein mines are discovered in consequence of washing the earth, particularly in the branches.'

The deposit on the Seigniorie of Rigaud Vaudreuil is of the character above described. In Virginia it would, I presume, be termed a *branch*, and a full investigation of it would probably lead to the discovery of the vein from the destruction of which it is derived. The deposit occupies the centre of the valley in which it exists, which is deep and not very broad, and the amount of detritus varies considerably in different parts of its distribution, while the brook has cut down through it in many places, exposing the glossy surfaced clay slate, and occasional quartzose bands on which it rests. The detritus is a gravel or shingle, of which the pebbles are derived from the various rocks composing the country, at least as far northwestward across the strata as the band of serpentine described as traversing the Chaudiere in the northwest part of the Seigniorie, the distance to which is six miles, and it is not improbable some of it may be derived from sources still farther in the same direction. One class of pebbles consists of talcose and chloritic slates, and glossy surfaced clay slates; another, of the various qualities of the rocks which have been described, as mixtures of corneous quartz and diallage, or hornblende, or feldspar; a third, of vein stone quartz, and a fourth, of serpentine. In the smaller parts of the gravel are found grains of chromic iron and crystals of rutile. The serpentine pebbles are often in a decomposed condition on the exterior, giving an adhesive, unctuous, and partially ferruginous clay. A clay of this description is occasionally seen among the pebbles in a thin layer not far removed above the slates, and in some places a deposit of peroxide of iron or of manganese, coating the pebbles and filling up the interstices among them, runs in thin horizontal patches. The pieces and

particles of gold are almost all found towards the lower part of the deposit, and many are discovered in the cleits of the slate, where the plates have been loosened by external causes; but the extent to which the plates have been so loosened is sometimes so small that it would scarcely be supposed they had been separated at all, yet scales of the metal will be found between them. Some pieces are found in the unctuous clay, and among the iron and manganese-coated pebbles, and the gold itself, is sometimes partially covered with a closely adhering film of the hydrated peroxide of manganese. The pieces of gold are all more or less rounded, their original sharp angles and corners, resulting from the mode in which they lie in the vein, having been worn away by attrition. In some of the largest, however, small portions of the vein stone quartz remain firmly adhering.

Unless the gold were scattered to a considerable distance from its source, it would be expected that the *branch* or deposit would observe a general course in some degree parallel with the parent vein; and inversely, the deposit running in a general line for a considerable distance parallel with the strike of the stratification, which coincides with the direction of the veins, it is to be inferred that the vein from which it is derived is not very far removed from the deposit. It is worthy of remark that the positions of the gold bearing vein of the vicinity of Sherbrooke and of the auriferous deposit of the Seigniorie of Rigaud Vaudreuil, bear directly for one another in the general strike of the stratification of the intervening country, and that they stand at an equal distance from the outcrop of what is considered the base of the Famine and St. Francis fossiliferous lime stone. The general character of the rocks of the two localities is not unlike; there appears to be less chlorite on the Chaudiere, and more talcose clay slate, but there is little doubt they belong to the same formation. The corneous rocks are much nearer the auriferous position on the Chaudiere than on the St. Francis, but there is between the Touffe des Pins and the Famine a band of the same peculiar dingy olive green translucent serpentine mentioned in the general description as occurring on the line of section not very far from the Georgeville limestone, the place of which serpentine on the St. Francis would be between Sherbrooke and Lennoxville, standing there in the same relation to the auriferous vein, that it does to the deposit in the vicinity of the Chaudiere. One or two small quartz veins run under the auriferous deposit of Rigaud Vaudreuil, and it is not improbable that in these or other quartz veins that may be near, the source of the gold will be found. Those displaying hydrated peroxide of iron should be especially examined.'

Whether the extent of this deposit will justify washing it for gold, or whether the presence of a vein mine in the neighborhood is sufficiently indicated, does not satisfactorily appear. The extreme caution, which marks all the statements of Mr. Logan in his previous Reports, would lead us to think favorably of this Canadian locality. At any rate it possesses sufficient scientific interest to justify us in giving it some space in our Journal.

In addition to the Report of Mr. Logan, we have been furnished with copies of two communications from Mr. J. P. Cunningham, giving the results of two several explorations made by him of this mine. We have no acquaintance with Mr. Cunningham, except from his Reports, in which he speaks of his home at the South in the United States, and of his acquaintance with the gold regions of Virginia and North Carolina, and of his experience at the copper mines of Lake Superior.

In speaking of the gold mines of Vaudreuil, in a letter addressed to the DeLerys, he says:

'Some of the peculiarities of this country bear a striking analogy to the auriferous formations of Russia, and the Southern States, which required only an investigation in the former, to open one of the most valuable mining regions in the world.

I can safely assert, that the deposit on your Seigniorie will bear comparison with many of the richest deposits of the south. I have examined many of

them, and ascertained carefully the results of the washings, and although our operations were conducted upon a very limited scale, being as it were simply an assay, I have no doubt when the mine is regularly opened and a system adopted, that the average proceeds of a year's labor, will fully equal those of the Carolinas or Virginia.

The gold found is remarkably large and easily collected, and there will consequently be no loss by the process of washing.

The extent of the deposit is the next important consideration, the limits of which are not yet determined; if the gold exists in the gravel of the country, it will be found wherever the characteristic formations extend; but if it has originated from some local cause, having an immediate bearing upon the rocks in the vicinity of the stream, the deposit will probably be confined to the country, embraced within the drainage of its tributaries.

I have found it in variable quantities in the valley of the stream commencing at its outlet and ascending two miles; and although our principal operations were confined to a very small section, I feel confident the same successful results will obtain wherever the deposit is tried in that distance.

Having thus given a general idea of the region, I shall now enter more minutely into the detail of the exploration.

On the first day of June last, the waters having subsided sufficiently to allow of the exploration of the head of the creek, on which my former investigations were conducted, I proceeded to define as far as possible, the extent of the deposit, and found that for a distance of two miles, beginning from the river Chaudiere, and ascending the creek, gold existed in the bed of the stream, and that within the first mile of that distance—nearest the river mentioned—a rich auriferous deposit became manifest.

My explorations were also directed to the branch of the stream flowing from the south, to the upper parts of the main branch, the other streams falling into the river Chaudiere, and in fact to the entire North Eastern portion of your Seigniorie including the steatite beds.

During my examination of the adjacent hills, on the southern side of the creek, I discovered indications of gold, nearly one hundred yards from the water, and at an elevation of sixty or seventy feet above the level of the stream; this would go far to prove that this deposit is not confined to the creek; but without a further and more minute exploration, its extent or value cannot be estimated, on account of the quantity of drift, which covers the entire face of this portion of the country.

It will be necessary, in order that you may fully understand what I wish to convey, that I should describe in detail, that part of the stream, and the valley and hills, which confine it, in which the greatest auriferous indications were observed; this comprises an extent of about two miles, bounded on each side by hills, of comparatively similar elevation, enclosing a valley, varying from fifty to three hundred yards in width, its general direction is from east to west, and the stream itself falls from sixty to seventy feet per mile, consequently there is little sinuosity in its course. The lower section of the valley, about half a mile in extent, consists of flats, and varies from one hundred to three hundred yards in breadth, those flats are composed of gravel and the debris of the surrounding rocks, covered with two or three feet of sand or clay, and may be from six to twelve feet in depth, resting on the rock in place; from this to the Falls of the Creek, a distance of half a mile, the stream has cut a channel through the shales and sandstones, which are everywhere exposed, and the remainder of the distance, for a mile or more, consists of beds of gravel, where the rocks are seldom seen "in situ."

The first portion described, consisting of that part nearest the river Chaudiere, was that to which my attention was most particularly directed, where I had sunk a number of pits, and from which I obtained such satisfactory results.

The first gravel tried, was from the surface, and about fifteen feet above the level of the waters, it yielded twenty pennyweights of gold in three hundred bushels of gravel, the last trial was made from the gravel above the slates, with the debris of the slates themselves, this yielded eighteen pennyweights, eighteen grains of gold from sixty bushels.

In the deposit mines of the Southern States, one

pennyweight of gold to each hand employed per day, is considered good work, and the mine yielding such results a rich one. Their calculation is, if one hundred men are employed, they will have five of those machines in operation, these at an average of three hundred bushels per day, will give a return of 1 3/5 grains per bushel or one pennyweight to the hand.

The average of the washings from our experiments, as given, amounts to 2 7-12 grains per bushel being very nearly one hundred per cent. more than the mines I have instanced above.

When you take into consideration the very unfavorable circumstances under which I operated without one experienced hand and almost totally obstructed by water, by which means the material washed, could not be taken from where the most favorable indications appeared, you cannot but feel satisfied with the complete success of the exploration.

It will be borne in mind, that the first discoveries made, before mine were confided to a small space in the bed of the creek, not more than 40 or 50 feet square, the gold found amounted to 300 pennyweights, the principal part of which was found in the open crevices of the slates.—This yield is unprecedented.

It has been observed on the opening of the Southern mines, that where pieces of 30, 40 or 50 pennyweights have been found, that invariable pieces of much larger weights have followed, you succeeded in finding pieces of the above weights, and there is every reason to believe the same rule will hold good here as well as elsewhere."

At the time when so much inquiry is made in regard to gold mines, this locality in Canada may be worth the attention of those engaged in mining pursuits. Its proximity and the cheapness and abundance of labor in Canada, will render the working of this mine a matter of comparatively little difficulty.

Culture and Manufacture of Cotton.

In our last paper we spoke of a new work on the Culture and Manufacture of Cotton, by GEN. CHAS. T. JAMES, of Providence, which we had been permitted to read in manuscript, and which has just come to hand in a pamphlet of 68 pages.

This work is addressed to HAMILTON SMITH, Esq., of Louisville, Kentucky, and entitled "*Practical Hints on the Comparative Cost and Productiveness of the Culture of Cotton, and the Cost and Productiveness of its Manufacture. Addressed to the Cotton Planters of the South.*" The work has not been circulated in New England, but several thousand copies have just been forwarded to different parties at the south and west, which we are quite certain will attract no little attention. The people of the cotton-growing states have not been informed as to the amount of profit they have been and are still paying to the manufacturers of Great Britain and the Northern States, upon all the manufactured articles they consume. This work of General James places this matter in so strong a light, that they cannot fail to be aroused by it to vigorous exertion to introduce the manufacture along side the production of cotton.

After devoting some twenty pages to the discussion of certain matters of political economy, Gen. James takes up the question of the comparative profit of the raising and manufacture of cotton,—which we cannot give in better terms than in his own language:

The latest official tabular statement to which we have access, of the amount of cotton produced in the world, is that made in the office of the United States Secretary of the Treasury, in the year 1834, for the use of Congress.

By this table, which is sufficiently correct for all practical purposes, it appears that the total amount of cotton raised in the world was 900,000,000 pounds; of which 460,000,000 pounds, 10,000 pounds more than one-half, was the product of the United States. Since that period, the culture of the article in the West Indies has almost ceased. The production in the East Indies rapidly increased during a few

subsequent years, owing to the very great efforts of the British East India Company; but from repeated failures, it has again become stationary, and will probably never be carried to any great extent. In the year 1839 the entire supply of cotton from India was 46,001,308 pounds. It may possibly now reach 50,000,000 pounds. The other cotton growing countries, viz. Brazil, Mexico, Egypt, and other parts of Africa, and Asia, other than India, and a few smaller districts with those named above, made up, in 1834, the balance of product, say, 440,000,000 pounds. Taking all the circumstances into the account, and especially the cheapness of the product in this country, and the known decline in quantity in some others, it is not probable that the foreign product has increased, since 1834, more than ten per cent. This would now give 484,000,000 for all the world, the United States excepted. In the United States, the result has been entirely different. So greatly have they increased the culture of the article, that their crop for 1848 is estimated, in round numbers, at 1,000,000,000 pounds; and which affords a sure indication, compared with the foregoing statements, that all the rest of the world cannot compete with them, either in quantity or price. Increasing the consumption of the article in Great Britain by ten per cent. from the year 1840 to '48, the quantity for the latter year would be 584,317,424 pounds; an excess of more than 100,000,000 pounds over the entire quantity produced in, and exported from, all the countries in the world, the United States excepted. France, Germany, and other European nations require about 300,000,000 pounds; which, added to the consumption in Great Britain, makes the quantity required in Europe, 884,317,425 pounds. Of this, only 480,000,000 is supplied by India, Egypt, Turkey, Brazil the West Indies, &c., and leaving a deficit of more than 400,000,000 pounds, for which Europe is entirely dependant on the United States. To withhold this supply, would enhance the price in Europe; and, though our labor would cost something more than theirs, our cotton would be so much cheaper, that no European manufactures could compete with us. Almost the only reason why no other country has extended its cotton culture as ours has done, is because no other one can raise the article at so small a cost. This circumstance has almost annihilated the culture of cotton in the West Indies, and prevented its rapid increase in Brazil. The British E. India Company, and the viceroy of Egypt, with their immense power and resources, have bent their energies to the object, but hitherto, all efforts have failed, and the cotton planters of the United States still hold and maintain their pre-eminence over all those of the rest of the world. With all these advantages, the United States ought to be, emphatically, THE cotton manufacturers of the world; and the cotton growing states should become the great cotton manufacturing states of the Union. One would think there could be no question that the cotton grower and cotton manufacturer, combined in one concern, with his full supply of the raw material produced on his own soil, might under-sell the European manufacturer, and control, as far as cotton fabrics were concerned, every market in the world. All this may appear chimerical to some, and they may be inclined to make the inquiry, how is all this to be done? The reply is at hand—Manufacture all your own cotton. How can we do this, is the next query, when we produce so much? Again the reply is ready—Others do it for you. You have labor, skill and materials—if you wish for more of labor and skill, they are readily obtained in sufficient quantities to manufacture all the cotton in the world. But we produce too much. True, too much. Then make a proper distribution and application of labor and skill—produce no more than can be manufactured at home. Cast not yourselves in a foreign market, with a redundancy of an article, begging for a purchaser, on the mercy of foreign brokers, speculators, and shavers. But more of this by and by. Let us now inquire which, in respect to the article of cotton, has made the best distribution and application of labor and skill, the United States or Great Britain, as far as the creation of wealth is concerned?

We have seen that according to the best estimates to be obtained, the quantity of cotton imported into the United Kingdom, and consumed by her manufactories in 1840, was 531,197,659 pounds; of which, at least four-fifths must have been sup-

plied by the cotton growers of the United States. McCulloch, in his Encyclopedia of Commerce, published in London, for 1847, estimates the increase at about fifteen per cent. This estimate would make the British consumption of cotton at present, 610,377,307 pounds per annum. Allowing only the same proportion, or rather less than we have already stated, say now four-fifths of the quantity, to be supplied from the United States, it will amount to 488,701,846 pounds. The present average value of this cotton in England, is not far from 8 cents per pound; and hence, the aggregate cost, to the British manufacturer, of the above quantity received from the United States, would be \$39,096,147 68. At this rate, the highest amount returned to the American cotton planter, would be, say, 488,701,846 pounds, at six cents per pound, \$29,322,110 76—for convenience, say, in round numbers, \$30,000,000. The best cotton lands will not yield more than three hundred pounds per acre, and the general average from year to year, probably does not exceed two hundred pounds. Suppose, however, the quantity, to be two hundred and fifty pounds; there is required, 1,794,807 acres of land to produce it; and as the product will not average more than 2,500 pounds per hand, it will require about 196,480 hands for its culture. The land, at \$25 per acre, is worth \$44,870,175.—The hands (slaves) at \$500 each, are worth \$97,740,000. Thus, the land and slaves together, would amount in value to \$142,610,000. The cost of other necessary appendages, such as cotton gins, presses, horses, mules, &c. will make up at least, with the above, the sum of \$150,000,000, as the capital employed in the production of the above amount of cotton furnished to the British manufacturer. In order to make the estimate high enough for the planter, we will suppose his net receipts to be 6 cents per pound. At that price, the quantity, 480,000,000 pounds, will return him, say, in round numbers, \$29,000,000.

According to the estimate in McCulloch's Encyclopedia of Commerce (English) the value of British cotton manufactures for the year 1847, was about £40,000,000. The estimated increase for the seven years, from 1833 to 1840, was 33 1-3 per cent. At that rate, the value in 1848, would have been about £42,000,000, or \$186,666 666, nearly. It is estimated also, that the amount of capital invested in the business, is about the same as the amount of value of product, per annum. The British manufacturers also employ about 300,000 operatives, and about the same number of hand-loom weavers.

For the above amount of product, it has been seen that the American cotton planter furnishes about 480,000,000 pounds of the raw material, for, at a high estimate, \$29,000,000. The cotton thus furnished, is four-fifths, nearly, of the entire quantity consumed. The capital invested in the production of the cotton, is \$150,000,000. That invested in the manufacture of it, viz: four-fifths of \$187,000,000, in round numbers, is \$149,600,000. In the ratio of capital, therefore, the planter should receive at least £150,000 for his product, whereas, he receives but \$30,000,000. But, the cotton which returns 6 cents per pound to the planter, costs the British manufacturer 8 1-2 cents. At this price, the amount of cost of the cotton, 480,000,000 pounds, is \$40,800,000. Deduct this amount from \$159,000,000, the value of the manufactured product, as above, and you leave \$118,000,000, as the value added to the above quantity of cotton, for which the planter receives but \$30,000,000 at most, on an outlay of capital very nearly equal to that employed by the manufacturer. So much as to the productiveness of British capital employed in manufacturing cotton, and American capital in producing it. Again in respect to the number of hands employed.

We have said that the British employed about 300,000 operatives. To work up four-fifths of the cotton consumed, would therefore require 240,000. Divide the above \$118,000,000 among these, and you will have \$491 69 nearly, as the value of product per hand. Again, divide the net receipts for the planter's cotton, \$30,000,000, among the number of hands, (195,480) required to produce it, and you have but \$153 36 per hand—less, by \$338 23 per annum, for each hand employed in the production of cotton than is realized by its manufacture in Great Britain. True, we have seen that, in the process, the British manufacturer employs also 240,000 hand-loom weavers; making the entire number of persons

employed, 490,000. Well, divide the British net product among the whole number, and you have \$215.84 per hand, and leaving yet, an excess of \$92.38 per hand in favor of the manufacturer, against the production of the raw material.

The foregoing statistics and calculations are sufficiently striking to arrest the attention of the southern planters, and to put them upon earnest inquiry. We believe they have only to look fully into this question to become, not only the advocates of a protective policy, but to be in fact, the most earnest of its supporters. Cotton goods of the common fineness are now made for the same price in Rhode Island and Massachusetts as in Manchester, and can be produced in Georgia and Alabama and the Southern States, more cheaply than in any part of the world where cotton is not grown.

We confess that we have been surprised at reading the statement of Gen. James, as to the profits of the cotton manufacture in New England; though any one who looks at Lowell or Manchester, N. H. or Willimantic, cannot but see that the profits of cotton manufacture have been great beyond those of any other branch of industry in the United States. We cannot in this number pursue this topic at great length. We shall give further extracts from Gen. James' work in our next issue, with other observations of our own.

Ohio and Pennsylvania Railroad Meeting.

Pursuant to public notice, a large meeting of the citizens of Pittsburgh and Alleghany, relative to the Ohio and Pennsylvania railroad, was held in the rooms of the Board of Trade, on Monday evening, the 23d ultimo, and was organized by the election of

GEN. J. K. MOORHEAD, *President.*

Richard Edwards and Jesse Carothers, *Vice Presidents.*

Reuben Miller, Jr., and B. A. Sampson, *Secretaries.*

The President stated the object of the meeting, after which it was addressed by Solomon W. Roberts, engineer of the Ohio and Pennsylvania railroad, and by John Larwell, and H. B. Wellman, Esqs., of Ohio.

Col. Thomas H. Benton, of Missouri, being present, by request, entertained the meeting in a beautiful and eloquent speech; and when he had concluded, a motion that the thanks of the meeting be returned to him, was unanimously adopted.

Addresses were also made by Mr. Carter, of Stark County, Ohio, and Col. Robinson, President of the railroad company. He also examined the amount of subscriptions to the work in this city and county.

Thomas Bakewell, Esq., then offered the following resolutions. After they had been read, it was agreed to vote on them separately:

Resolved, That the renewal of the efforts of the Baltimore and Ohio railroad company to connect the fertile plains of the great west with the Atlantic by a southern route, and the continued exertions of the New York and Erie railroad company to effect the same great object in a northerly direction, render the completion of the great central chain of railroads from Philadelphia to the Mississippi more than ever essential to the prosperity of the State of Pennsylvania, and especially to the county of Alleghany.

Resolved, That the liberal subscription made by the citizens of Ohio, residing in the counties of Columbiana, Stark, Wayne, Ashland, and Richland, to the Ohio and Pennsylvania railroad, entitle them to the praise and gratitude of their fellow citizens and of this community; and that it is at once the duty and the interest of the citizens of Alleghany county to contribute with equal liberality to the prosecution of this important improvement.

Resolved, That in the opinion of this meeting the true interests of the citizens of Pittsburgh and Alleghany would be promoted by a corporate subscription on the part of those cities, each to the amount of Two Hundred Thousand Dollars, to the stock of the Ohio and Pennsylvania railroad company, as authorized by Act of the Legislature of Pennsylvania,

passed April 5th, 1849, to be made payable in bonds of those cities, exempted by the aforesaid act from all local taxation, none of the bonds to be issued until at least two hundred thousand dollars shall have been subscribed to the stock by individuals in Alleghany county, and as the progress of the work, after it shall have been put under contract may require; and provided further, that the avails of said bonds be applicable to the construction of said road within the State of Pennsylvania.

Resolved, That a committee of three members be appointed to prepare and circulate a brief address to the citizens, setting forth the advantages of this improvement, and urging the importance of their making such subscription thereto, and will insure its speedy completion.

Resolved, That a committee of five be appointed, whose duty it shall be, in conjunction with the Directors of the company, to wait upon the citizens generally, and solicit their subscriptions to the stock of the Ohio and Pennsylvania railroad company, and that the committee act forthwith.

The first and second resolutions were adopted unanimously. When the third was read, Mr. A. W. Foster moved that it be referred back to the Committee, to be reported to a public meeting of the citizens, on next Saturday. The Chair decided that the motion was not in order, and on taking the question on the resolution, it was adopted. The fourth and fifth resolutions were adopted unanimously.

It was, on motion, Resolved, That the President and Vice Presidents of this meeting be three of the Committee mentioned in the fifth resolution.

Committee under fourth resolution—George Darsie, T. J. Bigham, Wilson McCandless.

Committee under fifth resolution—Jesse Carothers, Richard Edwards, J. K. Moorhead, James Crossan and Thomas Bakewell.

On motion, Resolved, That the proceedings be published in all the papers in the city friendly to the railroad.

The meeting then adjourned.

J. K. MOORHEAD, *President.*

RICHARD EDWARDS, } *Vice Presidents.*

JESSE CAROTHERS, }

REUBEN MILLER, JR., } *Secretaries.*

B. A. SAMPSON, }

Col. Benton's Speech.

The Colonel said, he had not yet arrived at that age, at which he could say, that he was too feeble to address them; nor could he plead as an excuse that he was too tired to address that meeting. He had had the honor—to him an unexpected one—of being invited to attend this meeting. If it had been a political meeting, he would have excused himself, by saying that he never spoke upon political subjects out of his own bailiwick; yet, as the object of this meeting was one larger than political—as it was characteristic of the age in which we live—as it was utilitarian in the highest degree, he came to this meeting for the purpose of showing that he was in favor of all such great projects.

The President of this meeting had well observed, that as a local question he could not be expected to enter into details, and it was a question with himself whether he would be able to say anything on the immediate subject of the meeting, but he (the chairman) also touched a point which touched him, (Col. Benton) inasmuch as one end of this road pointed to St. Louis, and St. Louis was on the high road, in a straight line, to the Pacific Ocean, and to Canton.

His name had been connected with this question. Thirty years ago, he had not only said it, but wrote it and gave it to those which constitute the monuments that never die—the printing press—and by the printing press it was then written down, that sooner or later, a great national high road would be made from the Mississippi to the Pacific Ocean; that the road would be made, either immediately, by the help of the Federal Government, or eventually without that help, by the force of circumstances, and the progress of events. (Applause) Every road, then, which pointed towards St. Louis, connected itself with this gigantic idea of the present age—the highway of nations—of Asia, of Africa of Europe, of generations yet unborn. A highway from ocean to ocean—three thousand miles across—

under one law, under one flag, and under one language, from one end to the other. (Applause)

That great idea was now abroad, walking over the land, and commended itself with such force, to all imaginations, as to create a universal approbation in its favor. He had brought forward a scheme a per centum of the sales of the public lands to effect this object. He was not only for a per centum, but a complete hypothecation of these lands, that this great work might be accomplished. "Go a head was the word," this was the feeling, the force, the power of the American people. (Applause.)

The wonders which we saw in the ancient world, such as the pyramids of Egypt, employing myriads of men—how did they arise? At the command of sovereigns, who, at once, were political and religious tyrants—who had dominion over the conscience as well as over the purse—who commanded the nation, and it came forward, and for three thousand years, had not been able to tell. But America had taken utility for her guide, and her people came forward, not at the instigation of priests and kings, but from a feeling that what they were going to do would benefit themselves and their posterity. (Applause.) So it was with the Western railroad.—The Romans, whom we so much admired, would not go sneaking around a mountain to make a road. They scorned to do that. They must either go over it or through it. And we could rival them in that. This great road would eventually be made by the Government, but if the Government did not make it, the people would.

The hoofs of horses, the tread of men's feet, and the grinding of wagon wheels were making it now. Tens of thousands of people would go to it this year, making the road as they went. (Applause.) Yes, that road would be made; and while both in Europe and America, the vast country beyond the Pacific, remained a sealed book, and the Rocky Mountains were considered an impassable barrier between the United States, and those regions which lay beyond the Rocky Mountains, the time had now come when people from every State in the Union, from every quarter of the globe, were flocking to those regions, carrying with them the implements of industry and improvement, and thus advancing in civilization. By these very people, this route will be established—this road will be made.

Col. Benton here alluded, (as we suppose) to the exertions of Col. Fremont, and his travels through these wild regions, emphatically observing that the child was born, that the man was grown, that some of them were there, in that meeting, who would see all this; for "go ahead," was the feeling, the character of the American people—a people who needed no government to spur them on, but who were, themselves, always and at all times, ahead of the government they had chosen. (Applause.)

Mr. Benton here concluded amidst the loud and rapturous applause of all present—*Pittsburgh Daily Gazette.*

Virginia.

At a meeting of the citizens of Strasburg, and vicinity, held in Strasburg, on Saturday, the 15th day of April, 1849, for the purpose of taking into consideration the most suitable measures to be used in procuring the construction of the contemplated railroad from Alexandria to Strasburg, and to appoint delegates to a convention, to be held in the town of Front Royal, Warren County, Virginia, on the 15th day of May next; David Stickley, Esq., was called to the chair, and George Hupp was appointed Secretary.

On motion, the Chair appointed W. Gatewood, Geo. M. Brinker, S. Hupp, Samuel Kendrick and Daniel S. Lee, a Committee to draft resolutions, whereupon the following were reported and unanimously adopted:

Resolved, As the opinion of this meeting that the construction of a railroad from Alexandria to Strasburg, will be of great importance to the people of this section of Virginia, and that to effect so important an object, we will heartily cooperate with all others who like ourselves are deeply interested in said improvement.

Resolved, That a delegation of ten persons be appointed to represent this meeting in the convention, to be held in said town of Front Royal

Resolved, That W. Gatewood, Dr Geo. M. Brinker, Capt. Isaac S. Bowman, George A. Hupp,

Samuel Kendrick, Col. Daniel Stickley, Capt. Daniel S. Lee, Col. Geo. W. S. Bowman, John S. Hupp and David Stickley, Esq., be appointed delegates to represent this meeting at said convention.

D. STICKLEY, Chairman.
G. A. Hupp, Secretary. [Winchester Rep.]

The public temper is again up for railroads, and the people of the Piedmont country and of the valley are in a state of commotion on the subject. We give the proceedings of a public meeting at Strasburg, in Shenandoah, from which it will be seen that the effort is to be persevered in, to bring the Alexandria road into the valley.

The Piedmont Whig (Warrentown) makes some judicious suggestions as far as the prosperity of its own town is concerned. It suggests the construction of a road from Warrenton to the Rappahannock, to touch the Alexandria and Orange road, and the construction of turnpikes to Thornton's Manasses' and Ashby's Gaps, to secure the trade of the country west. This is its true policy, instead of joining in a scheme which is to render the village a mere passing point for the locomotives. In the one case, Warrenton would be a great depot; in the other, it would have no more consequence than one of the smallest villages in the country. Besides, with a railroad to the neighborhood of the Springs, an immense increase of travel would follow, and the White Sulphur would be a place of increased attraction.

The people of Fredericksburg will be thoroughly aroused to the importance of early and energetic action.—Ibid.

The Danville Railroad.

The City Council of Richmond has appointed a Committee to confer with the Board of Public Works, for the purpose of requesting the Board of Directors of the Danville railroad company to call a meeting of the Stockholders, to re-consider the resolution by which the Board was instructed to adopt the most direct route between Richmond and Danville. The importance of bringing the road as near as possible to Lynchburg, with a view of connecting it by a branch road with our great southwestern improvement, is now confessed by all in Richmond. It is believed that a route further north than the one which was rejected may be found and which will bring the road still nearer to Lynchburg. We presume there will be no objection to the call of the meeting, and we trust the resolution referred to will be re-considered and the Board left at liberty to adopt such a route as they think best.—Virginia.

North Carolina.

Central Railroad.—The friends of the North Carolina (or Central) railroad had a meeting at Raleigh on Thursday last, Ex. Governor Iredell presided. Speeches were made by the Chairman, Wm. Roylan, Esq., Gov. Morehead, Mr. Thomas, Senator from Davidson in the late Legislature, and Dr. McClanahan, of Chatham.

The opening of books to receive subscriptions for stock, was postponed until the Tuesday or Wake May County Court, when it is proposed to hold another County meeting, for the purpose of furthering the prosecution of the work.

It was resolved to send three delegates from Raleigh, and one from each Captain's district in Wake, to the convention to be held at Salisbury, on the 14th of June next. The formation of an Internal Improvement Association in Raleigh was also recommended. It was resolved too, says the Register, that the North Carolina railroad "shall be built without delay."—Wilmington Chron.

Fayetteville and Western Plank Road Company.

As we mentioned last week, the stockholders in this company met at Fayetteville on the 11th inst., and chose a President and directors as follows:

President, Edward L. Winslow. Directors, Chas. T. Haigh, Alfred A. McKethan, Henry L. Myrover, John H. Cook, George McNeill, Thos. S. Lutterloh, David A. Ray, Edmund J. Lilly, John D. Starr.

The Fayetteville papers express a decided opinion that the selections were judicious and fortunate for the interests of the enterprise. The salary of the President was fixed at \$500, with his necessary travelling expenses, Mr. Winslow has gone north,

we understand, for the purpose of examining the plank roads there, and procuring information in regard to their construction.

Wilmington and Manchester Railroad.

On the 16th inst., at Whiteville, Columbus county, where there was quite a large gathering of people, the grading of this road from Livingston Creek (Brunswick county) to Whiteville, and a considerable portion between Whiteville and the South Carolina line, was contracted for on terms considered favorable to the company. The contracts were made by Mr. Fleming, resident engineer. The road is located throughout its whole extent, but we are not informed of the exact location.—Ibid.

Cape Fear and Deep River Improvement.

The shareholders in the company chartered by the last Legislature to improve the Cape Fear and Deep rivers, met at Pittsboro', Chatham county, on the 14th instant, and elected officers. It is stated that all the stock but about \$10,000 in amount is taken, and this will be very soon, it is expected, so that the company is manifestly in a situation to carry on its intended operations in a prompt and vigorous manner. A resolution passed at the meeting instructs the directors to proceed at once in the contemplated works of improvement.

APPOINTMENTS BY THE SHAREHOLDERS.

SPENCER McCLANAHAN, of Chatham, President.
B. I. HOWZE, of Wilmington, Secretary and Treasurer.
— THOMPSON, Engineer.

DIRECTORS.

ISAAC CLEGG, } On behalf of the State.
A. S. McNEIL, }
PETER EVANS, Sr., }
JOHN M. HOUGHTON, } On behalf of individuals.
THOMAS HILL, }

After the foregoing was in type, we received the official report of the proceedings of the meeting. It appears in another part of the paper.—Ibid.

Sandusky Harbor.

A committee of our citizens went out in the steamboat Islander to examine into the condition of the harbor. In the channel, there was in no place less than nine and a quarter feet of water, and this but for a short distance, when the water became twelve, fifteen and twenty feet in depth. The channel is very crooked, and we believe somewhat changed from last year, which accounts for the frequent grounding of steamers which endeavor to follow the same channel run in last year.

The committee have discovered a new channel, in running which, by boats going down, a distance of two miles is saved. There was found fifteen and twenty feet of water from the channel in the bay to the lake, except in one place where there is a bar across some two hundred feet in width, on which there is but eight feet water.

The committee have concluded to open this channel, and have about concluded a bargain with a gentleman from Buffalo to dredge it so there shall be 15 feet of water in the shoalest part.

There is water sufficient for the deepest class of boats, and if they get aground it is because they are not in the channel.

The channel is not yet fully staked out owing to the continued blow, but the collector informs us that the remainder of the stakes shall be set at the earliest possible moment.—Clarion.

Ashuelot Railroad.

Mr. Field, an experienced engineer, with his assistants, commenced on Monday last the re-survey of the road between this town and West Winchester, for the purpose of locating the line of this road. Mr. Potter who made the original survey, ran three lines, we believe, over part of the route. They are now to be examined, and the best location fixed upon. We learn that the shortest line, which will not require a grade over 15 feet to West Winchester, and 30 feet thence to Vernon, is only five miles longer than the direct route through Brattleboro' and Bellows Falls. Thus, for a sum less than one-half the expence of a direct line up the Connecticut, a road may be built, answering every purpose of the travelling public, connecting the great lines of railway north and south, and accommodating the large and increasing business of the Ashuelot valley. We

look upon the early construction of this road, as no longer a problem; and if the energy and zeal exhibited along the line is met by a corresponding interest and liberality on the line of the Connecticut river, the valley corporation may, this year, secure a communication much more valuable to them than the direct line up the Connecticut, and save a mint of money in these hard times.—Sentinel.

Albany and Cohoes Railroad.

At a meeting of the Directors of the Albany and Cohoes railroad, held this day, Teunis Van Vechten, Visscher Ten Eyck, and Watts Sherman were elected Directors to supply vacancies.

The Board now consists of M. T. Reynolds, President, John L. Schoolcraft, Andrew White, E. P. Prentice, James Edwards, James Kidd, Archibald McClure, Teunis Van Vechten, Visscher Ten Eyck and Watts Sherman, of Albany, C. F. Crosby and D. Hamilton of West Troy, and Egbert Egberts of Cohoes.

The subscription books are directed to be opened on the 15th May, at Albany, 17th at West Troy, and 17th at Cohoes.

Manufactures at the South.

We learn from the Georgia papers that the Augusta Manufacturing Company have declared a dividend of 3 per cent. for the last three months, equal to twelve per cent per annum.

If a considerable portion of southern capital were invested in manufactories, we would soon cease to hear complaints about high tariffs and low prices for cotton.

A few weeks since we suggested the formation of companies, by which the weak hands of planters could be profitably employed, and the prices of cotton better sustained. What objections do planters see to this plan of southern operations?

While we leave it altogether to Europe and the Northern States of the Union to regulate the prices of cotton, we cannot expect high rates. We must, in self defence, take the matter into our own hands.—Republican.

Georgia.

Central Railroad.—The earnings of the Central railroad for the month of March are:

	1849.	1848.
Freight, up.....	\$22,032 65	\$14,135 12
" down.....	46,237 59	29,802 72
Passage Money	6,000 48	5,796 54
Mails	1,600 00	1,600 00
Total.....	\$75,879 72	\$51,434 38
	51,434 38	

Increase of 47½ per ct. \$24,445 34

The increase for the four months since the last annual report in December is nearly in the same ratio.

Rutland and Burlington Railroad.

The Rutland and Burlington Railroad has always been, as far as we can judge, a favorite enterprise in Vermont. It furnishes the shortest line of railway from Burlington to Boston, in a distance of 230 miles, connecting with the Cheshire, Vermont and Massachusetts and Fitchburg railroads. From Bellows Falls to Rutland the distance is 52 miles, and from Rutland to Burlington 66 miles.

We learn from gentlemen in the direction of this road, that the laying of the rails is now going on with vigor at both ends of the line. The grading is completed, with the exception of a short distance near the summit at Mount Holly, on which portion a strong force is engaged. Nine thousand tons of rails are already delivered along the line, at points convenient for distribution. The rail used weighs 60 lbs. to the yard, of the T pattern, with what is usually called the pear head shape. We saw at the Trenton Iron Company's works last week, the rolling of the rails for this road in progress, at the rate of about two hundred tons per day. These rails

are 21 feet long, and are a good specimen of railroad iron of American manufacture.

It is understood that 79 miles of this road will be opened in July next, or early in August, 27 miles more in September and the whole line in running order during the year 1849. The company have contracted for twelve locomotives, and a suitable number of cars for the equipment of the road, which will be in readiness as soon as it is in running order.

This vast work, requiring an expenditure of *three millions of dollars*, has been carried successfully forward, against severe competition, by the indefatigable energy, good judgment and business talent of its directors, and the people along the line. With scarcely any encouragement from Boston at the outset, who threw the strength of its support in aid of the Central road, it has relied mainly for its success upon the rich agricultural and manufacturing population in southern and western Vermont. There is scarcely any private enterprise within our knowledge that more fairly illustrates the tenacity of purpose and the unconquerable energy of the New England character.

AMERICAN RAILROAD JOURNAL.

Saturday, May 5, 1849.

Practical Geology and Metallurgy.

JAMES T. HODGE WILL EXAMINE AND report upon Mines and Ores; construct and conduct Blast-furnaces; and give important information as to the best localities for their establishment. To parties desirous of building the nearest furnaces to New York city he can furnish the control of ores, which will warrant the enterprise.

Office at No. 1 New St., corner of Wall. When absent from the city, inquiry may be made at the office of this Journal, 54 Wall St.

Office of the York and Cumberland Railroad, }
York, Pa. }

NOTICE IS HEREBY GIVEN, THAT PRO-posals will be received for the Graduation and Masonry of the different sections upon this line of road. The amount of masonry being large, the attention of contractors is specially invited.

Specifications of the work will be ready for distribution at the office in York after the 23d of April,—and proposals will be received until the 10th of May, inclusive.

The payments will be made in cash, reserving the usual 20 per cent. until the completion of the contract.

Proposals will also be received for the complete construction of the work, for the whole length of about 26 miles, under the superintendence of the undersigned and his assistants, to do all the Graduation, Masonry and Bridging, etc., to furnish all the materials, iron, lumber, stone, etc., and to complete the work in eighteen months.

The contractors will be required to state for what sum of money they will finish the entire construction of this work, and what portion of this amount they will agree to take in the stock of the company.

By order of the President and Directors,

JOHN McD. GOLDSBOROUGH,
Engineer.

Iron Ores and Iron Manufacture.

Under our mining head, the readers of the Journal will find the first number of a series of articles on the *Iron Ores and Iron Manufacture* of the United States, from the pen of J. T. Hodge, Esq., an accomplished geologist and mineralogist, of the city of New York, who is to be hereafter associated with us as an Assistant Editor of the Journal, for the department of mining and metallurgy.

Mr. Hodge has for many years been engaged in the preparation of a work on the Iron Ores and Iron Manufactures of the United States, embracing descriptions in detail of the different localities of ore, the expense of working different mines, the structure and location of the several blast furnaces and the results of their working. This work is to be pub-

lished in a condensed form in the Journal, in a series of weekly papers, conveniently arranged under appropriate heads, with statistical tables of different districts, and such plans and drawings as may be found desirable.

Besides this work on iron, Mr. Hodge is to furnish to the Journal detailed accounts of the *Copper and Lead mines of the United States*, which have been carefully examined by him, with information on mining subjects generally.

Those, therefore, who have been desiring the publication of the works of Mr. Hodge, will be gratified to find them in the pages of the Journal. Of their value to the scientific inquirer, and to the man of business it is unnecessary for us to speak. They will command attention from the interest now felt on these subjects, and from the fact they will be found indispensable to all parties engaged in the iron manufacture. This is the first attempt yet made to give in an elaborate and practical form, a scientific work on the iron ores, the iron manufacture, and mining resources of the whole country.

The richness and the abundance of our iron and coal mines, should lead us to discard at once, as far as possible the use of foreign iron. Every quality of iron wanted for manufacturing purposes in the United States, with perhaps one or two unimportant exceptions, can be produced at our own furnaces.

The present capital engaged in the production and manufacture of iron, is sufficient to supply the entire demand for consumption, if our labor could only be protected from the fluctuations of foreign markets. During the past year the iron manufacturing interest of the country has been compelled to struggle against the extraordinary competition which the prostration of business throughout Europe has thrown upon them, under our present *ad valorem* system of duties.

We look forward with confidence to the time when the entire consumption of iron in the United States shall be supplied from our own mines; and it shall become an important article of export. At the present time the balance of trade in iron is very largely against us. Notwithstanding the reverses which have fallen upon the iron manufacture the past year, the extent and value of this branch of industry at the present time, are not generally understood. Over *four hundred and fifty* blast furnaces are embraced in the tables prepared by Mr. Hodge; about one-half of which are within the state of Pennsylvania. Maryland, New York and Ohio, have as many as thirty or more each.

To preserve the arrangement of Mr Hodge's work, we shall furnish the accounts from the different states in the usual order of publication, commencing with Maine in the present number.

This arrangement with Mr. Hodge will not preclude us from giving other mining intelligence, for which the Editor is alone responsible. Whatever is written by Mr. Hodge will appear under his name in the Journal.

Railway Management.

It is an old maxim, that "Every man is to be trusted in his particular calling." We cannot always follow this maxim. In this country, where so much work is to be done, and comparatively so few to do it, the execution of many things must be entrusted to men who have not been trained to the duties they are called upon to perform, and who are selected, as a general rule, for the good sense they display in the management of their own affairs. In the construction of railroads, had we always waited till we could find for directors, men of experience in these matters, many of our best lines would have been

untouched till the present time. Directors of roads, as a general thing, are taken from the section thro' which the road runs. They are the representatives of those interested in its construction, and must qualify themselves for a discharge of their duties, by the experience that comes with their labors; and though in the outset they are liable to make many mistakes, which often materially increase the cost of the road, yet, with all these disadvantages, our enterprises in railroad construction have been vastly more successful than those of any other country; owing in part to the readiness with which our people fit themselves for any new undertaking to which they may be called, and to the very general interest felt in the construction of roads, and the sacrifices that all classes are willing to make to encourage them.

In the building of roads, the most important thing is the selection of a suitable engineer.—If the right kind of a man is obtained, he should be invested with much greater authority than is usually entrusted to him. A competent engineer knows much better how to construct a road than its directors. To the discharge of his duties he brings, not only his experience, but the aggregate of that of the profession to which he belongs.—He possesses the latest and most improved method to direct in any particular work.—He is not obliged to resort to a long series of experiments to determine his course, and to which his predecessors were compelled to resort, at immense costs and outlay, to gain the knowledge they have imparted to him; the want of which made so many early attempts at road making failures, and which, with the modern improvements, might have been constructed at one-half the original cost. This experience the engineer possesses; while the directors in new roads for the want of it occupy, the same position as the pioneers in railroad construction, and the acquiring of this experience, in the discharge of their duties, would, to a certain extent, involve them in similar expensive experiments and losses.

Again, in all expenditures, true economy consists in knowing when and where the expense should be incurred. A thoroughly constructed work may cost \$10,000. This is perfectly adapted to the purpose for which it was made. A similar article may cost \$9,000, and yet be almost entirely valueless. It may work well for a time, but it involves great expense in keeping it in order, and will certainly be abandoned, sooner or later, for the perfect machine. Thus, the greater part invested in it is lost. True economy, in all cases, consists in doing thoroughly in the onset, whatever is to be done. So with railroads; the construction of a poor road is so much money thrown away; though it may cost four-fifths as much to build it as a perfect one. It is a source of constant expense and vexation while in use, and is to be eventually abandoned for a better one. Now there is nothing in which an engineer is more interfered with or thwarted in the discharge of his duty than in the expenditure of the difference between the cost of a good road over a poor one. Directors have a laudable desire for economy. They want to make the best possible show with their money. They have not learned the difference between the *value* of a good and a poor road. They are very often actuated by a petty vanity of gaining a reputation, or making a great show with a little money. Where the duties of the directors are divided, as is the case usually on our roads; they wish to stand relatively well with each other, and with the stockholders. They lack courage to adopt that course which they are satisfied will be best in the long run for fear of immediate unpopularity. They cannot afford so long

a credit to their reputations, where it may take years to do them justice. They are perfectly free to expend up to a certain point that which will make a road barely possible; beyond this they feel that all expended is money thrown away, when it is the very expense that gives value to all that has gone before. Again, in constructions, mere utility in the ordinary use of the word is not the only thing to be consulted. The public demand the display of a certain degree of beauty and taste in railway buildings. Any unsightly work is sure in time to disappear before public disapprobation. Such a building may afford as good shelter to travellers and merchandise as the most ornamental one; yet the public demand something tasteful just as much as they do a smooth road; and all money laid out in one that does not meet this requirement is so much wasted. It will be soon torn down to give place to a better one. Yet on many of our roads that we are now building, directors still persist, where only perhaps a few hundred dollars are involved; in putting up unsightly buildings, in buying old barns and sheds and converting them into depots and station houses, which they will commence tearing down almost as soon as completed. It may be very foolish in the public to require beauty to be consulted in the construction of railway buildings; but as it does require this, and as directors always yield to this demand, it is of importance that they do this once for all in the outset, and not subject themselves to the penalty of double damage for not doing it at the right time.

India-rubber Springs for Railroad Cars.

Among those agents that men have but recently made use of in ministering to their wants, one of the most useful is India-rubber, ranking next in the scale of importance to steam and electricity. There is scarcely any article used in the arts possessed of so many valuable properties, and capable of so many different applications. Its most important properties of elasticity, ductility and imperviousness to water, are well known, and are causing it to be applied to the arts of life in a thousand different ways.

Among the most important of these applications, is that to the Springs of Railroad Cars and Locomotives. For this purpose it is fast superseding the old fashioned steel spring, having already been applied by the New England Car Company to 1400 cars in this country. As its peculiar fitness for this purpose is as yet but little understood, we propose to give some account of these springs, the manner of the preparation and the qualities they are made to possess to fit them for this use. A few days since we had the pleasure of visiting the India-rubber works at Harlem, where these springs are manufactured for the New England Car Company, and examined somewhat in detail the mode of preparing them.

To make these springs, the best quality of South American rubber is used, costing from 28 to 30 cts. per pound. After this is thoroughly washed and cleansed of all extraneous matter, it is mixed with certain mineral or earthy substances, and then fed to large iron rollers heated by steam to about 175°. It is passed between these rollers until the rubber and the mineral substances become thoroughly intermixed; the rubber becoming so softened by the heat as nearly to lose its tenacity; the whole very much resembling putty in its appearance. It is then transferred to other rollers, which are also highly heated, from which it comes in regular sheets or webs, of any given thickness or width. That designed for springs is rolled into very thin sheets, and

is wound on a spindle as it comes from the rollers, till it reaches the size required for the spring. As it is highly heated when it comes from the rollers, it instantly unites with the rubber on the spindle, making one solid mass as fast as wound off. When taken from the spindle, it is then tightly fitted into cast iron cylinders, which are closed by an iron cap, secured by a strong iron bolt running through the cylinder. The cylinders are then placed into a large iron oven, heated by steam up to about 300°, where they remain about nine hours. This process is what is termed curing the spring. Before subjected to this last process, it is very easily indented, and possesses but little elasticity. If it was subjected to this degree of heat without being confined, it would be enlarged to two or three times its former dimensions, and so enormous is the pressure caused, that it often parts the bolts that confine the cap, which are one and a half inch in diameter, or burst the cylinders which have a two inch shell. In the process of curing, all the moisture is expelled, and a chemical union of the ingredients used seem to take place. After the curing is complete, the springs come from the cylinders changed from a gray to a jet black color; their resistance to pressure vastly increased, and their elasticity perfect. Subject to any pressure they return to their original shape as soon as it is removed; so that in most cases, from the appearance of the spring, it is almost impossible to tell that it has been compressed out of its original shape. Neither does the long continuance of the pressure, make any difference. All the moisture being expelled in the curing, it is not affected in any degree by the cold, and if properly cured it is impervious to water. The manner of applying these springs can be seen by referring to the advertisement of the New England Car Co., in another part of our paper. The weight of a common passenger car settles a twelve inch upright spring about one and a half inch. It yields about one half an inch more when it receives its ordinary load. Unlike a steel spring, its resistance increases with the increase of pressure, and it never allows the car to strike the axle, as the steel spring does, when overladen. Assuming then that these springs preserve their elasticity, their superiority to all others must, we think, be apparent; and we have the testimony of conductors and engineers that the difference between the two can hardly be estimated, as it relieves the car from that unpleasant jar which is so wearing to the nervous system, and which in a few years frequently breaks down the strongest constitution. The preparation used in making them is "Goodyear Patent Metallic India-rubber." Mr. Goodyear's patent consists in the combination of rubber with the various mineral substances, and in combining these substances by subjecting the preparation to artificial heat. This preparation, the exclusive right to use for the springs of cars, patented by Mr. Goodyear, has been purchased by the New England Car Co., and its application to this use was invented by [F. M. Ray in 1844, and subsequently patented by him, under the assignment of which the above company are manufacturing them

The Railroad Journal.

The Railroad Journal has been published for three months and more, by its present proprietors. Having got fairly started on the track, we are anxious to know whether we can get up the steam. At the time of our purchase, it had a respectable subscription list, which we regarded as only giving us room on which to try our working power.

We are happy to say, that the accession to our

list of subscribers and advertisers has been at the rate of more than twenty per week, which has far exceeded our expectation, as we have made no effort to obtain either, beyond our exertions to make the Journal worthy of public confidence.

Our arrangements, to give the friends of the Journal, and of the Railway interest, a work of practical value, by engaging the best writers in the country, in the various departments of industry and of business, are now producing their appropriate results in a rapid increase of our circulation. Our friends who feel an interest in the success of the Journal can still do us many favors by a repetition of their good offices.

We hope, too, our subscribers will agree with us in the advantages of adopting the cash system.

ENGINEERS.

- Arrowsmith, A. T.,**
Buckfield Branch Railroad, Buckfield, Me.
- Berrien, John M.,**
Michigan Central Railroad, Marshall, Mich.
- Clement, Wm. H.,**
Little Miami Railroad, Cincinnati, Ohio.
- Fisk, Charles B.,**
Cumberland and Ohio Canal, Washington, D. C.
- Felton, S. M.,**
Fitchburgh Railroad, Boston, Mass.
- Ford, James K.,**
New York.
- Gzowski, Mr.,**
St. Lawrence & Atlantic Railroad, Montreal, Canada.
- Gilbert, Wm. B.,**
Rutland and Burlington Railroad, Rutland, Vt.
- Grant, James H.,**
Nashville and Chattanooga R. R., Nashville, Tenn.
- Holcomb, F. P.,**
Southwestern Railroad, Macon, Ga.
- Higgins, B.,**
Mansfield and Sandusky Railroad, Sandusky City, O.
- Johnson, Edwin F.,**
New York and Boston Railroad, Middletown Ct.
- Latrobe, B. H.,**
Baltimore and Ohio Railroad, Baltimore, Md.
- Morton, A. C.,**
Atlantic and St. Lawrence Railroad, Portland, Me.
- McRae, John,**
South Carolina Railroad, Charleston, S. C.
- Nott, Samuel,**
Lawrence and Manchester Railroad, Boston.
- Reynolds, L. O.,**
Central Railroad, Savannah, Ga.
- Roberts, Solomon W.,**
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.
- Robinson, James P.,**
Androscoggin & Kennebec Railroad, Waterville, Me.
- Schlatter, Charles L.,**
Northern Railroad (Ogdensburg), Malone, N. Y.
- Stark, George.,**
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.
- Trimble, Isaac K.,**
Philad., Wil. & Baltimore Railroad, Wilmington, Del.
- Tinkham, A. W.,**
United States Fort, Bucksport, Me.
- Thomson, J. Edgar.,**
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.**James Laurie, Civil Engineer,**

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848.

6m*

James Herron, Civil Engineer,OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.**Railroad Iron.**

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

DUDLEY B. FULLER, Agent,
139 Greenwich street.

New York, October 25, 1848.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,
22 South William street,
New York.

February 3, 1849.

English Railroad Iron.

3000 Tons T pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturer's name, and inspected before shipment at the works in Wales. For sale by

DAVIS, BROOKS & CO.,
68 Broad street.

March 18, 1849

2m.11

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President

Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2½ by ½ Flat Bars.

25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Gartsberrie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.

No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN,
41 Broad street.

March 29, 1849.

3m.13

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.**RAILROAD IRON & LOCOMOTIVE TIRES**

Imported to order, and constantly on hand, by

A. & G. RALSTON,
4 South Front St., Philadelphia.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

Wanted Immediately.

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, etc.
Sandusky City, Ohio, March 15, 1849. 2m.13

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

SCHENECTADY LOCOMOTIVE WORKS

SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

P. S. DEVLAN & CO's**Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,

5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,

J. D. BRONDBERG,

Secretary U. C. M. C.

Hamilton, 24th February, 1849. 12f

WILLIAM JESSOP & SONS'**CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted.

Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

W. M. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

**Direct Action Engines
FOR STEAMBOATS.**

THE PATENT DOUBLE CYLINDERS,

AND ALSO

THE ANNULAR RING PISTON ENGINES,
of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,

THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS, } SPRINGFIELD, MASS.
1748

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849.

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

**LAP — WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|-------------------------|------------------------------|
| Charles Cook, | } Canal Commissioners |
| Nelson J. Beach, | |
| Jacob Hinds, | } of the |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } State of New York. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer of the Bridge for |
| | |
| | } the Albany Basin. |
| | |
| | } Railroad Bridge Builders, |
| | |
| | } Springfield, Mass. |
| | |
| | } Engineer & Bridge Builder, |
| | |
| | } Utica, N. Y. |
| | |

January 1, 1849.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

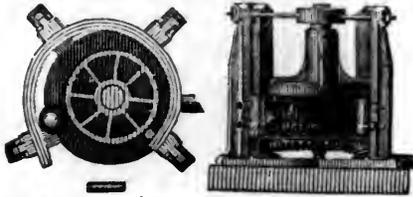
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous; considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Cheirs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent.

Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

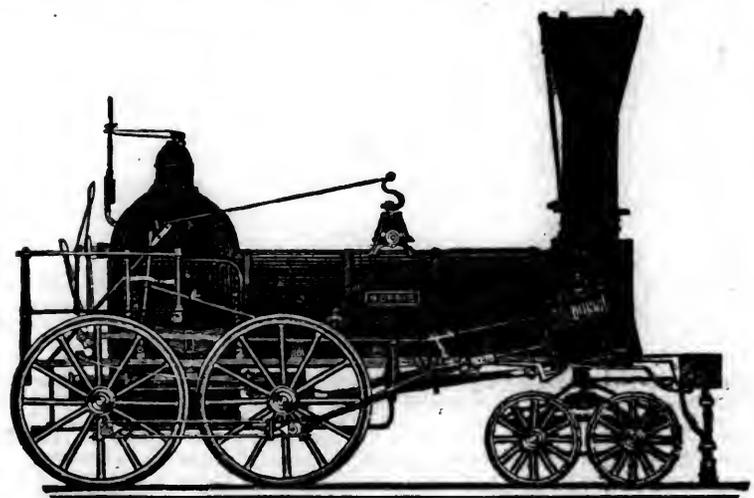
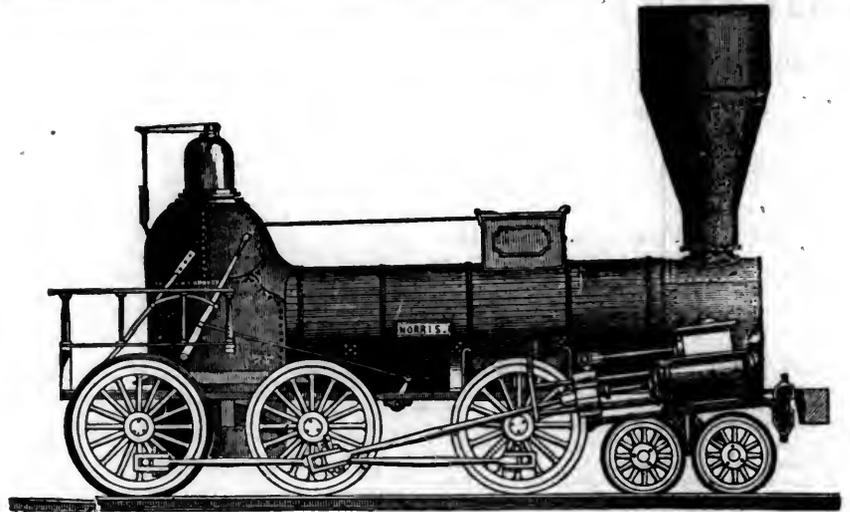
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



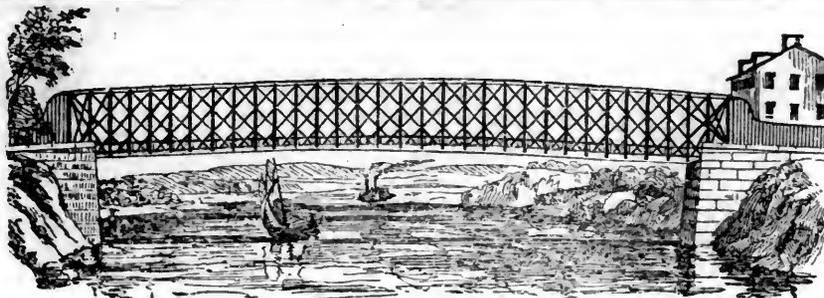
THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad and Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

- | | |
|--------------------------|-----------------------------|
| Eastern Railroad. | Boston & Maine Railroad. |
| Providence Railroad. | Providence and Wor. Road. |
| Western Railroad. | Concord Railroad. |
| Old Colony Railroad. | Fitchburg Railroad. |
| Schenectady Railroad. | Syracuse and Utica Road. |
| Balt. and Ohio Railroad. | Baltimore and Susq. Road. |
| Phila. & Reading Road. | Schuylkill Valley Road. |
| Central (Ga.) Railroad. | Macon and Western Road. |
| | New York and Erie Railroad. |

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.

St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 51 Water St., N. York.
} A. E. NORRIS, 196 Market St., Philadelphia.
April 22, 1849. ly*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of *Twenty years* has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

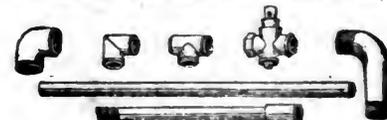
ELLIOTT & ABBOTT,
Factory, 9th st., near Coates, cor. of Melon st.
Office, No. 3, North 5th street,
Philadelphia, Pa.,
ly25

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit. Fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.

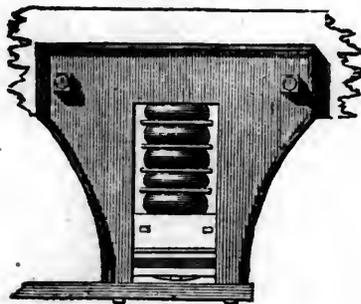


Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt, & Co., New York; E. Pratt & Brother, Baltimore, Md.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article; omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

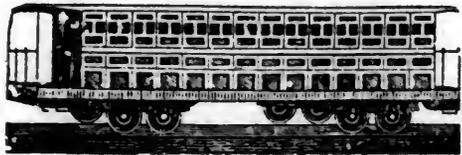
"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

CAR MANUFACTORY, CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848. 44tf

Norwich Car Factory, NORWICH, CONNECTICUT.

At the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
Orders executed with promptness and despatch.

Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,

Will meet with immediate attention. 1y6

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, APRIL 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8½ a.m., and 4 pm.

Dedham Trains—Leave Boston at 8½ am, 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, am., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5½ pm. Leave Stoughton at 11½ am., and 3½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the **DEDHAM TRAIN** will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.

Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm. Leave Worcester at 7½ and 10½ am., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. S. H. P. LEE, Jn., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT.

On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)
For Lynn, 7, 9 1½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9 1½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m., 3½, p.m.
Gloucester, 9, a.m., 3½, p.m.
Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
Portsmouth, 7, a.m., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,
From Portland, 7½, am., 3, pm.
Portsmouth, 7, 9½, am., 5½, pm.
Newburyport, 7½, 10½, am., 2, 6, pm.
Gloucester, 7½, am., 3½, pm.
Manchester, 8, am., 3½, pm.
Salem, 7½, 8½, 9, 10½, 11-40, am., 2½, 3, 4½, 7, pm.
Lynn, 7½, 8½, 9½, 10½, 11-55, am., 2½, 3½, 4½, 7½, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.

Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 8½, 10, 11-25, am.
2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, am., 4½, pm.
Salem for Gloucester at 9½, am., 4½, pm.
Trains leave
Gloucester for Salem at 7½, am., 3½, pm.
Manchester for Salem at 8, am., 3½, pm.
Freight Trains each way daily. Office Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM to LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover.
On and after Monday, Oct. 2, 1848,

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.
Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.

Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.

Salem for Lawrence, 9, am., 3.15, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.

South Danvers for Salem at 7.45, 8.45, 11.30, am., 2, 4.55, pm.

North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.

Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30, am., 5, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.

Outward Trains from Boston
For Portland at 6½ am. and 2½ pm.
For Rochester at 6½ am., 2½ pm.
For Great Falls at 6½ am., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
For Lawrence at 6½, 9, am., 12 m., 2½, 4½, 6, 7½ pm.
For Reading at 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½ pm.

Inward trains for Boston
From Portland at 7½ am., 3 pm.
From Rochester at 9 am., 4½ pm.
From Great Falls at 6½, 9½ am., 4½ pm.
From Haverhill at 7, 8½ 11 am., 3, 6½ pm.
From Lawrence at 6, 7½, 8½, 11½, am., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9, am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½ pm.
Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD.

WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.

WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8.50, 10 am., 12 m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.
Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8.10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40, and Morrisiana and Harlem at 8 o'clock am.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8 1/2 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leave Baltimore at	9 am. and 3 1/2 pm.
Arrive at	9 am. and 6 1/2 pm.
Leave York at	5 am. and 3 pm.
Arrive at	12 1/2 pm. & 8 pm.
Leave York for Columbia at	1 1/2 pm. & 8 am.
Leave Columbia for York at	8 am. & 2 pm.

Fare to York	\$1 50
" Wrightsville	2 00
" Columbia	2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg Or via Lancaster by railroad Through tickets to Harrisburg or Gettysburg In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5 1/2 pm. Returning, leaves Owing's Mills at 7 am. D. C. H. BORDLEY, Supt. Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton. 271 miles.	Between Charleston and Dalton. 408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hogshead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.

On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.

Returning, leave Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2, pm., Train from Cincinnati, and 2 1/2, am. Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.

April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm. Leave Baltimore 9 am, and 8 pm. Sunday—Leave Philadelphia at 10 pm. " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20. Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12. " " Wheeling, 13.

Through tickets sold at Philadelphia office only. Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm. Leave Wilmington at 7 1/2 am., 4 1/2 and 7 pm.

Newcastle Line.

Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm. Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for. I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	58	2.25	and 1.90
" " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8ft.

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight

Rate of Passage	\$3 00.	Freight—
On weight goods generally,	50 cts. per hundred	
On measurement goods	13 cts. per cubic ft.	
On bris. wet (except molasses and oil)	1 50 per barrel.	
On bris. dry (except lime)	80 cts. per barrel.	
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts. per hundred	
On hhd. and pipes of liquor, not over 120 gallons	\$5 00 per hhd.	
On molasses and oil	\$6 00 per hhd.	

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, Gen'l Supt Transportation.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroad—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

Troy Iron and Nail Factory, Troy, N. Y.

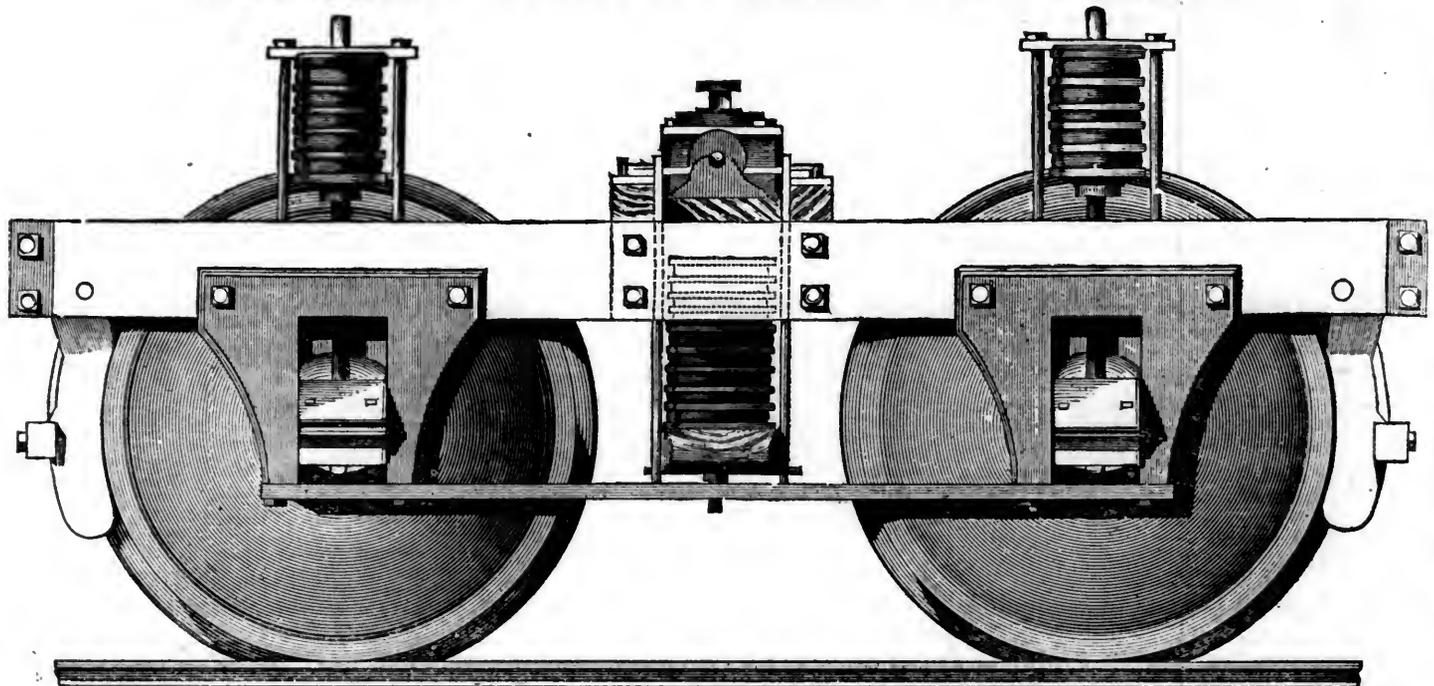
TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.— They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with **WM. RIDER & BROTHERS,** No. 58 Liberty-street, New York, or with **F. M. RAY, Agent,** 100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.— During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.

WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.

D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.



ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,
Surviving partner of **STANCLIFFE & DRAPER.**
No 23 Pear street, below Walnut, y10 near Third, Philadelphia.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

TERMS.— Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column "	50 00
One square "	15 00
One page per month.....	20 00
One column "	8 00
One square "	2 50
One page, single insertion.....	8 00
One column "	3 00
One square " "	1 00
Professional notices per annum.	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor, **HENRY V. POOR, 54 WALL ST.**

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 19.]

SATURDAY, MAY 12, 1849.

[WHOLE No. 610, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, May 12, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL,
superior quality for Locomotives, for sale by
H. B. TEBBETTS,
No. 5½ Pine St., New York.
May 12, 1849. Im19

RAILROAD SCALES, ETC.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad and Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad.	Boston & Maine Railroad.
Providence Railroad.	Providence and Wor. Road.
Western Railroad.	Concord Railroad.
Old Colony Railroad.	Fitchburg Railroad.
Schenectady Railroad.	Syracuse and Utica Road.
Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.
	New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.
St. Johnsbury, Vt.

Agents, } FAIRBANKS & Co., 81 Water st., N. York.
} A. B. NORRIS, 196 Market st., Philadelphia.
April 22, 1849. ly*17

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make Platform Scales in the United States;—supposing that an experience of *Twenty years* has given him a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. ELLICOTT has made the largest Railroad Scale in the world, its extreme length was One Hundred and Twenty Feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT,
Factory, 9th st., near Coates, cor. of Melon st.
Office, No. 3, North 5th street,
Philadelphia, Pa.,
ly25

Norwich Car Factory,

NORWICH, CONNECTICUT,

AT the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of

RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF

ENGINE TENDERS AND SNOW PLOUGHS.

TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

General Agent,
Norwich, Conn.,

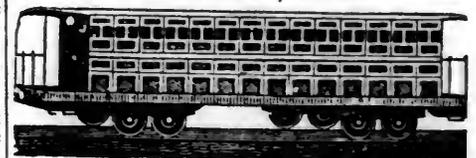
Will meet with immediate attention. ly6

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co., Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

CAR MANUFACTORY,
CINCINNATI, OHIO.



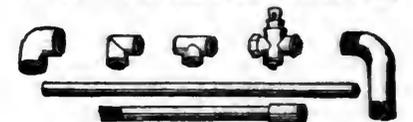
KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848. 44tf

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

CENTRAL RAILROAD COMPANY OF N. JERSEY.—At a meeting of the Stockholders, held at Elizabethport, on the first day of May, inst., the following persons were elected directors of the company for the ensuing year:

John T. Johnston,	Benjamin Williamson,
Stephen Vail,	William S. Wetmore,
Elisba Peck,	William E. Dodge,
John C. Green,	John O. Sterns,
	Cornelius Vanderbilt.

At a subsequent meeting of the Board, John T. Johnston, Esq., was unanimously re-elected President of the company.

This road is now in operation as far as Whitehouse.

Iron Ores and the Iron Manufacture of the United States.

VERMONT.

The iron mines of Vermont, from the advantage of their position near the navigable waters of New York, and also in consequence of the easy reduction of their ores, the hematites, have been much more extensively wrought than those of New Hampshire.

The principal metalliferous range, is a continuation of that of Connecticut and Massachusetts, coming into the state near its south-western corner, and passing northward to the shores of Lake Champlain, along which it continues to Canada. In width the formation appears to stretch across to the principal ridge of the Green Mountains. In some instances, indeed, it re-appears on the eastern side, with the same ores that characterise it on the west. I shall give a more particular account of the rock formations, as they appear in their continuation into Massachusetts and Connecticut, where I am more familiar with them, simply remarking now, that, so far as I can ascertain, there is little difference throughout the whole range, either in the general character of the ores or of the modes of their occurrence. I shall draw from the pages of Professor Adams' Report on the Geology of Vermont, for a considerable part of my information in this State.

The ore, he says, "is found abundantly along the western base of the Green Mountains, usually near the eastern margin of the limestone district, beneath the gravel or hard-pan, associated with yellow and red clayey ochres and porcelain clay, and overlaying a brown-yellow ferruginous limestone."

This position of the ore, in close connection with limestone, (usually found underlying the ore) and with no rock cover, is its most striking peculiarity in almost all places in Massachusetts, Connecticut and New York.

It is an interesting fact in relation to the limestones of Vermont, that those near the iron ores are the only magnesian varieties, so far as they have been examined in the course of the geological survey of the state. As will be seen in the remarks upon the iron ores of Massachusetts, it is the magnesian limestone, that is best suited to work with the hematites as a flux, and the occurrence of exactly this variety, only in connection with them, is one of those remarkable instances of the provident arrangement of the materials of the earth for the use of man, which science, as it progresses, is continually developing.

Prof. Adams notices the fact of their so occurring, without being aware of its full significance. He says, "of the specimens from North Dorset and Bristol, and some from the limestone, which contains the specular iron, in the north-west corner of Milton, and which Prof. Emmons regards as the calciferous sand rock of the Champlain rocks, it is remarkable that they are the only limestones which may be called magnesian among all that were analysed. They are all without distinct crystalline structure, and are very compact, with a brownish tinge and argillaceous odor, and are perhaps the last ones in the series of limestones, which would have been suspected of being magnesian. In each case the specimens were taken from immediate proximity to the iron ores." He then gives the analyses of Mr. Olmstead, as follows:

	N. Dorset.	Bristol.	Milton.
Carbonate of Lime.....	85.18	51.35	84.45
" Magnesia.....	13.11	44.76	12.14
Alumina and Iron.....	1.79	2.00	1.01
Insoluble matter, mostly silica.....	1.49	1.40	1.50
Water and loss.....		.49	.90
	101.57	100.00	100.00

The following table comprises the number of furnaces in the state, which, if not all actually in blast, will probably go into operation again in more prosperous periods of the trade. There are a few other stacks, which may be considered as abandoned. Several of these in the table are soon to go out of blast in consequence of want of demand for their products.

No.	Locality.	Proprietors or Lessors.	Capacity. T. per ann.
3	Bennington,	Hinsdale & Brock,	3,000
1	North Dorset,		1,000
1	Pittsford,	Granger,	1,000
1	Brandon,	J. C. Conant,	1,000
1	Forestville, (Brandon,)	Blake and others,	1,200
1	Troy,		500 ?
1	St. Johnsbury,		closed.
1	Plymouth,	Isaac Tyson.	closed.

The three *Bennington Furnaces* are in the south-west corner of the state. They are situated together on good water power, and are leased by Messrs Hinsdale & Brock. The works have been long established, and in former times have been prosperously conducted. It was here that the first hot blast was introduced in this country in the year 1833, as I am informed by Mr. Brock; and here too, the kilns or ovens, for charring wood, were first contrived and patented by Isaac Doolittle, now of Rochester, New York, December 14, 1829;—afterwards introduced at the Baltimore furnaces by one of the Ellicott family, they have thence been adopted at a great number of localities throughout the country. A plan of these will be given in the description of the Stockbridge furnaces of Massachusetts, where they are of rather superior construction to any others I have seen.

The ores for these furnaces are supplied from three different beds;—one seven miles distant, one five miles, and that which furnishes the largest proportion only a quarter of a mile. These are hematites, and the extent of the beds appears to be unlimited. But in consequence of a considerable percentage of manganese, particularly in the ores most convenient to the furnaces, some difficulty has been experienced in their reduction, and the quality of the iron is not like that made from the best hematite ores with charcoal. It is found to be suitable only for foundry purposes, and is not in demand at the puddling works. This excess of manganese, which is not an uncommon difficulty with the ores of this region, can only be corrected by a mixture of other ores in which it is deficient.

The iron from these furnaces is hauled in wagons to Troy, New York, a distance of thirty-two miles, at a cost of \$3 50 per ton, and there it is sold to the founders. It might be taken to the railroad at North Adams, in Massachusetts, a distance of twenty miles, but without any saving in the whole cost of transportation to the Hudson River.

At present only one of the furnaces is in operation, and this will soon stop for better times. The supplies of charcoal having become somewhat difficult to obtain, only two of the three furnaces have been in blast together for some time; and it is not likely that more than these will soon run at the same time. The cost of charcoal, delivered, is estimated at seven cents a bushel. The usual consumption to hot blast furnaces like these is 150 bushels to the ton. The hematite ores cost about a dollar a ton to mine, besides the expense of hauling to the furnace, and two and a half tons is a fair allowance to the ton of iron. Besides these items, \$2 50 is the

estimate for labor; and about \$3 for other items of repairs, superintendence and interest.

Two of the furnaces are 40 feet high, one 9, and the other 9½ feet across the boshes. They are blown with hot blast;—the blowing apparatus consisting of eight tub-bellows, 4 feet diameter and 22 inches stroke; working alternately, no regulator is required. They are driven by a water wheel 22 feet diameter, and 12 feet length of buckets. The furnace in blast now makes about 6 tons of iron a day. In the table I have allowed for two furnaces making 1,500 tons per annum each.

Beside the hematite ores, there is a vein of magnetic iron ore within 2½ miles of the furnace, which has never been proved. It is thought to be a small vein from one to two feet thick.

In Bennington are manufactured fire brick, which are said to be sufficiently refractory for use, instead of hearth-stones, for the furnaces. They are prepared from a clay found frequently among the mica and talcose slates of the Taconic range, which is ground and mined with quartz and fragments of burnt brick.

The ochre associated with the hematite ores is mined to some extent at Bennington:—about five hundred tons per annum being put up in casks and sold for about twenty dollars per ton. It is first thoroughly washed to free it from the sand associated with it, which settles to the bottom, is then washed again, and the water being drawn off, the ochre is left clean, ready for drying, and subsequent crushing in a stone mill.

The furnace in *North Dorset* is supplied with ore from east Dorset, (three miles from the furnace) and Wallingsford. The east Dorset ore is associated with ochres and with clay and is much comminuted. About three tons of ore are required for a ton of iron. The Wallingsford ore bed, lying in a steep hill, is opened by an adit running in an easterly direction. The adit passes through a bed of arenaceous ferruginous limestone, which dips 60° east, and then for fifteen rods passes through red and yellow clayey ochres and white clay, when it reaches the fragmentary bed of manganese and iron ore. The clays and ochres are more or less distinctly stratified conformably to the limestone which they overlie.—Much of the ore of this mine, called "black ore," contains a large proportion of manganese. Iron made from it is very white, brittle, and extremely hard, scratching common window glass. The iron made from the purer ore is very tough.

Mr. Olmstead, who made the analyses for the survey, gives the following as the composition of this "black ore:"

"Black ore."	
Per-oxide of Iron.....	71.30
" " Manganese.....	12.93
Alumina.....	trace
Silica.....	3.00
Water.....	12.50
	99.73

Metallic Iron..... 49.34

An ochreous vein in Dorset included in the limestone, is thus described by Professor Adams: "The direction of the strata is north and south, and the dip about 12° east. There are two systems of joints, which, with the planes of stratification, divide it into rhomboidal blocks. The vein has a direction of N. 30° E., is nearly perpendicular and is about three feet wide, running through a hill, which is parallel with and near the western ridge of the Green Mountains. The vein has been opened by Mr. Curtis at the northern extremity of this hill, a few rods east of his furnace on Otter Creek. It has

been penetrated horizontally 150 feet, to a depth under the hill of 100 feet. Notwithstanding the extent to which it has been penetrated, it was found to be, with the exception of a thin streak of solid ore in the middle, in a state of perfect disintegration, consisting of clayey ochre, yellow above and reddish beneath. Mr. Curtis has seen the same vein nearly half a mile south of this opening.

On many accounts this is a remarkable case. It is the only example of a true vein of ore, which we have seen in this formation."

The furnace in *Pittsford* stands on a bed of ore, but was not discovered till after the furnace was built. It is supplied from Mitchell's ore bed in Chittenden, three miles to the north-east. The ore at the furnace has no other cover than the drift formation; it is in ochre and clay, which rest on limestone. Mr. Granger, the proprietor, considers the proximity of limestone indispensable to success in finding ore.

Mitchell's ore bed is covered by sixty feet of drift. It rests against ferruginous limestone, which dips 35° east, and contains a large irregular vein of quartz. Galleries have been driven north and south from the shaft at the depth of fifty-four and sixty-two feet from the surface. They are in clayey ochres, white clay, and fragments of iron ore and manganese. At one point "a solid bed of ore" has been struck, which proves to be twelve feet in thickness. It rests against the limestone, separated only by a layer of yellow ochre an inch or two thick. Over the bed of ore are the usual clayey ochres. The bed is conformable to the limestone strata, but it was struck at its northern termination, in which direction it gives place to the common irregular collection of clays and ores. To the south, and on its line of dip, Professor Adams thinks it will continue an inexhaustible solid bed of ore. This may be the case, or it may prove a larger bunch of a purer variety of ore than the average of the mine, analogous instances not being extraordinary elsewhere. The hematite beds of Massachusetts and Connecticut contain enormous masses of solid ore, in which galleries are driven by blasting as in solid rock. The ore in this mass appears to be of very excellent quality, much better than the rest taken from the mine, which is described to be mixed with manganese.

The analysis of Mr. Olmstead gives—

Per oxide of Iron.....	84.90
Alumina.....	47
Silica.....	75
Water.....	13.88
	100.00
Metallic Iron.....	58.66
To be continued.	

The Tuscany Furnaces.

The rich specular iron ores of the Island of Elba on the coast of Italy are taken to the main land, opposite, (Tuscany), and there smelted. The few small furnaces employed have produced results of an extraordinary nature—being only about 27 feet high and 7 feet bosh. One of them has run continuously over 16 tons of pig iron per day. As the same principles adopted there may be introduced to advantage at many localities in this country,* and

* The importance of this subject can hardly be overrated, when it is remembered there are furnaces in this country of larger size than the Tuscany furnaces, and provided with excellent ores for making a large yield, which produce only from 1½ to 2½ tons of iron a day, as those in South Carolina and Georgia.

While connected with the Stockbridge furnace in

probably with equal results, the subject seems so important, that I propose in a few numbers of the Journal to give the substance of the information concerning them, that I have at hand. This is contained in the valuable French Journal, the *Annales des Mines*, vol. xvi., for the year 1839. The article on this subject is by M. N. Garella, mining engineer.

The Tuscany Iron Works depend wholly on the ores of Rio (Island of Elba). These works are blast furnaces and forges, for converting the pig-into forge iron. The furnaces, in number four, on account of convenience to the mines, are placed as near the shore as proper sites can be found for water power, supplies of wood, etc. The first of these, south of the city of Livourna, is the furnace of *Cecina*, situated on the stream of the same name, about 2½ miles above its mouth. The next is the furnace of *Follonica*, at the head of a bay opposite the Island of Elba. The third, that of *Valpiana*, is situated about nine miles from Follonica, on the road to Massa. And the fourth, *Pescia*, is on the frontier of the Roman States, between Orbetello and Montalto, nearly four miles from the sea; but a navigable canal extends a part of this distance. The only furnaces visited and described by the author are the three first named, all of which belong to the Grand Duke of Tuscany.

Here follows a particular description of the mine and mode of working it at Rio; which I shall make only a few extracts from. The ore is found in an immense mass of different oxides of iron; but principally the specular ore. This mass sometimes exceeding 400 feet in width, and extending to an unknown depth, passes in a north and south course from the shore of the island opposite Italy, and buries itself in the flanks of the mountain called Mount Giove. The workings are from three quarters of a mile to a mile from the sea. The ore is contained in talcose slate rocks and quartzose sandstones, which are sometimes very hard. These are the prevailing rocks on this part of the island. The talcose slate runs into the ore, dividing it into many beds or veins; but soon giving out, it is seen this division is only apparent; the metalliferous parts all belong to the same mass.

The road up to this mine from the shore is almost wholly made of fragments of ore, and would pay well to be worked itself, if the mine were not as rich as it is.

The excavation of this great mass is carried on open to the day; it is worked by stopes from 3 to 5 yards in height, and of width varying with that of the body of the ore. It is broken down by picks, wedges, hammers and blasting. The collection of materials is far from being homogenous in its whole length. Besides the compact and micaceous specular ore, brown and red oxides of iron are met with, and ochreous clays, but in small quantity. The compact specular and brown ores are the hardest to mine.

There are six classes of workmen, including the captains or overseers. The other five are, 1st, for drilling and blasting; 2d, pickers; 3d, hammers. Massachusetts, I was in the habit of reading these articles to Mr. Alger, till he had become familiar with them; when he adopted the improvements they suggested, and more than doubled the yield of his furnace. One of them was actually making at the rate of 94 tons a week, when the lining gave out. The stack was 37 feet high and 9½ feet bosh.

I recommended the form in a Report to Samuel Ward, Esq., for the Iron Mountain furnaces in Missouri. A similar form was adopted, stack 26 feet high and 7 feet bosh: and the yield has been for weeks over 70 tons a week to the furnace.

men; 4th, for uncovering the surface; 5th, for running off the cars of refuse matter.

Of the captains or overseers there were employed in May, 1838, six, and of the other hands, 8, 8, 19, 45, 101—making in all 187. The owners send the ore down to the water on the backs of asses conducted by children, each child taking two of them. Three hundred pounds make a load.

Of the varieties of the ores named above, the compact specular iron is the richest and the most favorable for reduction in blast furnaces. The micaceous varieties, particularly those which crumble easily to powder, are preferred for direct treatment in the small forges (bloomeries?). There are, besides, two other varieties—one consisting of fragments of ore washed down into the sea, and afterwards collected along the shore; and another of the dust of the micaceous ore, which forms the beach of Rio. These are sold exclusively by themselves, principally for the small forges of the Neapolitan States.

The other varieties, from the mine, are mixed, so as to produce a nearly uniform quality of from 60 to 65 per cent.; and are then ranged along the beach in heaps for sale without selection, at the price of 225 lires the cento (\$3 10 per ton) for home consumption, and 350 lires the cento (\$4 82 per ton) to foreigners.

The furnaces and forges using the ores are in Tuscany; Piemont; the environs of Genes; in the Roman States; the Kingdom of Naples; and lastly, Corsica.

The quantity sold from 1830 to 1838 was as follows:

1831.	1832.	1833.	1834.	1835.	1836.	1836-7.
T. 11,555	15,953	14,714	19,919	17,653	18,060	26,328

Since 1833, more than half of this has been consumed by the three Tuscany furnaces, the subject of this article.

The fuel used by these furnaces is charcoal of not very uniform quality, being made of green and white oak, and of shrubs, such as the myrtle and "Varbousier." Chestnut is also employed: but this is generally reserved for refinery fires, being preferred for this use to the oak-coal; as this is to the other for the blast furnace.

The charring is effected in small heaps of 2½ to 3 cords in each. The coal weighs about 15½ lbs to the cubic foot, and is worth, (calculating from the Italian measures,) \$7 for 2200 lbs., which is about the weights, as we estimate coal, of a hundred bushels. At the rate of 15½ lbs. to the cubic foot, the bushel would have to contain 2454 cubic inches for 100 of them to weigh 2200 lbs. The standard bushel of New York is 2211.84 inches; this, heaped, would more than equal 2454 cubic inches. So that charcoal costs about the same as at many of our furnaces in Massachusetts, New York, Connecticut and New Jersey.

The flux, where it can be had, as at Follonica and Valpiana, is a light, calcareous tufa, a porous, open limestone. At the other establishments, where there is only hard limestone to be had, this is first burned to lime. Being used with the ore only in the proportion of 6 per cent., this preparation is deemed necessary to ensure a thorough mixing with the charge.

The ores are roasted for six or seven days in ovens. Care is taken, that they are not melted on the surface, as too much iron then runs into the cinder. They are then broken and screened; and the dust, which passes through the sieve, is washed in a current of water. This separates the fine portions, which would, if put in the furnace, be carried out by the blast. This washed ore is carried wet to the

tunnel head; and is used in the proportion of a third or a fourth.

The next number will commence with a description of the furnaces themselves. H.

Virginia.

The citizens and Common Council of Lynchburg have subscribed \$500,000 to the Stock of the Lynchburg and Tennessee railroad.

The Louisa railroad is now opened to Charlottesville. Passengers from Richmond in the morning will now reach Charlottesville to dinner.

Culture and Manufacture of Cotton.

The work of GEN. JAMES, to which we referred in our last paper, and from which we made liberal extracts showing the profits made by English manufacturers upon cotton fabrics consumed in this country, discusses fully the question as to the profitability of this branch of industry in the New England States. We quote as follows:

"Let us now take another view of this subject and call the attention of the cotton planter to the principal manufacturing states in our Union; and where, we venture to predict, he will find the balance against them, as great in proportion, as in Great Britain; although labor is considerably dearer in this country than in that. Could or would the cotton planters of this country, employ all the capital and labor, now appropriated to the culture of cotton, to a business as lucrative as the cotton manufactures of Great Britain, they would, in the ratio of the present market value of that article now shipped to the British market, realize at least \$120,000,000 per annum, instead of \$30,000,000 now returned to them. This difference appears enormous, but such is the fact.

The entire cotton crop of 1840, as per official statements and returns, was 790,479,275 pounds.—Assuming 25 per cent. for the increase since that period, which is probably, a near approximation to the truth, the crop of 1848 was 988,099,093 pounds. Assuming also, six cents per pound as the return to the planter, the entire amount realized for the crop was \$59,285,945 58. Though persuaded that this estimate is a high one, we will yet increase it, and put it down, in round numbers, at \$60,000,000, for the sake of convenience. Taking our former estimates as a basis, to produce this quantity of cotton would require 3,991,036 acres of land, the value of which, at \$25 per acre, would be \$99,775,900.—There would also be required, the labor of 395,200 hands. The value of this number of able bodied slaves, say as before, \$500 each, would be 197,600,000, and which, with the cost of the cotton gins, mules, &c., &c., will amount to at least \$300,000,000. Let us now inquire what is done by the appropriation of capital, labor, and skill, together with the material, in the cotton mills of our principal manufacturing states.

In five of the New England States, there are employed, about 57,000 operatives, manufacturing cotton fabrics. The capital employed in the business, is estimated at \$42,982,120, and the gross product, at \$40,918,143. Deduct thirty-three-and-a-half per cent. from the latter sum, and the cost of all the materials, labor excepted, say \$13,639,381, and you have as the net product of labor, \$27,278,762. This sum is a trifle less than the entire amount received for all the cotton they ship to Great Britain. Yet this is realized on the employment of a capital of something less than \$43,000,000; while the planter employs, as has been seen, to produce that cotton, capital in land, slaves, and fixtures, to the amount of \$150,000,000. The difference in the interest on these two sums, per annum, at 6 per cent, is no less than \$6,420,000, a very desirable item in favor of the eastern manufacturer. Again, to produce that result, we have also seen that the planter must employ at least, about 180,000 hands, able bodied persons; whereas, the eastern manufacturer employs only 57,000, being less than one-third part of the number, and who create, by their labor, more wealth than the former. In proportion to the capital and labor employed, the planter should realize more than thrice the amount of the manufacturer, but does not, in fact, realize quite as much. Yet, no less than two-thirds of the whole number of operatives in cotton mills are women and children. These are plain and un-

embellished facts, based on, and borne out by, the most authentic data that can be obtained; and which we shall, hereafter, attempt to illustrate more fully, and verify more substantially, by the exhibition of practical details and known results, too simple to be misconstrued, and too well authenticated to admit of doubt. In fact, the superiority in the increase of the wealth and population of the manufacturing states, compared with that of the cotton growing states, affords almost incontestible proof of the fact, that manufactories create wealth with much greater rapidity than the cotton culture—if not, then whence arises the difference? for there is certainly a great difference. Labor and skill are more judiciously distributed in the manufacturing states than at the south, and more economically applied. With the planter, the object is, to work a certain number of hands: to make all the cotton with them that he can, and to sell it for what others may be disposed to give. The market is glutted—cotton must be sacrificed at a low price. Instead of diverting a portion of his means to some other and more profitable object, he exerts himself to produce more cotton this year, that by increase of quantity, he may make up the loss in price, instead of which, he enhances the supply, reduces the price still lower, and still continues at the mercy of foreign brokers. As a general thing, this is not the way with the people of the manufacturing states. Their object is, to pursue any certain branch of business no further than it is found profitable. When it ceases to be so, they relinquish it, and try their hand at some other. For this reason, labor is properly distributed, and economically applied. In other words, people are careful that labor shall be employed on objects most productive, and in such a way as to ensure the greatest result in the shortest time. So of skill, materials and capital.

Would the northern climate admit of the culture of cotton, and had a Yankee, in either of the New England States, a cotton plantation, with all the requisites for the prosecution of the business, the moment he found he could make more money by the manufacture of that article than by its production, it would be farewell to cotton growing; and the next thing you would hear on his premises, in the way of business, would be the clatter of the loom and the hum of the spindle. Yankee folks are said to be full of notions; and such notions constitute the great secret of their prosperity. If southern planters would act on a similar principle, they would much benefit themselves. A gentleman well versed in the statistics of cotton growing in the finest cotton regions of the southwest, has calculated that, to supply cotton for a mill of 10,000 spindles, say 1,800,000 pounds per annum, would require the product of ten of the best plantations in the country; which, with their slaves and fixtures, would be worth \$738,000. The product, as above, would amount to \$108,000; from which, deduct the cost of operating, such as overseers, materials, carriages &c., which he estimates at \$28,000, and you leave to the planters \$80,000. The mill to manufacture this cotton will cost, with all its machinery complete, \$210,000, and require a working capital of \$40,000—or say the entire capital, including mill and machinery, would at the outside, be \$250,000.

To manufacture the above amount of cotton into sheetings of one yard in width, the fineness of No. 14, will cost, including the cost of the cotton, steam power, transportation, insurance, labor and in fact, every item of expense, a little short of \$232,000,000 which add \$15,000, the interest of the capital, at six per cent. per annum, and you have the entire cost of manufacturing the above 1,800,000 pounds of cotton. This cotton will make 4,500,000 yards of cloth; which, at 7 1-2 cents per yard, a low price, by the way, will be worth \$337,500, leaving a balance, after having paid every expense, of about \$106,000. Thus, you see, by the labor of 275 operatives, mostly women, girls, and boys, there will be created, actual wealth to the amount of \$106,000, from 1,800,000 pounds of cotton, besides the amount paid to them for labor. To produce that same cotton, worth in market \$108,000, required the labor of no less than 600 able bodied hands, besides one-half that number of horses and mules. The capital employed to produce this result, is \$738,000. The manufacturer's capital is but \$250,000. If, therefore, the planter could by any means, remove these plantations into one of the New England States, with all their slaves, fixtures, &c., and they should

continue to produce cotton as abundantly as on the Mississippi or Tombigbee, though now nominally worth towards a million of dollars, the owner of the cotton mill which cost but \$250,000, would not exchange it for them, and would evidently be a loser by the bargain if he should. This will at once appear obvious, when we state that, over and above the cost of working the plantations, already named there would be expended, for overseers, &c. \$20,000 more; and reducing the net income to \$88,000—less by \$18,000, than the net product of the cotton mill. Under these circumstances, the mill owner would much rather keep his mill, and employ his hired operatives, than to take in exchange the plantations with their slaves, &c. The reason—he can make the most money by his mill. But this comparison applies not only to a cotton mill in Massachusetts, New Hampshire, Rhode Island or Connecticut, but even to the best cotton growing state, at the side of the best cotton plantation in that state. This statement requires no labored argument to conform it. Every species of property designed for the creation of wealth, is valued in the ratio of its productiveness, without respect to its actual cost. One plantation may have cost fifty thousand dollars, and require an outlay of twenty thousand dollars per annum to work it. Another may have cost twenty thousand dollars and be worked at an expense of only five thousand dollars. Without respect to this difference of cost and expenditure, every one knows that, if the cheaper establishment yield a greater product than the other, it is, of course of most value to its possessor. Thus, if a planter owns cotton lands which cost, with all his slaves and fixtures \$700,000, or more, and yield a net profit of \$80,000 per annum, the cotton mill at his side, the capital of which is but \$250,000 including the cost of the establishment itself, which yields a net profit of \$100,000, is, intrinsically worth more to its possessor than the planter's cotton lands and slaves. Every planter knows this common place statement to be true.

He then goes into a history of the cotton manufacture. The first attempt at spinning cotton in the world was in 1767. It is about sixty years since the work was commenced in the United States, which was begun in Rhode Island; but made no progress till Slater's arrival at Providence. His genius changed the course of New England industry, and laid the foundation of the cotton manufacture.

The following paragraphs show the rapid growth, the extent and profits of this branch of manufacture:

"In the year 1839, according to the data appended to the United States Census of 1840, there were in operation, in Maine, 29,736 cotton spindles—in New Hampshire, 195,173—in Massachusetts, 669,095—in Rhode Island, 518,817—in Connecticut, 181,319—making, in all, 1,590,140 cotton spindles in operation in those five states at that time. Since that period the number has been increased twenty per cent. at least; and there can therefore not be a less number now, than about 2,000,000, nearly. The manufacture of cotton was commenced in Rhode Island about 1791, but its progress for many years was extremely slow. We will assume the year 1810, as our starting point, at which time it had begun to put on the appearance of some importance. Thus, reckoning to the close of 1789, we have a range of 40 years.

Again, assuming that in 1810, there were 50,000 spindles in operation, then the medium or average number for forty years, would be something over 900,000. Distribute these in 90 mills of 10,000 spindles each, and each mill creating wealth at the rate of \$100,000 per annum, or which is the same thing, adding that amount to the value of the raw material; and which is nearly one-third less than the amount stated for the mill before alluded to, and we have \$4,000,000 in forty years. Hence, the ninety mills would add, and probably have added, at least \$360,000,000 of wealth or capital to the community, in forty years, by means of the combined operations of labor, skill, and materials, aided by capital and credit. It is true, there have been fluctuations in the business, and occasional failures; as there are, and ever will be in the most lucrative business ever known. But most persons who have entered into

these have made money by it; and, at any rate, failures or no failures, the wealth created by it is in the community—the product of labor skill, and materials—and if the foregoing estimates are within the limits of truth, and they are believed to be, then, by cotton manufactures alone, the above five states have added to the stock of wealth no less than \$360,000,000! Permit us now to inquire—Have the whole ten cotton planting states done as much by the culture of their staple production, or any thing like it, in proportion to the labor, skill, materials employed? Let the comparative estimates on the culture of cotton, and its manufacture, in the foregoing pages, furnish the reply. Such as has been stated, is the example set by New England, though commencing with a deficient capital even for her ordinary pursuits; with her system of credit to aid, in the production of the most valuable returns from the labor, skill, and real capital of the country. Can any reason, even a plausible one be given, why southern people should not do the same? Their means are more abundant than were those of New England at the commencement of the cotton manufacturing business in this country. All that is wanted is enterprise. There certainly could be no sufficient reason why a number of planters, having available property of the value of half a million dollars, could not raise on that property, the sum of two hundred and fifty thousand, to prosecute a business, the profits of which would be almost certain to return one hundred per cent. on the outlay in the short space of two years at farthest. Especially might they do this, when known, as known it is by practical experience, that that business would probably enhance the value of property in possession, fifty to one hundred per cent. Southern planters considered men of wealth, find little or no difficulty in extending their credit to any desirable amount, in the purchase of land or slaves, or both. It would be quite as easy for them to do so, if necessary, to erect manufactories, and their credit and funds would, in such case, be applied to an object much more productive."

What gives force to the suggestions of Gen. James is the great caution that marks his statements. We have taken pains to look into the statistics of the cotton trade and the cotton manufacture, and we are quite certain that all estimates put forth by Gen. James are inside the actual results. The cotton crop of 1848 is known to equal 2,500,000 bales, which at 450 pounds per bale, is 25,000,000 lbs. In regard to the increase of manufactures in New England, since 1840, we are able to show that it has far exceeded *twenty per cent.*, the estimate of Gen. James, before quoted.

These statistics of cotton manufacture in New England, with any further quotations from the work in question, we must defer to a future number.

Mobile and Ohio Railroad.

Almost every town in this country on the sea coast, of any considerable importance, is now busily engaged in opening a railway communication with the country contiguous to, or dependent upon it.—The advantages that these roads confer upon such towns, and the trade and business of the country they penetrate, in most cases warrant their construction; though many of them possess little general importance. They are local, both in their object and influence. On the other hand, we have certain great routes indicated by the natural features of the country, and which strike the eye in looking over its map, as the great lines of communication between its most important points. One of these great lines is that connecting the great lakes with the Gulf of Mexico.

In a country like ours, producing the fruits of the tropics, as well as those of higher latitudes, where everything that enters into consumption is produced within our own limits, the natural course of trade is from north to south and south to north. Each section forwards its surplus products which are pe-

culiar to, or most easily produced on its soil, to the other, and receives in return the appropriate products of the latter. The lines of communication, therefore, which run at right angles with the parallels of latitude, must be the great channels through which the products of these different latitudes shall be diffused and scattered over the whole.

The section of this great line between the Gulf and the Lakes, that this company proposes to construct, is from Mobile to the mouth of the Ohio.—This last point we have no doubt will be united with the Lakes, before it can be reached by this company. If, therefore, they can build their road to the mouth of the Ohio, this line will be complete.

If, therefore, a railway can compete with the present water communication between the Gulf and the Lakes, and we have no doubt it can successfully do this when the rivers are in the best state for navigation, to say nothing of the long period every year that they are closed by ice or unnavigable from droughts, over it must pass the greater part of the products of the section through which it runs, as well as of those connected with the road by branches, or by navigable waters, seeking a market, as well as the merchandise forwarded to consumers along the route.

These general statements alone are sufficient to show that a vast amount of business must pass over this line, ample we have no doubt in time to support many roads having the same object and the same general direction. But a faint idea can be gained of the amount of business this road would do, from the data furnished by the present amount of business of the section through which it proposes to pass, though we think that this would be adequate to support the road. Production which now languishes for want of suitable means of transportation, would be stimulated to an extraordinary degree; and a thousand sources of revenue would be developed which do not now enter the calculations of the income of the road. Our friends in Alabama have a clear field before them. They have every inducement to build the road, as offering a good investment of property. They can certainly by means of it draw an immense business to Mobile. It will develop, to an extraordinary degree, the resources of the country through which it passes.

Let those interested but display energy in its construction, united with a due regard to economy, and they cannot fail to come out right.

The following extracts from the last Annual Report of the Directors, held February 5, 1849, and just received by us, show the progress already with the future prospects of the road. After giving a brief history of its progress up to the time of the meeting, it goes on to say—

As soon as practicable, after the appointment of the principal Engineer, Capt. John Childe, the necessary instruments and equipments for four field parties were purchased in New York, by a member of the Board, in connection with Capt. Childe, and forwarded one-half to Mobile, and the remainder to Cairo.

Capt. Childe then proceeded to Cairo, and from thence, having been joined by Mr. Troost, who had been appointed principal Assistant, continued overland, following the direction of the route to Mobile.

The line having been divided into four general sections, the Engineering corps for the first division was organized at Mobile, and the survey was commenced from the city boundary, in the month of November last, under the direction of Thomas S. O'Sullivan, First Assistant.

The second division under the charge of Lewis Troost, principal Assistant, was in the field soon after, and is now progressing through the prairie land of Mississippi.

The third and fourth parties, with F. S. Smith

and H. S. McKean, First Assistants, respectively in charge, were also at work before the close of December, upon the northern end of the line.

The organization of these parties is complete and efficient, and the survey is progressing under the most favorable auspices. The plan of the survey embraces—in addition to a thorough instrumental examination of the route recommended by Mr. Troost—the survey of another route farther west, which has been noticed by the Chief Engineer, as worthy of special consideration. This route diverges from the first in the valley of the Escatawba, and passing through Clark and Wayne into Jasper county Mississippi, continues north via Newton, Neshoba, Winston, Chickasaw counties, &c., into Tennessee, uniting again with the other route in Obion county, in that State.

Should it be found upon comparison between these two routes, that the cost of construction will not be materially affected by the choice of either—the final location of the road must then necessarily be greatly influenced in favor of that route, which will contribute the largest amount of subscriptions to the work.

Their remoteness from market, and the great difficulty and expense incurred in reaching the rivers, at the season when their crops are ready to go forward, under the present condition, would make this road invaluable to the counties on the western route, and will doubtless call forth every effort upon the part of those counties, to secure for themselves, the immense advantages which the construction of this great line of railway through their limits would ensure them.

Actuated by an earnest desire for the early progress of the work, and determined to push it forward with all possible vigor, the Board resolved to re-open the Books on the tenth day of January last, for the purpose of increasing the Mobile subscription to one million dollars; which, with such aid as could be safely counted upon from other sources, as a more advanced stage of the work, in the exchange of iron, labor, &c. for stock—it was believed would be ample to place the road under full operation to the Kemper county line.

The Chief Engineer was also instructed to furnish a detailed report, with estimates, &c. for the first division of one hundred miles, in advance of his general report, in order that the construction of the road might be commenced without unnecessary delay, after the requisite sum shall be subscribed.

The Books were opened accordingly, on the date before mentioned, since which, the new subscriptions received, up to this time, amount to 684 shares or 68,400 dollars. This, with 6,317 shares before subscribed, makes an aggregate subscription in Mobile of 700,100 dollars.

The magnitude of this undertaking, rendering it necessary that every interest should be called upon to contribute to its support; and the vast benefits to be derived by the city from its early accomplishment, in increased wealth and population, and new sources of public revenue, making it proper that her aid should be obtained as far as practicable, application was made to the corporate authorities for their co-operation, in such manner as might be deemed compatible with a due regard to her present financial condition.

This application has been entirely successful, and the city has, by resolution of her authorities, agreed to aid the company by a subscription of \$300,000, in annual payments of 25,000 each, to be raised by a special tax upon the real estate of the city. By the terms of this resolution of the city authorities, this subscription to be carried into effect, requires the sanction of the property holders of the city, and the State Legislature, which will no doubt be readily granted.

Adding this sum, therefore, to the individual subscriptions, the aggregate Mobile subscriptions reach one million dollars, an amount sufficient, as has been before stated, to authorize the Board to commence the construction of the road, as soon as the estimates shall be received from the Chief Engineer.

In addition to the above subscription by the city of Mobile, subscriptions to the amount of over \$100,000 have been made on the line of the route, which will undoubtedly be very largely increased.

An interesting paper from the Chief Engineer, which is appended to this report, explains in a clear

and practical manner, and the wonderful bearing which this work will have upon the value of property in its neighborhood—establishing conclusively, by facts drawn from the history of similar improvements elsewhere, that the lands between Mobile and Columbus, Kentucky, within twenty miles of the road, will be enhanced nearly twenty-five millions of dollars by its completion. To the planters of East Mississippi, adjacent to the road, this consideration appeals with unanswerable force. The indirect benefits to accrue from the opening of such a vast highway, will be shared in a greater degree by the planting interest, than by any other class and a comprehension of this fact should make them at once its most zealous advocates and supporters. Aside from the reduction of expenses in transporting their produce to market, and the increased demand which would arise for the various other commodities, for which they have at present no market, items of no small amount in the aggregate—there can be no doubt in the mind of any intelligent man that every dollar invested in the Mobile and Ohio road will yield a handsome return of profit to the stockholder. It should be remembered also that a large proportion of the cost of building a railroad, is expended among the people of the country through which it passes, and that much of the amount subscribed by the planters, would return to them again, in payment of supplies which they would be called upon to furnish, in the wages of labor, &c., &c., so that, although the amount expended would be large, yet the portion actually withdrawn from the community would be so small as not to be sensibly felt.

The grading will be commenced on that portion allotted to Mobile, as soon as the estimates are received from the Engineer—and the subscriptions already secured in this city, furnish a sufficient guarantee that there will be no failure here. About one hundred and twenty miles above Mobile, the Mississippi road from Brandon, which is rapidly advancing eastward, and will ere long be completed to the Alabama line—will intersect the Mobile and Ohio railroad. It is the opinion of the Board that when this connection is formed, a traffic will at once spring up, which will yield a profit upon the stock invested; and bring a large accession to the trade of Mobile, from the fertile country north and east of Jackson.

It is the desire of the Board, to begin the construction in Mississippi, also, as soon as the amount subscribed in that State shall be large enough to warrant such a course. It remains, therefore, with the friends of the road there, to decide how soon they shall participate in its benefits and advantages. For the purpose of co-operating with the local Commissioners, and with a view to prompt and concerted action upon this point, the Directors have appointed M. J. D. Baldwin, Esq., an Agent of the Company, and he will proceed in a few days to Mississippi, upon these and other duties connected with the road.

The following extracts are from the report of the Chief Engineer:

First—The country through the whole distance is of the secondary alluvial formations; exhibiting but few points of excavation, and these of the softest kinds of limestone and sandstone. Its surface is moderately undulating; but where the road will naturally cross the dividing ridges, does not exceed 250 to 300 feet above the nearest navigable waters of the Tennessee or Tombigby rivers—nor will the road be at the highest point over 650 to 700 feet above tide water at Mobile. Very little stone fit for masonry can be found; but materials for bricks, and timber in the greatest abundance, are every where convenient and suitable for railroad structures. In fact, the country under examination, topographically and geographically, is very favorable for the construction and use of a railway.

Second—In consequence of the slight elevation to be overcome and the otherwise general feasibility of the country for a railroad in the north and south direction, the gradients and curves can be made, by a careful location, of easy passage, so that the speed and effective power of the engines may be greater upon your road, other things being equal, than upon any other line of equal extent in the United States. Going south, we hope to have no gradient to exceed 30 feet per mile, or north, over 40 feet; and the shortest curve not less than 1432 feet radius. With these

natural facilities for construction, and the certainty of taking a fair portion of the immense traffic of the Mississippi and of its northern and eastern tributary valleys; also the whole of the local business of the extensive agricultural country through which the road will pass, you have no apology for building any other than a permanent, *first class* road—one as good as the best in the Northern States.

Third—the great benefits of this road to the country to be traversed by it, will be fully proved by enabling the agriculturist of Western Kentucky and Tennessee, and Northern Mississippi and Alabama, to crop their fields and place the products in the Mobile market twelve or twenty days earlier than can be done from the States north of the Ohio; and also, by furnishing the citizens of Mobile, and the planters of the whole cotton growing region of Eastern Mississippi and Northern Alabama, with their supplies of provisions, directly from the north, at all seasons of the year, and over an average distance of 200 to 400 miles instead of 1500 to 1800 miles, as is now the practice via the Ohio Mississippi and Tombigby rivers. * * * * *

Sixth—The route now under survey is that mainly recommended by Mr. Troost, passing through portions of Ballard and Hickman counties, Kentucky; Obion, Giltson, Madison, McNairy and Hardin or Hardiman counties, Tennessee; Tishamingo, corner of Pontotoc Itawamba, Monroe, Lowndes, Noxubee, Kemder, Lauderdale, Clarke, and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama.

Another general route is worthy of particular consideration, and is as follows: Diverging from the first route in Obion county, Tennessee; thence through portions of Gibson, Haywood and Fayette counties, Tennessee; Marshall, Fayette, Chickasaw, Choctaw, Winston, Neshoba, Newton, Jasper, Clarke and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama—joining the other route again in the valley of the Escatawba. These two routes, denominated the *Eastern* and *Western*, are the most favorable that the country presents—and the thorough examinations now under way, will enable me to report upon their comparative merits.

Among the resolutions adopted at the meeting are the following:

Resolved, That the construction of the Mobile and Ohio railroad, and of the Central railroad of Illinois, connected with the cities of Chicago and Mobile by an unbroken line of communication, except at the mouth of the Ohio, crossing the United States from north to south, and running through the heart of the country, at its narrowest point, is a reasonable and practicable measure, and one demanded, not only by the interests and necessities of these points of termini, but of the whole people along the entire line of the route; by the interests and necessities of the several States through which this line passes, and by the interests and necessities of the government of the United States.

Resolved, That this line, when completed, in connection with a line of steamships from the city of Mobile to the Isthmus of Tehuantepec, and when the crossing of this isthmus is made, in connection with a line of steamships from its Pacific side to California and Oregon, is the most practicable and direct channel of communication with all parts of the heart of the United States, on the east with her possessions on the Pacific, and is the one most demanded by the interests and necessities of the people and the government of the United States.

Resolved, That the superiority of this line of communication with the Pacific, over that proposed by Mr. Whitney, for the present is, the expedition with which its execution may be accomplished, and the greatly diminished cost of its successful and speedy establishment. And that its superiority over the route of the Isthmus of Darien is manifest from an inspection of the map, in its greatly diminished distance, and by reference to the resources of the Mississippi Valley, which it proposes to connect so immediately with the commerce of the Pacific.

Resolved, That it is the policy and duty of the government of the United States to negotiate with, and secure from the government of Mexico, at the earliest practicable period, the right of way across the Isthmus of Tehuantepec, and to grant a liberal aid for the construction of a railroad across that Isthmus, to establish without delay this channel of

communication with her possessions on the Pacific.

Resolved, That it is only the duty and policy of the government of the United States, in order to facilitate the construction of the Mobile and Ohio railroad, and of the Central railroad of Illinois, to grant liberal appropriations of the public domain, to aid in completing more speedily these works; and that it is also the duty and policy of the several States through which these lines of road pass, looking at the immense benefits which they are to derive from them, to come liberally to the aid of these roads, with whatever means and in whatever manner, their respective Legislatures shall deem best, to secure their most speedy and successful accomplishment.

The following gentlemen were chosen Directors for the ensuing year:

SIDNEY SMITH,	A. W. GORDON,
FRANCIS B. CLARK,	CHARLES LEBARON,
DAVID STODDER,	JOHN BLOODGOOD,
S. GRIFFITHS FISHER,	J. M. CUNNINGHAM, Miss.
GEO. N. STEWART,	B. E. GRAY, Ky.
MOSES WARING,	W. H. LONG, Tenn.
JONATHAN EMANUEL.	

Meeting of Stockholders of the Cape Fear and Deep River Navigation Co.

Pursuant to notice, the Stockholders of the Cape Fear and Deep River Navigation Co. met in Pitsboro' on the 14th of April. The meeting was organized by the appointment of Dr. J. Hill, of Brunswick county, as chairman, and M. Q. Waddell and Wm. Stedman, as secretaries. Dr. Hill, upon taking the chair, addressed the meeting at some length upon the subject of the contemplated work in his usual happy style. The meeting was then successively addressed by Dr. S. McClanahan, Captain Gilbert Potter, B. I. Howze, Col. McNeil, of Wilmington, and Col. Thompson (the engineer who made the survey of the river) in a manner worthy the cause, and they took their seats amid cheering from the numerous spectators present.

The books containing subscriptions for the capital stock of this company, being presented by the various commissioners appointed by the General Assembly for that purpose, at the clerk's table, it appeared that about \$90,009 of the stock had been taken by individuals; and a motion was made by J. H. Haughton, that the representative of the State N. A. Stedman, be allowed the right of casting the State's vote in all questions before the meeting, and unanimously carried.

There being a sufficient number of votes, as prescribed by the act incorporating this company, the stockholders then proceeded to fix the salary of the President of the company at \$1,000 per annum, and combined the offices of Treasurer and Clerk of the company, with a salary of \$1,000 per annum.

On motion, it was Resolved, That the Chairman appoint a Committee of three persons to audit the accounts of the Treasurer, and make annual reports to the general meeting of the stockholders; and that the bond of the Treasurer be in the sum of \$50,000, and be approved by the President and Directors of the company.

An election was then held for President and Directors of the company, and resulted in the choice of Dr. Spencer McClanahan, of Chatham, as President, and the following persons as Directors, viz: J. H. Haughton, Peter Evans and Thomas Hill. Mr. N. A. Stedman was then called upon as the State Proxy, to appoint two Directors on behalf of the State, and he thereupon appointed Isaac Clegg, of Chatham, and Col. A. S. McNeil, of Cumberland.

After this appointment doubts were entertained as to the authority of the State to make such appointments.

Whereupon, on motion of B. I. Howze, it was unanimously Resolved, That the individual Stockholders in this meeting entirely concur in said appointment, and that they do hereby ratify and adopt the appointment of Isaac Clegg and A. S. McNeil as Directors of this company.

On motion, it was Resolved, That another general meeting of the Stockholders of this company be held at Pitsboro' on the Second Thursday in June next, and that hereafter the annual meetings of the company shall be on the second Thursday in June. Committee on accounts, John J. Jackson, William T. Horne, and Nathan A. Stedman.

On motion of John H. Haughton, it was Resol-

ed, That it is the sense of this meeting that the President and Directors commence operations as soon as practicable.

On motion, the thanks of the meeting were tendered to the Chairman and Secretaries, for the manner in which they had discharged their duties. After which the meeting adjourned till the second Thursday in June next.

On motion, it was Resolved, That the papers in Pittsboro' and Wilmington be requested to publish the proceedings of this meeting; and that all other papers in the State, favorable to the cause, be requested to copy the same.

FRED. J. HILL, Chairman.

M. Q. WADDELL, } Secretaries.
WM. STEDMAN, }

In the afternoon, the President and Directors of the company held a meeting and elected Benj. I. Howze, Treasurer, and Wm. B. Thompson, Engineer, of the work.—*Chronicle.*

Railway Economy.

Some very useful experiments with a new passenger carriage axle box have just been completed upon the London and North Western railway, under the superintendence of the company's officers. The objection to the ordinary axle boxes of railway carriages, is, that while the grease finds an easy escape from them, and is wasted to a very expensive extent, the dust, of which an abundance is generally raised by the speed of the train, insinuates itself between the axles and the journals, and acts as a grinding medium upon the surfaces of both metals. The consequence is a very considerable wear of the materials, and frequent "hot axles." To this objection must be added the wages of the men employed at the stations to replenish such of the axle boxes as have lost an undue quantity of grease. The men are allowed very little time to do this, and in their haste they seldom stop to examine whether, in scraping off and putting into the axle box the grease that may have been pressed over the side, they gather up with it a quantity of the fine pointed grit which is usually found adhering to the outside of axle boxes. It is very seldom that a passenger train runs fifty miles without some of the axle boxes requiring a fresh supply of grease. The new axle boxes, which are the invention of one of the officers of the engineering department of the London and North Western company, Mr. Normanville, prevent the admission of grit, by the use of a screw opening, through which the grease is supplied, and the waste of the latter, as well as the insinuation of dust between the axles and the journals, are avoided by the application of a valve acted upon by vulcanised India-rubber springs, fitted to the axle at the hitherto open end of the box. The experiments were made with two four wheeled first class carriages, Nos. 106 and 169, taken indiscriminately from the rolling stock of carriages fitted with this description of box, of which there are a considerable number at work.—These carriages were worked in the express and ordinary trains between London, Liverpool and Manchester. One of them ran upwards of 4,000 miles and the other upwards of 3,600 miles, without the axle boxes having had any additional grease supplied, and without the axles having once got hot.—At the conclusion of the experiment, the axles and journals were inspected by the officers, and found to be in perfect order. It is stated that the application of these axle boxes to the company's stock, will effect a saving of several thousand pounds per annum.—*Morning Chronicle.*

Susquehanna Coal Trade.

The extensive coal deposits which are known as the Southern Coal Field of Pennsylvania, and which are nearer to the water than the other are now likely to be steadily and surely developed. The Lykens Valley company have their railroad and the Wisconsin Canal in complete order for operations; the Dauphin and Susquehanna railroad is in progress towards completion; and it will be seen from the annexed article that a company for making a third railway has just been organised. The Tide Water Canal is the outlet for these important mineral treasures, and must derive from them annually increasing resources:

From the Philadelphia North American.
NEW SUPPLIES OF COAL.

We learn that the extensive coal field west of the

Pine Grove district, is shortly to be opened. A company, under the name of the "The Pequa railroad and Improvement company," was incorporated by the last Legislature, for the purpose of opening these coal fields and making a railroad from them.

This company has just organized, and elected as President our townsman, Mr. Lea, the senior member of the firm of Lea & Blanchard, who for many years have been large owners of the lands embracing the entire southern coal field, from the river Susquehanna east to the Schuylkill county line, a distance of twenty-six miles.

Explorations of the lands of the Pequa company have developed almost inexhaustible quantities of anthracite coal of the best quality; fifteen distinct workable veins have been opened, eleven of them averaging seven feet, and the whole, 92 feet thickness of pure coal; in addition, large veins of carbonates and oxides of iron are known to exist. The position of the coal, which is accessible in several gaps, will enable the company to mine large quantities at a very small cost.

The exit to a market will be over a railroad of about twenty miles, (sixteen of which are now making by the Dauphin and Susquehanna Coal company to carry their semi-bituminous coal to the town of Dauphin, eight miles above Harrisburg) on a descending grade, which will land the coal in boats on the State Canal ready for transport to the whole valley of the Susquehanna and Chesapeake Bay; or by a connection with the Central railroad at a point where it crosses the Susquehanna, three miles below Dauphin, this coal will be in transit from the mines to all points on the railroads that pass out from Harrisburg.

These coal fields are the nearest to tide water of any in the valley of the Susquehanna; and now that capital has been obtained and the companies organized under management that should inspire confidence, we may look for activity and business in the valley of the Susquehanna that will add to the resources of the State, hold out further inducements to our citizens to rely upon their home wealth, give aid to railroad and other improvements, and furnish employment to our own people.

Liability of Railroad Companies for the Carelessness of their Servants.

The following extract copied from the Hampshire Gazette, of the trial of an action for damages for personal injury, sustained through the carelessness of the engineers employed on the Connecticut River railroad, possesses great interest, as defining the liabilities of railroad companies as public carriers, and the right of passengers to reparation in case of injury:

Heavy Damages.—The Connecticut River railroad company were molested in heavy damages, by a jury of the Supreme Court, at Springfield, last week, for injury sustained by Ezra S. Corning, of Chicopee Falls, in a collision on the railroad, on the 11th February, 1855. From the report of the case in the Springfield Republican, we gather the following facts:

Corning was a passenger on the day mentioned, in the train from Chicopee Falls to Springfield. An engineer, employed on the road, by the name of Johnson, very carelessly ran an engine out from Springfield for trial, and on a curve, about a mile from Springfield, a collision took place between the train and the engine, the latter running at the rate of about fifteen miles an hour, and the train very slow. The plaintiff was thrown upon the floor of the car, and injured on the side of his head, on his hip, and in his spine. He did not appear to be seriously hurt at the time, for he went on to Springfield and transacted his business there, attended to his own business at home the next day, the following day went to church, and a few weeks after took a trip to Greenfield per railroad, and went from Northampton to Chicopee Falls, by way of Amherst, in bad travelling, in a private conveyance. During the whole time, however, he suffered more or less inconvenience from the injuries received from the accident. Soon after, his sufferings increased, his symptoms grew more and more alarming, and for some time he has been wholly incapacitated to attend to ordinary business.

A number of medical gentlemen were produced

on both sides as witnesses, among whom were Dr. Woodward of Northampton, and Dr. Hayward of Boston. They seemed to agree substantially, that the plaintiff's present condition was the result of the collision on the railroad, though they generally were of opinion that the injuries, as they first manifested themselves, seemed to be hardly adequate to produce the consequences that followed. They also substantially agreed that it was quite doubtful whether the plaintiff ever recovered. He might be restored to health and he might not. Medical aid and treatment could do little for him. Rest, quiet, and change of air and scene would help him more than any thing else.

The Court (Judge Metcalf) instructed the jury that they were to view the plaintiff's constitution as it was on the time the suit was commenced, which was on the 21st of August last, and not as it is at the present time. They were to award such damages as in their opinion, would compensate him, so far as dollars and cents could, for the injuries received. There was no price current for pain and suffering, but they must look at the case as men of sense, and do what was in their power towards recompensing the plaintiff. They were not to pay any attention to the fact that he might be a poor man, and the defendants a rich corporation, but consider only what amount of damage had been done, and what amount of money would pay for it. The golden rule had nothing to do with the case, for if juries were to do as they would be done by, it would be impossible ever to get a man hung.

The jury, after an absence of two hours, returned a verdict for the plaintiff, assessing the damage at Nine Thousand and Forty-five Dollars.

Cleveland, Columbus and Cincinnati Railroad.

Messrs. Witt & Harbeck, who have the contract for the construction of this road, long since sublet the entire distance between Cleveland and Columbus, and there are now at work on that portion about 1000 men, and more are being added from day to day.—The work is being prosecuted with great vigor, and will be ready for the superstructure, as per contract, by June 1st, 1856.

The precise distance between Cleveland and Columbus by the survey adopted, is 131 1/2 miles.

As has already been announced, Mr. Kelly, the President of the road, has negotiated for 7,000 tons of iron, sufficient to lay the track of seventy miles, more than half of the road.

One feature in this great work is that every thing connected with it is done in the best possible manner. The abutment for the bridge across the canal, at the foot of Vineyard street, is a model piece of work, and a fair specimen of the balance of the road.

Mr Kelly who has been absent for several weeks, is expected in this city in a few days, when some interesting facts may be presented.—*Clev'd. Herald.*

Maryland.

It gives us pleasure to say that last week the Baltimore and Susquehanna railroad company remitted to the Treasurer of Maryland the sum of \$15,000. This, together with what has been previously remitted, makes an aggregate of \$50,000 paid into the State Treasury since the opening of the present year, 1855. The road is managed with energy and efficacy, and its revenues are steadily on the increase. The completion of the new line from York to Hagerstown will give us no business new trade and more rapidly growing profits.—*Baltimore Am.*

Through to Chicago Direct.

The train of cars that left this city Saturday morning, had about ninety passengers that came up on the steamer Baltic, one of the boats of the north shore line to this city, who were going direct thro' to Chicago, by this route. This is the first load of the season and the first passenger train that will arrive at Buffalo from Detroit. Hereafter the cars will leave at 7 o'clock and the passengers will be in Chicago the next morning. After the first of May a second train will be put on.—*Free Press.*

The Detroit Advertiser has the following remarkable paragraph:

Boston and St. Louis Five Days Apart.—The completion of the Michigan Central railroad from Detroit to New Buffalo, will give the merchants of St.

and practical manner, and the wonderful bearing which this work will have upon the value of property in its neighborhood—establishing conclusively, by facts drawn from the history of similar improvements elsewhere, that the lands between Mobile and Columbus, Kentucky, within twenty miles of the road, will be enhanced nearly twenty-five millions of dollars by its completion. To the planters of East Mississippi, adjacent to the road, this consideration appeals with unanswerable force. The indirect benefits to accrue from the opening of such a vast highway, will be shared in a greater degree by the planting interest, than by any other class and a comprehension of this fact should make them at once its most zealous advocates and supporters. Aside from the reduction of expenses in transporting their produce to market, and the increased demand which would arise for the various other commodities, for which they have at present no market, items of no small amount in the aggregate—there can be no doubt in the mind of any intelligent man that every dollar invested in the Mobile and Ohio road will yield a handsome return of profit to the stockholder. It should be remembered also that a large proportion of the cost of building a railroad, is expended among the people of the country through which it passes, and that much of the amount subscribed by the planters, would return to them again, in payment of supplies which they would be called upon to furnish, in the wages of labor, &c., &c., so that, although the amount expended would be large, yet the portion actually withdrawn from the community would be so small as not to be sensibly felt.

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Second—In consequence of the slight elevation to be overcome and the otherwise general feasibility of the country for a railroad in the north and south direction, the gradients and curves can be made, by a careful location, of easy passage, so that the speed and effective power of the engines may be greater upon your road, other things being equal, than upon any other line of equal extent in the United States. Going south, we hope to have no gradient to exceed 30 feet per mile, or north, over 40 feet; and the shortest curve not less than 1432 feet radius. With these

natural facilities for construction, and the certainty of taking a fair portion of the immense traffic of the Mississippi and of its northern and eastern tributary valleys; also the whole of the local business of the extensive agricultural country through which the road will pass, you have no apology for building any other than a permanent, *first class* road—one as good as the best in the Northern States.

Third—The great benefits of this road to the country to be traversed by it, will be fully proved by enabling the agriculturist of Western Kentucky and Tennessee, and Northern Mississippi and Alabama, to crop their fields and place the products in the Mobile market twelve or twenty days earlier than can be done from the States north of the Ohio; and also, by furnishing the citizens of Mobile, and the planters of the whole cotton growing region of Eastern Mississippi and Northern Alabama, with their supplies of provisions, directly from the north, at all seasons of the year, and over an average distance of 200 to 400 miles instead of 1500 to 1800 miles, as is now the practice via the Ohio Mississippi and Tombigby rivers.

Sixth—The route now under survey is that mainly recommended by Mr. Troost, passing through portions of Ballard and Hickman counties, Kentucky; Obion, Gilson, Madison, McNairy and Hardin or Hardiman counties, Tennessee; Tishamingo, corner of Pontotoc Itawamba, Monroe, Lowndes, Noxubee, Kemper, Lauderdale, Clarke, and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama.

Another general route is worthy of particular consideration, and is as follows: Diverging from the first route in Obion county, Tennessee; thence through portions of Gibson, Haywood and Fayette counties, Tennessee; Marshall, Fayette, Chickasaw, Choctaw, Winston, Neshoba, Newton, Jasper, Clarke and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama—joining the other route again in the valley of the Escatawba. These two routes, denominated the *Eastern and Western*, are the most favorable that the country presents—and the thorough examinations now under way, will enable me to report upon their comparative merits.

Among the resolutions adopted at the meeting are the following:

Resolved, That the construction of the Mobile and Ohio railroad, and of the Central railroad of Illinois, connected with the cities of Chicago and Mobile by an unbroken line of communication, except at the mouth of the Ohio, crossing the United States from north to south, and running through the heart of the country, at its narrowest point, is a reasonable and practicable measure, and one demanded, not only by the interests and necessities of these points of termini, but of the whole people along the entire line of the route; by the interests and necessities of the several States through which this line passes, and by the interests and necessities of the government of the United States.

Resolved, That this line, when completed, in connection with a line of steamships from the city of Mobile to the Isthmus of Tehuantepec, and when the crossing of this isthmus is made, in connection with a line of steamships from its Pacific side to California and Oregon, is the most practicable and direct channel of communication with all parts of the heart of the United States, on the east with her possessions on the Pacific, and is the one most demanded by the interests and necessities of the people and the government of the United States.

Resolved, That the superiority of this line of communication with the Pacific, over that proposed by Mr. Whitney, for the present is, the expedition with which its execution may be accomplished, and the greatly diminished cost of its successful and speedy establishment. And that its superiority over the route of the Isthmus of Darien is manifest from an inspection of the map, in its greatly diminished distance, and by reference to the resources of the Mississippi Valley, which it proposes to connect so immediately with the commerce of the Pacific.

Resolved, That it is the policy and duty of the government of the United States to negotiate with, and secure from the government of Mexico, at the earliest practicable period, the right of way across the Isthmus of Tehuantepec, and to grant a liberal aid for the construction of a railroad across that Isthmus, to establish without delay this channel of

communication with her possessions on the Pacific.

Resolved, That it is only the duty and policy of the government of the United States, in order to facilitate the construction of the Mobile and Ohio railroad, and of the Central railroad of Illinois, to grant liberal appropriations of the public domain, to aid in completing more speedily these works; and that it is also the duty and policy of the several States through which these lines of road pass, looking at the immense benefits which they are to derive from them, to come liberally to the aid of these roads, with whatever means and in whatever manner, their respective Legislatures shall deem best, to secure their most speedy and successful accomplishment.

The following gentlemen were chosen Directors for the ensuing year:

SIDNEY SMITH,	A. W. GORDON,
FRANCIS B. CLARK,	CHARLES LEBARON,
DAVID STODDER,	JOHN BLOODGOOD,
S. GRIFFITHS FISHER,	J. M. CUNNINGHAM, Miss.
GEO. N. STEWART,	B. E. GRAY, Ky.
MOSES WARING,	W. H. LONG, Tenn.
JONATHAN EMANUEL.	

Meeting of Stockholders of the Cape Fear and Deep River Navigation Co.

Pursuant to notice, the Stockholders of the Cape Fear and Deep River Navigation Co. met in Pittsboro' on the 14th of April. The meeting was organized by the appointment of Dr. J. Hill, of Brunswick county, as chairman, and M. Q. Waddell and Wm. Stedman, as secretaries. Dr. Hill, upon taking the chair, addressed the meeting at some length upon the subject of the contemplated work in his usual happy style. The meeting was then successively addressed by Dr. S. McClanahan, Captain Gilbert Potter, B. I. Howze, Col. McNeil, of Wilmington, and Col. Thompson (the engineer who made the survey of the river) in a manner worthy the cause, and they took their seats amid cheering from the numerous spectators present.

The books containing subscriptions for the capital stock of this company, being presented by the various commissioners appointed by the General Assembly for that purpose, at the clerk's table, it appeared that about \$90,000 of the stock had been taken by individuals; and a motion was made by J. H. Haughton, that the representative of the State N. A. Stedman, be allowed the right of casting the State's vote in all questions before the meeting, and unanimously carried.

There being a sufficient number of votes, as prescribed by the act incorporating this company, the stockholders then proceeded to fix the salary of the President of the company at \$1,000 per annum, and combined the offices of Treasurer and Clerk of the company, with a salary of \$1,000 per annum.

On motion, it was Resolved, That the Chairman appoint a Committee of three persons to audit the accounts of the Treasurer, and make annual reports to the general meeting of the stockholders; and that the bond of the Treasurer be in the sum of \$50,000, and be approved by the President and Directors of the company.

An election was then held for President and Directors of the company, and resulted in the choice of Dr. Spencer McClanahan, of Chatham, as President, and the following persons as Directors, viz: J. H. Haughton, Peter Evans and Thomas Hill. Mr. N. A. Stedman was then called upon as the State Proxy, to appoint two Directors on behalf of the State, and he thereupon appointed Isaac Clegg, of Chatham, and Col. A. S. McNeil, of Cumberland.

After this appointment doubts were entertained as to the authority of the State to make such appointments.

Whereupon, on motion of B. I. Howze, it was unanimously Resolved, That the individual Stockholders in this meeting entirely concur in said appointment, and that they do hereby ratify and adopt the appointment of Isaac Clegg and A. S. McNeil as Directors of this company.

On motion, it was Resolved, That another general meeting of the Stockholders of this company be held at Pittsboro' on the Second Thursday in June next, and that hereafter the annual meetings of the company shall be on the second Thursday in June.

Committee on accounts, John J. Jackson, William T. Horne, and Nathan A. Stedman.

On motion of John H. Haughton, it was Resolv-

ed, That it is the sense of this meeting that the President and Directors commence operations as soon as practicable.

On motion, the thanks of the meeting were tendered to the Chairman and Secretaries, for the manner in which they had discharged their duties. After which the meeting adjourned till the second Thursday in June next.

On motion, it was Resolved, That the papers in Pittsboro' and Wilmington be requested to publish the proceedings of this meeting; and that all other papers in the State, favorable to the cause, be requested to copy the same.

FRED. J. HILL, Chairman.

M. Q. WADDELL, } Secretaries.
WM. STEDMAN, }

In the afternoon, the President and Directors of the company held a meeting and elected Benj. I. Howze, Treasurer, and Wm. B. Thompson, Engineer, of the work.—*Chronicle.*

Railway Economy.

Some very useful experiments with a new passenger carriage axle box have just been completed upon the London and North Western railway, under the superintendence of the company's officers. The objection to the ordinary axle boxes of railway carriages, is, that while the grease finds an easy escape from them, and is wasted to a very expensive extent, the dust, of which an abundance is generally raised by the speed of the train, insinuates itself between the axles and the journals, and acts as a grinding medium upon the surfaces of both metals. The consequence is a very considerable wear of the materials, and frequent "hot axles." To this objection must be added the wages of the men employed at the stations to replenish such of the axle boxes as have lost an undue quantity of grease. The men are allowed very little time to do this, and in their haste they seldom stop to examine whether, in scraping off and putting into the axle box the grease that may have been pressed over the side, they gather up with it a quantity of the fine pointed grit which is usually found adhering to the outside of axle boxes. It is very seldom that a passenger train runs fifty miles without some of the axle boxes requiring a fresh supply of grease. The new axle boxes, which are the invention of one of the officers of the engineering department of the London and North Western company, Mr. Normanville, prevent the admission of grit, by the use of a screw opening, through which the grease is supplied, and the waste of the latter, as well as the insinuation of dust between the axles and the journals, are avoided by the application of a valve acted upon by vulcanised India-rubber springs, fitted to the axle at the hitherto open end of the box. The experiments were made with two four wheeled first class carriages, Nos. 106 and 169, taken indiscriminately from the rolling stock of carriages fitted with this description of box, of which there are a considerable number at work.—These carriages were worked in the express and ordinary trains between London, Liverpool and Manchester. One of them ran upwards of 4,000 miles and the other upwards of 3,800 miles, without the axle boxes having had any additional grease supplied, and without the axles having once got hot.—At the conclusion of the experiment, the axles and journals were inspected by the officers, and found to be in perfect order. It is stated that the application of these axle boxes to the company's stock, will effect a saving of several thousand pounds per annum.—*Morning Chronicle.*

Susquehanna Coal Trade.

The extensive coal deposits which are known as the Southern Coal Field of Pennsylvania, and which are nearer to the water than the other are now likely to be steadily and surely developed. The Lykens Valley company have their railroad and the Wisconsin Canal in complete order for operations; the Dauphin and Susquehanna railroad is in progress towards completion; and it will be seen from the annexed article that a company for making a third railway has just been organized. The Tide Water Canal is the outlet for these important mineral treasures, and must derive from them annually increasing resources:

From the Philadelphia North American.
NEW SUPPLIES OF COAL.

We learn that the extensive coal field west of the

Pine Grove district, is shortly to be opened. A company, under the name of the "The Pequa railroad and Improvement company," was incorporated by the last Legislature, for the purpose of opening these coal fields and making a railroad from them.

This company has just organized, and elected as President our townsman, Mr. Lea, the senior member of the firm of Lea & Blanchard, who for many years have been large owners of the lands embracing the entire southern coal field, from the river Susquehanna east to the Schuylkill county line, a distance of twenty-six miles.

Explorations of the lands of the Pequa company have developed almost inexhaustible quantities of anthracite coal of the best quality; fifteen distinct workable veins have been opened, eleven of them averaging seven feet, and the whole, 92 feet thickness of pure coal; in addition, large veins of carbonates and oxides of iron are known to exist. The position of the coal, which is accessible in several gaps, will enable the company to mine large quantities at a very small cost.

The exit to a market will be over a railroad of about twenty miles, (sixteen of which are now making by the Dauphin and Susquehanna Coal company to carry their semi-bituminous coal to the town of Dauphin, eight miles above Harrisburg) on a descending grade, which will land the coal in boats on the State Canal ready for transport to the whole valley of the Susquehanna and Chesapeake Bay; or by a connection with the Central railroad at a point where it crosses the Susquehanna, three miles below Dauphin, this coal will be in transit from the mines to all points on the railroads that pass out from Harrisburg.

These coal fields are the nearest to tide water of any in the valley of the Susquehanna; and now that capital has been obtained and the companies organized under management that should inspire confidence, we may look for activity and business in the valley of the Susquehanna that will add to the resources of the State, hold out further inducements to our citizens to rely upon their home wealth, give aid to railroad and other improvements, and furnish employment to our own people.

Liability of Railroad Companies for the Carelessness of their Servants.

The following extract copied from the Hampshire Gazette, of the trial of an action for damages for personal injury, sustained through the carelessness of the engineers employed on the Connecticut River railroad, possesses great interest, as defining the liabilities of railroad companies as public carriers, and the right of passengers to reparation in case of injury:

Heavy Damages.—The Connecticut River railroad company were mulcted in heavy damages, by a jury of the Supreme Court, at Springfield, last week, for injury sustained by Ezra S. Corning, of Chicopee Falls, in a collision on the railroad, on the 11th February, 1848. From the report of the case in the Springfield Republican, we gather the following facts:

Corning was a passenger on the day mentioned, in the train from Chicopee Falls to Springfield. An engineer, employed on the road, by the name of Johnston, very carelessly ran an engine out from Springfield for trial, and on a curve, about a mile from Springfield, a collision took place between the train and the engine, the latter running at the rate of about fifteen miles an hour, and the train very slow. The plaintiff was thrown upon the floor of the car, and injured on the side of his head, on his hip, and in his spine. He did not appear to be seriously hurt at the time, for he went on to Springfield and transacted his business there, attended to his own business at home the next day, the following day went to church, and a few weeks after took a trip to Greenfield per railroad, and went from Northampton to Chicopee Falls, by way of Amherst, in bad travelling, in a private conveyance. During the whole time, however, he suffered more or less inconvenience from the injuries received from the accident. Soon after, his sufferings increased, his symptoms grew more and more alarming, and for some time he has been wholly incapacitated to attend to ordinary business.

A number of medical gentlemen were produced

on both sides as witnesses, among whom were Dr. Woodward of Northampton, and Dr. Hayward of Boston. They seemed to agree substantially, that the plaintiff's present condition was the result of the collision on the railroad, though they generally were of opinion that the injuries, as they first manifested themselves, seemed to be hardly adequate to produce the consequences that followed. They also substantially agreed that it was quite doubtful whether the plaintiff ever recovered. He might be restored to health and he might not. Medical aid and treatment could do little for him. Rest, quiet, and change of air and scene would help him more than any thing else.

The Court (Judge Metcalf,) instructed the jury that they were to view the plaintiff's constitution as it was on the time the suit was commenced, which was on the 21st of August last, and not as it is at the present time. They were to award such damages as in their opinion, would compensate him, so far as dollars and cents could, for the injuries received. There was no price current for pain and suffering, but they must look at the case as men of sense, and do what was in their power towards recompensing the plaintiff. They were not to pay any attention to the fact that he might be a poor man, and the defendants a rich corporation, but consider only what amount of damage had been done, and what amount of money would pay for it. The golden rule had nothing to do with the case, for if juries were to do as they would be done by, it would be impossible ever to get a man hung.

The jury, after an absence of two hours, returned a verdict for the plaintiff, assessing the damage at Nine Thousand and Forty-five Dollars.

Cleveland, Columbus and Cincinnati Railroad.

Messrs. Witt & Harbeck, who have the contract for the construction of this road, long since sublet the entire distance between Cleveland and Columbus, and there are now at work on that portion about 1000 men, and more are being added from day to day.—The work is being prosecuted with great vigor, and will be ready for the superstructure, as per contract, by June 1st, 1850.

The precise distance between Cleveland and Columbus by the survey adopted, is 134 1/2 miles.

As has already been announced, Mr. Kelly, the President of the road, has negotiated for 7,000 tons of iron, sufficient to lay the track of seventy miles, more than half of the road.

One feature in this great work is that every thing connected with it is done in the best possible manner. The abutment for the bridge across the canal, at the foot of Vineyard street, is a model piece of work, and a fair specimen of the balance of the road.

Mr. Kelly who has been absent for several weeks, is expected in this city in a few days, when some interesting facts may be presented.—*Clev'd. Herald.*

Maryland.

It gives us pleasure to say that last week the Baltimore and Susquehanna railroad company remitted to the Treasurer of Maryland the sum of \$15,000. This, together with what has been previously remitted, makes an aggregate of \$35,000 paid into the State Treasury since the opening of the present year, 1849. The road is managed with energy and efficacy, and its revenues are steadily on the increase. The completion of the new line from York to Harrisburg will give to its business new trade and more rapidly growing profits.—*Baltimore Am.*

Through to Chicago Direct.

The train of cars that left this city Saturday morning, had about ninety passengers that came up on the steamer Baltic, one of the boats of the south shore line to this city, who were going direct thro' to Chicago, by this route. This is the first load of the season and the first passenger train that will arrive at Buffalo from Detroit. Hereafter the cars will leave at 7 o'clock and the passengers will be in Chicago the next morning. After the first of May a second train will be put on.—*Free Press.*

The Detroit Advertiser has the following remarkable paragraph:

Boston and St. Louis Five Days Apart.—The completion of the Michigan Central railroad from Detroit to New Buffalo, will give the merchants of St.

Louis an opportunity to make the trip to New York or Boston in five days, for the sum of twenty-eight dollars, without hardship, through a most interesting and attractive region of country, and with the most pleasant variety of conveyance.

AMERICAN RAILROAD JOURNAL.

Saturday, May 12, 1849.

THE RAILROAD JOURNAL.

The attention of the readers of the Journal is invited to our prospectus in another column. The engagement of Mr. Hodge for the particular department of mining and metallurgy, and Gen. James for the department of manufactures and the mechanic arts, will enable the Editor to devote his labors to the railway interest and general business of the country. Arrangements to give information as to the most improved forms of mechanical invention in connection with the Patent Office, in addition to our other engagements, will enable us to give to the business man and industrial classes of our country a work of practical value, such as has not before been attempted.

We therefore request our exchanges who feel an interest in the success of the Journal, and such papers as may receive this number of it, and desire an exchange with it, to copy our prospectus and send us their paper.

Railway Management.--Deterioration of Way.

In this country, most of our railroads have not been built a sufficient length of time to show from actual experience the annual amount the deterioration of way bears to the cost of the road. In England, where roads have been longer in use, and do a much larger business than roads with us, and consequently furnish more data by which to estimate this annual wear, one of the great causes of distrust of railway property is this deterioration of way.—Notwithstanding the perfect manner in which their roads are built, and their freedom from frosts which so much disturbs our tracks in the northern States, their roads are fast giving away under their immense engines, weighing from 25 to 30 tons, and running at the rate of 40 or 50 miles per hour. At every inequality or curve on the road, the wheels strike the side of the rail with a tremendous concussion, and in a short time the chairs become loosened and draw the spikes from the sleepers; the evil increasing just in proportion as the chair is moved out of its place. It is a well known fact that a few blows with a sledge upon a bar of cold iron changes its texture, and destroys to a great degree its strength. The same change to a certain extent takes place in the rail from the long continued passage of a heavy engine over it, and particularly at those points where, from inequality of surface, the rail receives a concussion from the wheel. This deterioration of way is undoubtedly much greater in England than in this country, from the greater cheapness of the wood worked in our roads, and from the less speed of our trains. Still we are convinced that we have not estimated this wear of the track so high as it really is. In their anxiety to stand well before the public and the stockholders, directors on many of our roads, seem to think that all surplus earnings over the cost of running the road, is a proper subject for dividend. There can be no greater mistake. There should always be set apart, before making a dividend, a reserve fund equal to the annual wear of the road, though the amount reserved may not be required to be laid out for years. It is undoubtedly a fact that the annual wear of the rail on most of our roads using light rails and heavy engines, is

equal to six per cent. of its cost, if not more.—Where therefore the iron for a road costs \$6,000 per mile, \$360 per mile per year should be set apart to make good this waste. So, with the wood work of a road. Here the deterioration is vastly greater, and consequently requires a proportionate reserve fund. All these items of wear and decay should be provided for before any dividend is declared, and this deterioration of way, as fast as it can be ascertained from experience in running roads, should be an item to be provided for, as much as the expenses of running the road; and until this can be ascertained, a liberal sum should always be reserved for this contingency. The usefulness, nay, the necessity of roads is admitted by all. That many of them offer safe and lucrative opportunities for investment of money, we have not a doubt. But in estimating the value of the stock in a road, deterioration of way, which is one of the main things to be considered, is little thought of. There is one fortunate circumstance, however, in almost all our roads. Where their net earnings, without providing for this loss, will allow at the present time a dividend, the annual increase of their revenues bid fair to furnish a sufficient fund for this purpose, when it shall be needed.

In confirmation of the above views we give the following article from the Practical Mechanics' Journal, as showing the attention that this subject is receiving in England.

Railway Economics.--Improvements in Permanent Way.

In our late remarks upon Mr. Adams' locomotive carriage for branch traffic, we took occasion to remark upon some of the leading points bearing upon the present inordinate amount of deterioration of the permanent way as effected by the introduction of the carriage-engine system. Whilst this system is to be looked upon as one great means of relieving lines of the existing style of construction from the overwhelming expenses of repairs, there is yet another to which we may look forward as promising to be fundamentally effectual in securing lines, hereafter to be formed or re-modelled, from excessive wear, even under the heavy travelling machinery of the present day. It is in the way itself that the proposed advantages are to be secured, and that by a judicious modification of the continuous-bearing system, so long scouted by engineers.

The question assumes a very serious aspect, when it is closely examined; for how can it be expected that lines, originally laid with 50, 60 or 70 lb. rails, for carrying engines of 10 or 14 tons, can be made to withstand the shocks of the modern 25 ton engine? The item of "maintenance of way" has become too formidable to be longer overlooked; in fact, something must be done to reduce its amount, and that at once.

The mere friction of the axles of carriages, or the power necessary to move them on a dead level, does not exceed 4 lbs. per ton; but practically the total resistance is found to range from 8 to 25, or even 30 lbs. per ton. Thus we have a loss of from 4 to 26 lbs. to be laid to the charge of the rubbing between the wheels and the rails, added to the momentum annihilated by the bad joints of the rails, their deflection, and general constructive defects. Again, we have to allow for the great speed at which these overpowering heavy engines are now travelling; for when the line once receives an injury, the evil constantly increases, from the leaping of the wheels from one inequality to another.

In all lines with transverse bearings, great loss is occasioned by the unequal strengths of the different portions. Practical test has shown that the deflection of the rail with a given weight is four times as great at the intermediate bearings as at the joints, and hence the jumping motion is vastly aggravated; for no vehicle can possibly pass smoothly over a line whose elasticity is constantly varying. A comparatively weak rail, with well constructed joints, is far preferable to a heavy rail with badly adjusted or insecure joints; thus the light rail of the

broad gauge, with a continuous bearing of timber, is, and must ever be, more mechanically perfect than the chair and transverse sleeper construction of the narrow gauge.

An insufficient substructure has likewise had a good deal to do with the deterioration of way. The transverse sleepers are frequently too sparingly applied, and too small in size, so that they are liable to sink considerably in the ballast of the way, and the costly operation of "packing" becomes necessary. When we add to this list of objectionable features the decay of timber sleepers, for which no good preventative has yet been adopted, our summary is perhaps complete. In the Eastern Counties line, for example, the capital invested in sleepers alone, is, we believe, very nearly £200,000; and from a late examination of the line, we are clearly of opinion, that the entire quantity will require renewal within five years, at an expense, calculating each sleeper to cost 5s. when fixed, of some £250,000. That this decay is not overrated, is proved from the fact of entire and radical decay frequently occurring in three years from the time of laying, as in chalk formations, or where the wood is subjected to extreme alterations of wet and dry. Mr. Robert Stephenson was fully alive to the magnitude of the apprehended evils when he stated in the House of Commons, "that if the increased weights and the increased speeds are to be maintained, it will be necessary to relay the lines."

We before remarked, that there are two ways of mitigating or removing the difficulties in question, the adoption of lighter engines, and a relay of the line. Arguing on the broad principle, a large locomotive is more profitable in its action than a small one, provided there is full work in each case; therefore it would appear that the former must answer better, in a commercial point of view, provided its weight and speed are not beyond what Mr. Stephenson has termed the "economic endurance" of the line. Knowing, however, that large engines cannot always be supplied with work to the full extent of their power, the proposition is modified, and light engines may sometimes answer for the traffic, whilst their deteriorating influence on the way is manifestly nothing to compare with that of the former class. As a point of commercial calculation, the speed of an engine may be increased in direct proportion to its lightness, heavy engines being kept exclusively for the conveyance of luggage and other slow trains. The arguments in favor of the light engines have been already fully elucidated in this Journal; we shall, therefore, at once proceed to the consideration of the improvement of the permanent way.

In lines where chairs are used, the latter are required to be long and heavy, to afford a resisting power against the leverage of the rails, which tends to tear them up from the sleeper when side-blows are given from the travelling wheels. No arrangement of the chairs, short of an excessive increase in size, can, however, remove the objectionable wear between the rail and its bed in the chair. To remedy this evil we must do away with chairs altogether.—*Glasgow Practical Mechanics' Journal.*

As a substitute for the chair, the writer of the above proposes that each longitudinal sleeper shall consist of two pieces of timber seven inches square, with a groove cut partly out of each each for the reception of what he terms the main central rib of the rail, which is a projection from the underside of the rail, in the shape of an inverted T; the two pieces of timber being secured by transverse bolts passing through these ribs of the rail, which is thus tightly bound between the timbers. Thus, while the rail has the best possible bearing upon the timbers, these firmly hold the main rib which is fitted into the groove. To prevent looseness, so common with iron spikes and chairs, the whole surface of the rail is to be embedded in tar, so that the timber and metal portion would be hermetically sealed from the rust.

☞ The fast train which now runs through between Albany and Buffalo, traverses the distance of 323 miles in sixteen hours—a little over twenty miles per hour including all stoppages.

Cost of Blast Furnaces.

The question is often asked, how it is possible a blast furnace should be so costly an affair—one for anthracite often exceeding \$50,000, and one for charcoal \$30,000. A great deal of the work about one of these structures is hidden from view; and they all involve, moreover, many accessory items, which do not present themselves at the first glance. Small charcoal furnaces are built and put in operation, with all their machinery, at an expense sometimes not exceeding \$10,000 or \$12,000; but this must be on water power furnished at little cost for dam, and race-way, and with the strictest economy in the amount and quality of the machinery for the blast, and in the general character of all the work. Such furnaces can hardly be depended upon for a long time, still from the contingencies of the business it is often the most judicious plan to construct such.

The following estimate comprises the ordinary essential items connected with building a furnace for charcoal, and about the range of their cost.

Furnace—stack and foundation.....	\$1,000 to	\$3,000
Lining.....	300 "	600
Hearth stones.....	200 "	350
Castings (including 20,000 lbs. hot air pipes) at 4 cts. per lb.....	800 "	1,500
Top and casting house.....	200 "	1,500
Blowing machinery.....	600 "	3,000
50 horse-power steam engines (sufficient for two furnaces).....	5,000 "	5,000
Coal sheds.....	500 "	1,000
Blacksmith's shop and tools.....	300 "	400
Workmen's houses.....	1,500 "	3,000
Agent's house.....	1,500 "	2,000
Store.....	700 "	1,000
Out houses, stables, etc.....	800 "	1,500

\$13,400 to 23,850

If kilns are added for charring wood, their cost will be from \$700 to \$1000 each. H.

American Cast Steel.

It is generally known that the important article of cast steel—for the supplies of which we are dependent on foreign countries, principally England—is now produced in this country from American iron, and that of a quality much superior to that imported. For this important advancement towards a state of entire independence of other countries, we are indebted to the energy and enterprise of the *Adirondac Steel Manufacturing Company*, and to the ingenuity and science of their superintendent, Mr. Joseph Dixon. Their manufactory is located at Jersey City, N. J., and the iron which they use for making the steel is manufactured by themselves, at their works, situate on the western borders of the county of Essex, in the state of New York. The ore from which it is made is there found in inexhaustible quantity, and being in the heart of an extensive forest, which will furnish charcoal for a century, their works might be so extended as to meet the entire demand of the Union. They are now prepared, we understand, to furnish steel of all sizes and forms, and at prices below that of the best qualities of imported steel.—*Phil. North Am.*

At a meeting of the stockholders of the Phenix Mining and Manufacturing Company, held at the office of the company, in Wall street to-day, the following gentlemen were elected Directors of the company:—Samuel Jaudon, Wm. S. Wetmore, Elisha Peck, David Banks, John C. Zimmerman, John C. Stemmeler, Benjamin Nathan, Myndert Van Schaick, Benj. T. Reed, Boston.

Cleveland and Pittsburgh Railroad.

The city of Cleveland has already subscribed over \$130,000 for the construction of this road. This will put under contract 57 miles of the road from Cleveland to Tea Garden, near Mount Union, which will be ready for the iron in 1850. Eighteen miles beyond this is under contract, making in all 75 miles, leaving but 23 miles to be provided for.

Practical Geology and Metallurgy.

JAMES T. HODGE WILL EXAMINE AND report upon Mines and Ores; construct and conduct Blast-furnaces; and give important information as to the best localities for their establishment. To parties desirous of building the nearest furnaces to New York city he can furnish the control of ores, which will warrant the enterprise.

Office at No. 1 New St., corner of Wall. When absent from the city, inquiry may be made at the office of this Journal, 54 Wall St.

American Railroad Journal.

Steam Navigation, Commerce, Mining, Manufactures.

ESTABLISHED IN 1831.

At Five Dollars Per Annum in Advance.

THE AMERICAN RAILROAD JOURNAL is published at 54 Wall St., New York, under charge of HENRY V. POOR, Esq., Editor. Several gentlemen are engaged as regular contributors, known as leading Railroad men in the country.

The Railroad Journal was commenced before any similar publication was attempted in this country, or elsewhere, devoted to the Railway interest; and it has recorded the progress of the Railway System from its humble beginnings, and contributed to carry it forward till the whole civilized world has become more dependent upon it than upon any other agency whatever.

The Locomotive Railway System has now become the great necessity of man—the great instrument of civilization and progress—the great idea of modern times. It has already done more to relieve the burdens of labor—to minister to man's wants and necessities, and to elevate him in the scale of being, than any other agency that has ever been exerted.

The Locomotive Steam Engine, we regard as the greatest achievement of man—the most extraordinary instrument for good the world has yet reached. It traverses the earth with a speed outstripping the swiftest bird upon the wing, carrying—not thought or language alone, but—man, living, breathing, sensitive man—instinct with new life—new energy—new powers, conscious almost of new faculties and a new creation. Without danger, and without fatigue, it enables man to transfer himself to distant regions of space, and participate in the enjoyments, the physical gratifications, and the various pleasures of social existence, in a manner heretofore unknown. It gives to every community the productions, and ideas of every other—disclosing or creating new sources of enjoyment, and multiplying, to an infinite degree, every susceptibility to pleasurable emotion.

It will not have achieved its highest work till it has harmonised political differences, and elevated all men to the highest social condition of which they are capable. By making distant places one neighborhood, it practically prolongs our being, not to one, but to a fourfold degree, enhancing, in the same ratio, all the joys of existence.

Whoever, therefore, labors in this field, has more than the ordinary rewards for exertion. He is working for humanity—for progress—for the highest good of his race. Profoundly impressed with these views, we intend, in accordance with their spirit to conduct the Journal.

The history, the influence, and the improvements of the railway, with statistics, showing its extent, cost and productiveness, as well as a careful inquiry into its management; scientific discoveries, the mechanic arts, steam navigation, commerce and mining—especially in connection with locomotion and the progress of industry—are embraced in the range of our labors.

Under the mining head, the readers of the Journal will find a series of articles on the *Iron Ores and Iron Manufacture* of the United States, from the pen of J. T. Hodge, Esq., who is an Assistant Editor of the Journal, for the department of Mining and Metallurgy.

Mr. Hodge has for many years been engaged in the preparation of a work on the *Iron Ores and Iron Manufactures* of the United States, embracing descriptions in detail of the different localities of ore, the expense of working different mines, the structure and location of the several blast furnaces and the results of their working. This work is to be published in a condensed form in the Journal, in a series of weekly papers, conveniently arranged under appropriate heads, with statistical tables of different districts, and such plans and drawings as may be found desirable.

Besides this work on iron, Mr. Hodge is to furnish to the Journal detailed accounts of the *Copper and Lead Mines of the United States*, which have been carefully examined by him, with information on mining subjects generally.

These works will be found indispensable to all parties engaged in mining and the iron manufacture.—This is the first attempt yet made to give, in an elaborate and practical form, a scientific work on the iron ores, the iron manufacture, and mining resources of the whole country.

GEN. C. T. JAMES, of Providence, has also been engaged as an Assistant Editor of the Journal. He will furnish to the Journal full accounts of the progress of mechanical invention, and of the condition of the manufacturing interests of the country. His reputation as a practical mechanic, a successful manufacturer and an able writer, are already well known to the public. He will also furnish valuable information touching other branches of industry and of business.

Great Britain owes her present commercial and political importance more to the mechanical invention of her people than to any other cause.

American skill, industry and enterprise, are giving us a distinguished rank in the community of nations. To these interests, and to the Railway, as the most valuable of all, this Journal will be earnestly devoted.

J. H. SCHULTZ & CO.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.**BUSINESS CARDS.****James Laurie, Civil Engineer,**No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m***James Herron, Civil Engineer,**OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE**HERRON RAILWAY TRACK.**

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.**Railroad Iron.**THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Railroad Iron.THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
DUDLEY B. FULLER, Agent,
139 Greenwich street.
New York, October 25, 1848.**Railroad Iron.**THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.**English Railroad Iron.**3000 Tons T pattern Rails in store, and to arrive this Spring—58 and 60 lbs per yard; of an approved pattern, best English make, each bar being stamped with the manufacturers' name, and inspected before shipment at the works in Wales. For sale by
DAVIS, BROOKS & CO.,
68 Broad street.
March 18, 1849 2m.11**Railroad Iron.**THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.**Railroad Iron, Pig Iron, &c.**600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by 1 Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsberrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.**Railroad Iron.**

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13**Pig and Bloom Iron.**THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.**Railroad Iron.**RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.**RAILROAD WHEELS.**

CHILLED RAILROAD WHEELS.—THE Undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE Undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }**Wanted Immediately.**

8000 Tons of Inverted T Rail wanted, of about 60 lbs. to the yard, for laying 80 miles of road, by the Columbus and Lake Erie Railroad Company, and Mansfield and Sandusky Railroad Company, 60 miles of which is new road, and to re-lay 20 miles on the last mentioned road.

Proposals will be received until May 15, addressed (under seal) to me, at this place.

Proposals are invited for cash on delivery, and also for 7 per cent. bonds, payable in New York or Boston. Delivery may be made at Oswego, Albany, or New York, or at Portsmouth, on the Ohio river, Montreal, Canada, or at Sandusky city. American Iron would be preferred, except good English. Parties proposing, will please name the place preferred for delivery. Delivery to commence as early as June 1st, and complete as early as October 1st, if practicable.

B. HIGGINS, Superintendent, etc.
Sandusky City, Ohio, March 15, 1849. 2m.13SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent,
Albany Iron and Nail Works.**SCHENECTADY LOCOMOTIVE WORKS**
SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.

April 11, 1849.

P. S. DEVLAN & CO'S
Patent Lubricating Oil.THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON,
54 Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14



INCORPORATED BY ACT OF PARLIAMENT

NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDEEET,
Secretary U. C. M. C.
Hamilton, 24th February, 1849. 12tf**WILLIAM JESSOP & SONS'**
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Bliester Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

Direct Action Engines FOR STEAMBOATS.

THE PATENT DOUBLE CYLINDERS, AND ALSO

THE ANNULAR RING PISTON ENGINES, of Messrs. Maudslay, Sons & Field, of London, may be built in the United States, under license, which can be obtained of their agent,
THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } **SPRINGFIELD, MASS.**
ISAAC MILLS, } 1y48

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woolen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

For sale by **ALLEN & NEEDLES,**
22 & 23 South Wharves,
Philadelphia Pa.

LAP - WELDED WROUGHT IRON TUBES FOR TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. **STARKS & PRUYN,** of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	} Canal Commissioners of the State of New York.
Nelson J. Beach,	
Jacob Hinds,	} Engineer of the Bridges for the Albany Basin.
Willard Smith, Esq.,	
Messrs. Stone & Harris,	} Railroad Bridge Builders, Springfield, Mass.
Mr. Wm. Howe,	
Mr. S. Whipple,	} Engineer & Bridge Builder, Utica, N. Y.
January 1, 1849.	

FRENCH & BAIRD'S Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't no. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

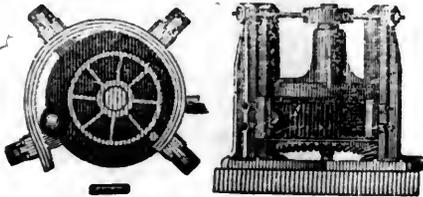
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

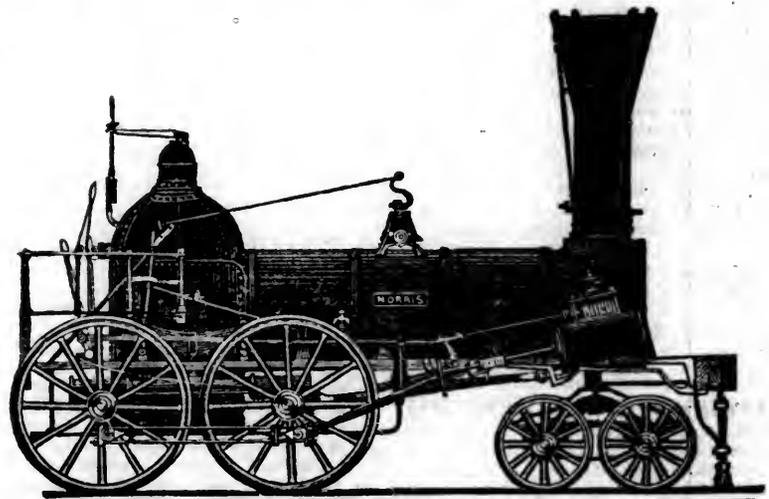
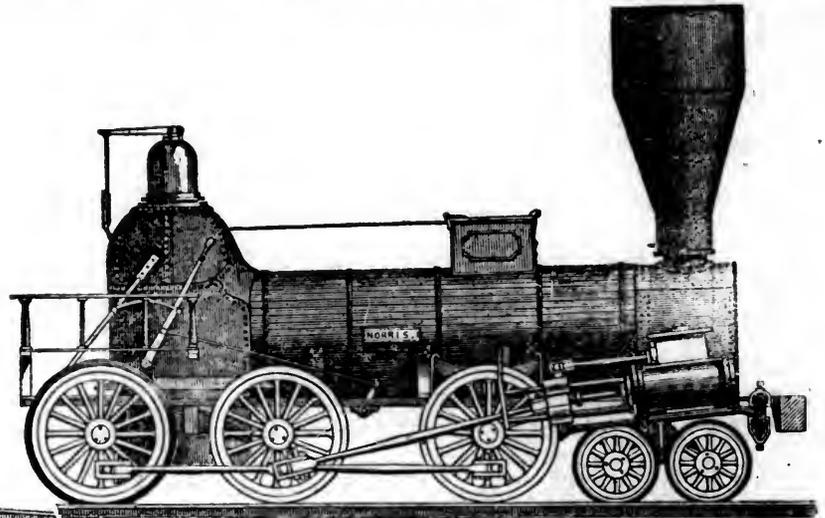
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

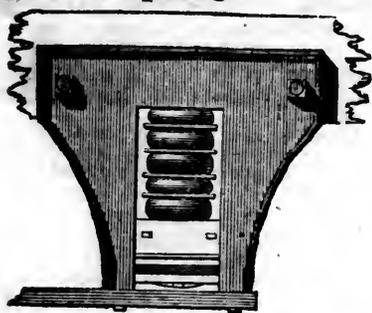
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Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

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Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c.

G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].
INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

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Jan. 20, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

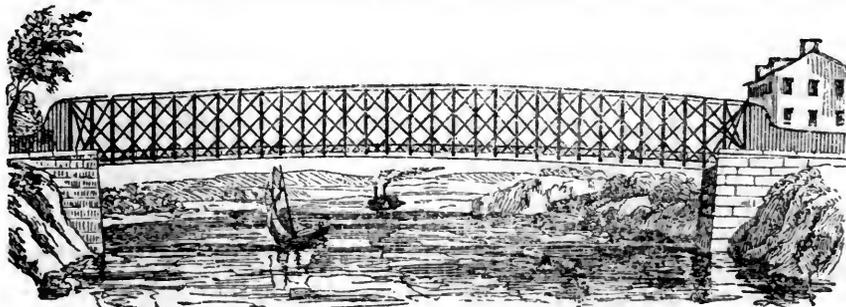
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The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

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INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



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THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

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M. M. WHITE,
Agent for the Company.

November 25, 1848.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, supt Georgia railroad, Augusta, Ga.; G. A. Nicolls, supt Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, supt Hart. and N. H. railroad; W. R. McKee, supt Lexington and Ohio railroad; T. L. Smith, supt N. Jersey railroad and transp. co.; J. Elliott, supt M. P. Philad. and Wilm. railroad; J. O. Stevens, supt Elizabethtown and Songville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, supt Mason, (Ga.) railroad; J. H. Cleveland, supt Southern railroad, Monroe, Mich.; M. P. Centenden, supt no. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

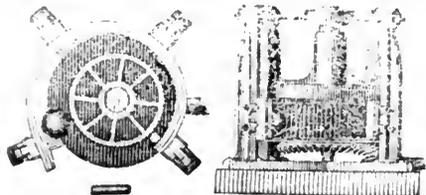
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown out, and that most effectually; saving of staks, as none are used; required. The time required to furnish a bloom being only about six seconds, the scoria has not time to cool, consequently is got rid of much easier than when allowed to cool. Thus under the hammer, the iron is discharged from the machine so hot, rolls better, and is taken easier on the rollers and machinery. The iron is harder, and are much better in the end. The subscriber would commend to persons who will examine the machine in operation, will find it possesses more advantages than can be enumerated. For further particulars, address the subscriber, at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, the exclusive owner of all Henry Burden's Patent Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent, Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR

WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

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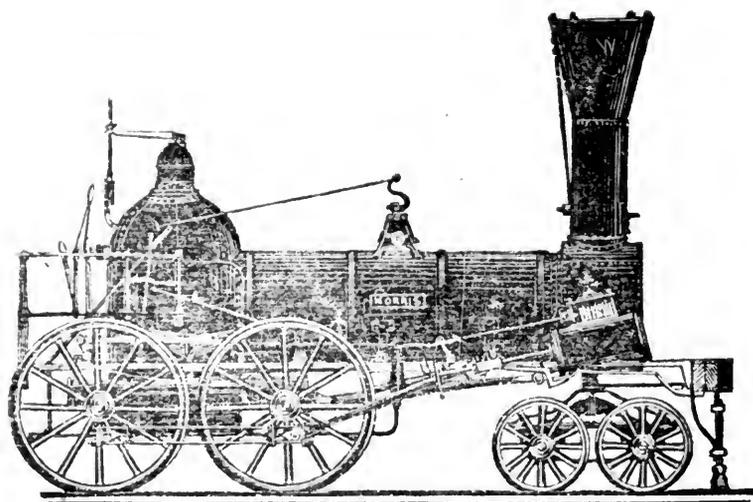
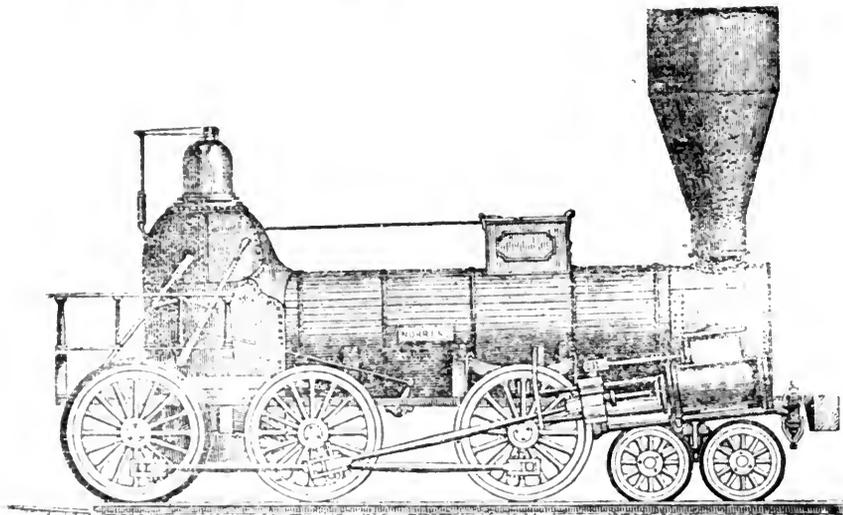
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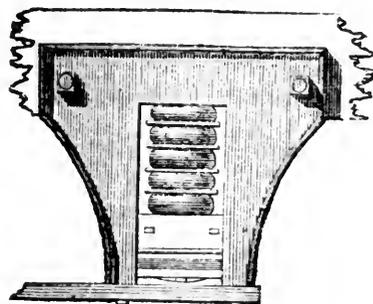
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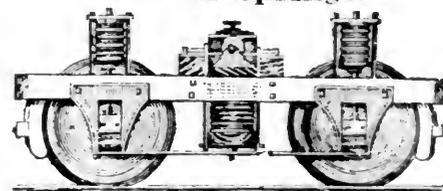
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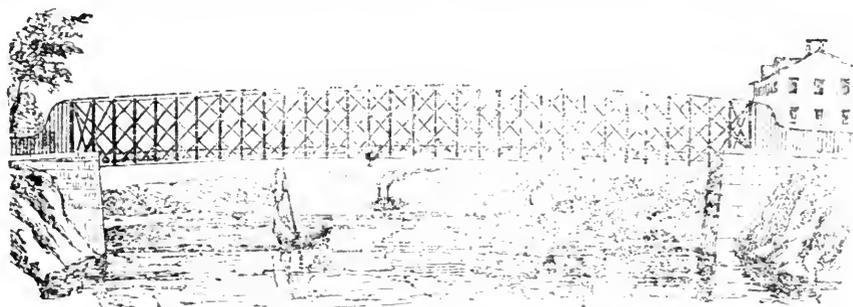
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M. M. WHITE, Agent for the Company.

November 25, 1848.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, APRIL 2d, the

Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8½ am., and 4 pm.

Dedham Trains—Leave Boston at 8½ am, 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, am., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5½ pm. Leave Stoughton at 11½ am., and 3½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Supt.

NORWICH AND WORCESTER RAILROAD.
Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm.

Leave Worcester at 7½ and 10½ am., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1 North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. S. H. P. LEE, Jr., Supt.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9, 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9, a.m., 3½, p.m.
Gloucester, 9, a.m., 3½, p.m.
Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
Portsmouth, 7, am., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,
From Portland, 7½, am., 3 pm.
Portsmouth, 7, 9½*, am., 5½* pm.
Newburyport, 7½, 10½*, am., 2, 6*, pm.
Gloucester, 7½, am., 3½ pm.
Manchester, 8, am., 3½, pm.
Salem, 7½, 8½*, 9*, 10½, 11-40*, am., 2½, 3*, 4½*, 7*, pm.
Lynn, 7½, 8½*, 9½*, 10½, 11-55*, am., 2½, 3½*, 4½*, 7½*, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock; p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 8½, 10, 11-25, am.
2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9½, am., 4½, pm.
Salem for Gloucester at 9½, am., 4½, pm.
Trains leave
Gloucester for Salem at 7½, am., 3½ pm.
Manchester for Salem at 8, am., 3½ pm.
Freight Trains each way daily, Office 1 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM to LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9*, am., 3.15*, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am., 2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30*, am., 5*, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.

Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
Outward Trains from Boston

For Portland at 6½ am. and 2½ pm.
For Rochester at 6½ am., 2½ pm.
For Great Falls at 6½ am., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
For Lawrence at 6½, 9, am., 12 m., 2½, 4½, 6, 7½ pm.
For Reading 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½* pm.

Inward trains for Boston
From Portland at 7½ am., 3 pm.
From Rochester at 9 am., 4½ pm.
From Great Falls at 6½, 9½ am., 4½ pm.
From Haverhill at 7, 8½ 11 am., 3, 6½ pm.
From Lawrence at 6, 7½, 8½, 11½, am., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9, am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½* pm.
Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27, 1849.

NEW YORK AND ERIE RAILROAD. WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40 and Morrisiana and Harlem at 8 o'clock am.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice. The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8 1/2 a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3 1/2 p.m. The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10 1/2 a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5 1/2 p.m.

THOMAS STEERS, Secretary.
March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:
Leave Baltimore at 9 am. and 3 1/2 pm.
Arrive at 9 am. and 6 1/2 pm.
Leave York at 5 am. and 3 pm.
Arrive at 12 1/2 pm. & 8 pm.
Leave York for Columbia at 1 1/2 pm. & 8 am.
Leave Columbia for York at 8 am. & 2 pm.

Fare:
Fare to York \$1 50
" Wrightsville 2 00
" Columbia 2 12 1/2
Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg \$9
Or via Lancaster by railroad 10
Through tickets to Harrisburg or Gettysburg 3
In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at 5 1/2 pm.
Returning, leaves Owning's Mills at 7 am.
D. C. H. BORDLEY, Sup't.
31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.
This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

	Between Augusta and Dalton.	Between Charleston and Dalton.
	271 miles.	408 miles.
1st class Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 23
2d class Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses per hogshead	8 50	13 50
" " barrel	2 50	4 25
Salt per bushel	0 18	
Salt per Liverpool sack	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile. Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton. F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.
n and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows: Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield. Returning, leave Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati. Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains: A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2 pm., Train from Cincinnati, and 2 1/2 am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.
Fare from Cincinnati to Xenia \$1 90
Do do Springfield 2 50
Do do Sandusky City 6 50
Do do Buffalo 10 00
Do do Columbus 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.
The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7 1/2, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
April 1st, 1849.—Fare \$3.
Leave Philadelphia 8 1/2 am., and 10 pm.
Leave Baltimore 9 am., and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" Baltimore at 8 pm.
Trains stop at way stations.
Charleston, S. C.
Through tickets Philadelphia to Charleston, \$20.
Pittsburg and Wheeling.
Through ticket, Philadelphia to Pittsburg, \$12.
" " Wheeling, 13.
Through tickets sold at Philadelphia office only.
Wilmington Accommodation.
Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7 1/2 am., 4 1/2 and 7 pm.
Newcastle Line.
Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm.
Fare \$3.—Second class, \$2.
N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Sup't.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.
A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
The Train from Philadelphia arrives at Reading at 12 18 m.
The Train from Pottsville arrives at Reading at 10 43 am.

Fares. Miles. No. 1. No. 2
Between Phila. and Pottsville, 92 \$3.50 and \$3.00
" " Reading 58 2.25 and 1.90
" " Pottsville 34 1.40 and 1.20
Five minutes allowed at Reading, and three at other way stations.
Passenger Depot in Philadelphia corner of Broad and Vine streets. 81f.

CENTRAL RAILROAD.—FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight.
Rate of Passage \$8 00. Freight—
On weight goods generally, 50 cts. per hundred
On measurement goods 13 cts. per cubic ft.
On brls. wet (except molasses and oil) 1 50 per barrel.
On brls. dry (except lime) 80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery 40 cts. per hundred
On hhds. and pipes of liquor, not over 120 gallons \$5 00 per hhd.
On molasses and oil \$6 00 per hhd.
Goods addressed to F. WINTER, Agent, forwarded free of commission.
THOMAS PURSE, Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the

arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.
Fare through from Charleston to Montgomery daily \$26 50
Fare through from Charleston to Huntsville, Decatur and Tusculum 22 00
The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculum, Alabama, and Memphis, Tennessee.
On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
This is the most expeditious route from the east to any of these places.
CHAS. F. M. GARNETT, Chief Engineer

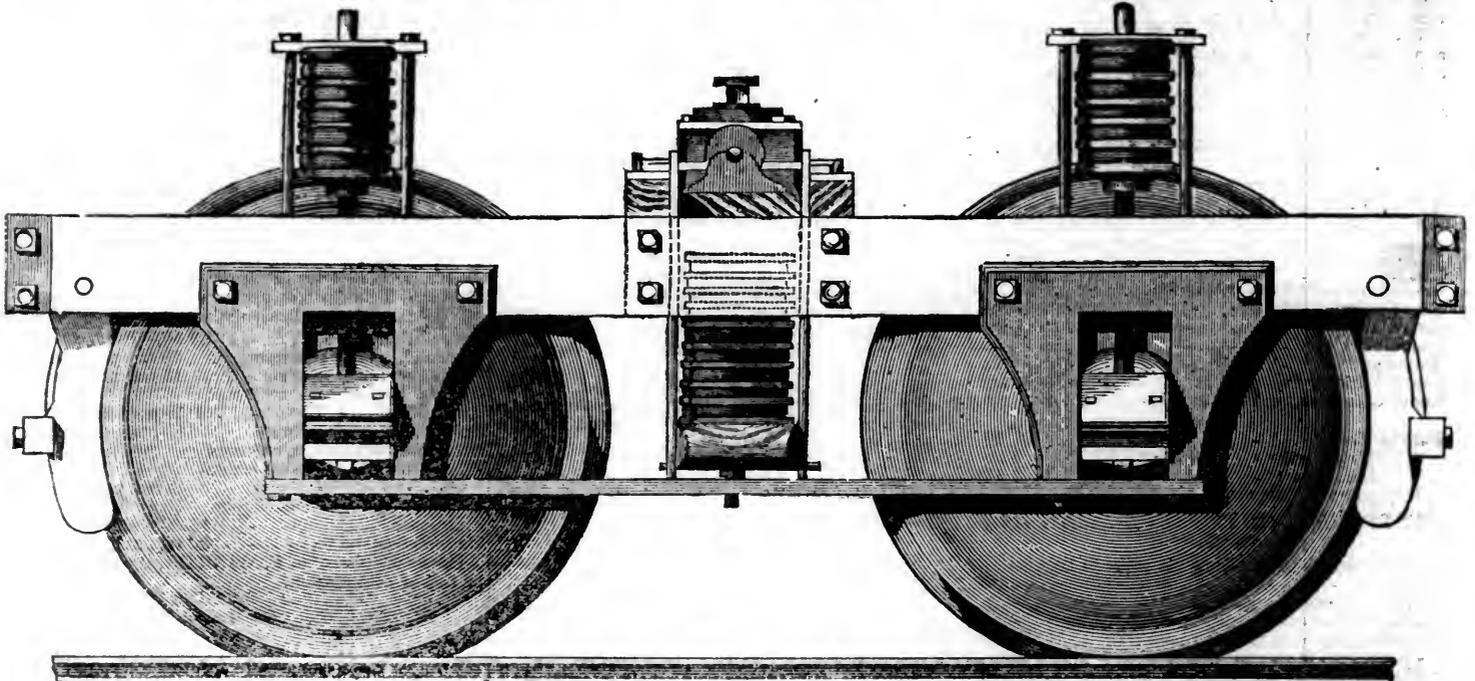
PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.
Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanised India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other Company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the right of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms.—They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent,
Office 99 State-street.
Orders may also be left with WM. RIDER & BROTHERS, No. 53 Liberty-street, New York, or with F. M. RAY, Agent,
100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair.—During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficacy."

The above statement of Mr. Hale agrees with my own observation in all particulars.
WM. PARKER, Supt., B. & W. R. R.
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation cars.
D. N. PICKERING, Jr.,
Supt. Car Building B. & W. R. R.
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.
DAVENPORT & BRIDGES, Car Builders.
BRADLEY & RICE, Car Builders.
Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 ly.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut, Philadelphia, y10 near Third,

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.

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One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5

LETTERS and COMMUNICATIONS for this Journal may be directed to the Editor, HENRY V. POOR, 54 WALL ST.

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STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, May 19, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 291.

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character;—while the ore itself when these indications testify to its origin from the quartz, is highly siliceous; and when derived from the slates, whose decomposition has been more complete, it is found free from stony matter.

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The furnace in Brandon village is owned by Mr. J. E. Conant; the "*Forestville* furnace," three miles north east from Brandon, by Mr. Blake and others.

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At the depth of eighty or ninety feet the ore, although mingled with yellow ochre and some of it finely comminuted, is quite free from admixture with the overlying deposit of drift. This would seem to indicate a near approach to the solid bed of ore, if such there be, from which the fragments originated. Large nodules are common, whose cavity is completely filled with water—a fact which seems inconsistent with the theory of a powerful igneous agency exerted on the hematite, subsequent to its

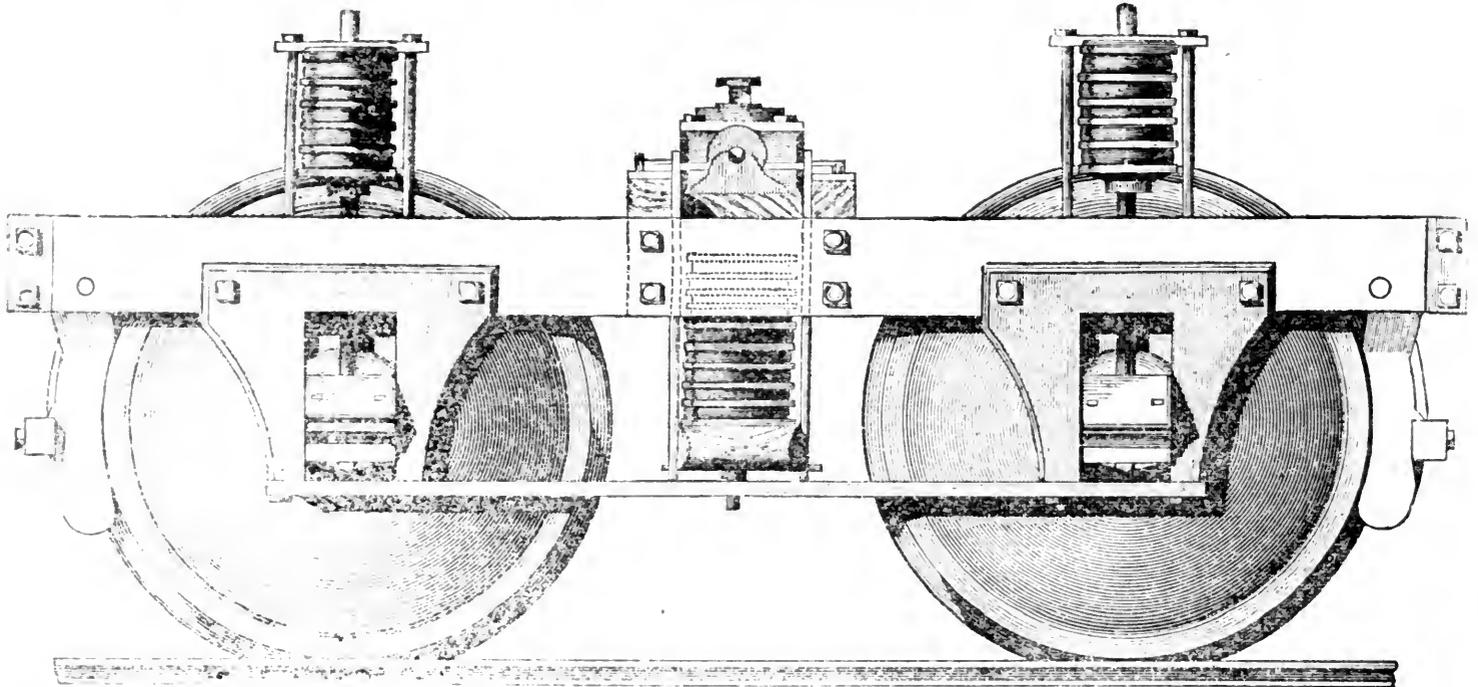
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The furnaces in *Rutland county* are the farthest north in this range. The whole district, however, to the Canada line appears to abound in iron ore. An old furnace is standing at *Vergennes*, which was formerly supplied from the towns of *Bristol* and *Monkton* near by. These ores are associated with quartz rock. The *Bristol* ore was injured by manganese, and the bed at *Monkton* was badly situated for draining. *Colchester* and *Millen*, near the lake,

FOWLER M. RAY'S

METALLIC INDIA RUBBER CAR SPRINGS.



THE NEW ENGLAND CAR COMPANY. Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this in a in operation on every Railroad operating in Boston, period applicable, we are hardly aware of one in which and several others in New England and the Middle West has been more successful than in forming springs States. Their qualities are well understood, or may for railroad cars. We have had occasion to observe, be readily ascertained by every person interested to for some months past, its application to this use, on know them. They require no recommendation from one of the passengers of the Newton special train the Company. The only known compound of India of the Boston and Worcester railroad. It is there used, Rubber good for anything for the purpose is the Vulca not only for the springs on which the car rests, but can't India Rubber, invented by Charles Goodyear, or the springs attached to the draw bar at each end of New Haven, and the application of it, and the form of the car, to prevent any car on the sudden advances in which it is used, which has made by F. M. Ray, of merit or interruption of the motion of the car. For New York. The right to manufacture and sell the both these purposes it appears to be admirably adapted, substance, its use for the purpose of Railroad Carriage and we do not know, that during the period in which Springs, as well as the form and application of it, are it has been used, any defect in it has been discovered, held exclusively by the New England Car Company. It renders the movements of the car extremely easy. No other Company, or individual, has any right to and protects it more effectively, we think than any sell or use it for such purposes, or has attempted so to us in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purposes. None have been manufactured in this country or imported from abroad besides their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the serious scrutiny, into the merits of their Springs, whenever they have applied them. And if after such examination, your Company should prefer for the interest of itself or others, the N. E. Car Company would respectfully invite the patronage, which they think they deserve, and are confident of receiving at your hands.

EDWARD CRANE, Agent.

Office 99 State-street.

Orders may also be left with WM. RIDER & BROTHERS, No. 52 Liberty-street, New York, or with F. M. RAY, Agent, 100 Broadway, N. Y.

The following article from the pen of Mr. HALE, the President of the Boston and Worcester Railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this in a in operation on every Railroad operating in Boston, period applicable, we are hardly aware of one in which and several others in New England and the Middle West has been more successful than in forming springs States. Their qualities are well understood, or may for railroad cars. We have had occasion to observe, be readily ascertained by every person interested to for some months past, its application to this use, on know them. They require no recommendation from one of the passengers of the Newton special train the Company. The only known compound of India of the Boston and Worcester railroad. It is there used, Rubber good for anything for the purpose is the Vulca not only for the springs on which the car rests, but can't India Rubber, invented by Charles Goodyear, or the springs attached to the draw bar at each end of New Haven, and the application of it, and the form of the car, to prevent any car on the sudden advances in which it is used, which has made by F. M. Ray, of merit or interruption of the motion of the car. For New York. The right to manufacture and sell the both these purposes it appears to be admirably adapted, substance, its use for the purpose of Railroad Carriage and we do not know, that during the period in which Springs, as well as the form and application of it, are it has been used, any defect in it has been discovered, held exclusively by the New England Car Company. It renders the movements of the car extremely easy. No other Company, or individual, has any right to and protects it more effectively, we think than any sell or use it for such purposes, or has attempted so to us in this country.

The above statement of Mr. Hale agrees with my own observations in all particulars.

WM. PARKER, Supt., B. & W. R. R. June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last five months, on the Boston and Worcester railroad corporation D. N. PICKERING, Jr., Supt. Car Building B. & W. R. R. Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and merits.

DAVENPORT & BRIDGES, Car Builders, BRADLEY & RICE, Car Builders. Boston, June, 1848.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to France's "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE, 112 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER, Surviving partner of STANCLIFFE & DRAPER.



No 23 Pear street, below Walnut, 10 near Third, Philadelphia.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tilters, etc, by JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Ships, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

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HENRY V. POOR, Editor.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*

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The furnaces in *Rulland county* are the farthest north in this range. The whole district, however, on the Canada line appears to abound in iron ore. An old furnace is standing at *Vergennes*, which was formerly supplied from the towns of *Bristol* and *Monkton* near by. These ores are associated with quartz rock. The *Bristol* ore was injured by manganese, and the bed at *Monkton* was badly situated for draining. *Colchester* and *Millon*, near the lake,

seem to offer great inducements for the establishment of furnaces. The Colchester hematite is now mined for a furnace, at Westport, on the other side of Lake Champlain, where it is used to advantage by F. H. Jackson, Esq., in mixture with the magnetic ores of Essex county, New York. Near *Milton* and *Fairfield* there appears to be some promise of opening workable veins of *specular iron ore*, as this has already been met with in veins of uncertain extent. A specimen I have is of beautiful character, pure and rich, much resembling the iron mountain ore of Missouri. Good ore of several varieties appears to be abundant throughout this section, and its proximity to the lake is certainly very important for convenience of transportation, and for drawing supplies of fuel from the timbered country on its shores. The severities of the climate must necessarily be lessened in leaving the mountains and approaching the lake.

The furnace in *Troy* near Canada is on the serpentine range of the Green Mountains. The ore is a titaniferous magnetic ore, occurring in a vein lying nearly vertical in the serpentine, and following its range, along which it has been traced two miles. The vein is from three to five feet thick.—Professor Emmons in the Geological Report of the New York Survey, p. 346, speaks of it as from 10 to 15 feet in thickness, and sinking but a few feet into the serpentine. Veins in this rock generally appear to be very uncertain as to continuance.

In 1844, six hundred tons of pig iron and castings were made, and machinery has since been erected for the manufacture of wrought iron also. The ore is quite free from admixture with the serpentine.—I subjoin an analysis of a specimen by Mr Olmstead.

Per oxide of Iron	81-20
Protoxide "	13-37
Titanic acid	4-10
Silica	1-33
	100-00
Metallic Iron	66-62

The ore works with great difficulty, making a thick pasty cinder and high iron. In the mass it probably contains a larger per centage of titanium than the specimen analysed afforded.

In the town of *Jay*, which adjoins *Troy*, veins of *chromic iron ore* occur in the serpentine, which but just discovered by Professor Adams, are as yet too partially developed to determine their real importance. The largest vein is described to be from one to two feet wide. It is anticipated that from the high value of good chromic iron, which Professor Adams states is worth forty dollars per ton, these veins will prove of great consequence.

Concerning the *St. Johnsbury Furnace*, in the north eastern part of the state, I have no details. Professor Adams remarks that in *Waterford*, the adjoining town, some small isolated beds of bog ore have been found in the vicinity of the furnace of *St. Johnsbury*, and nearly exhausted. One yielded a few hundred tons. I understand the furnace is no longer in blast.

Tyson's Furnace in *Plymouth* on the east side of the mountains, owned by Isaac Tyson of Baltimore, Md., runs with hematite ores, which are found only a quarter of a mile distant. They resemble the ore of the west side of the Green Mountains, and like them are associated with manganese, which incrusts and is intimately mixed with them. In the vicinity of the furnace there are found boulders of magnetic iron ore, sometimes of several hundred weight each. They have been so abundant as to have added ma-

terially to the supplies of ore for the furnace; yet no veins have been found, notwithstanding diligent search has been made for them. Their discovery would have been a matter of no small moment, for from its purity and deficiency in manganese, this ore is extremely well adapted to mix with the highly manganesean hematites.

Carbonate of iron is found in small veins near the furnace also, which, if it should prove abundant, would prove a valuable ore, though this too has rather a large per centage of manganese in the state of a carbonate. Its analysis, made in the Ecole des Mines, at Paris, in April, 1848, gave the following result:—

Carbonate of Iron	75	Iron	36-00
Carbonate of Manganese	10		
Carbonate of Magnesia	12		
Pyritous Copper	3	Copper	1-00
	100		

The furnace was erected in the year 1837, with hot blast, the consumption is said to be one hundred bushels of charcoal to the ton, which means no doubt the amount actually put into the furnace, no allowance being made for the great waste in handling;—with cold blast one hundred and fifty bushels. The iron made, which amounts to about three tons per day; while the furnace is in operation, is for the most part high iron of poor quality. The excess of manganese in the ore is no doubt the cause of the ill success that has attended the operations of this furnace, its effect being the same as in the Wallingford "black ore," before described as used at the North Dorset Furnace. The quality of the iron is of that silvery white high iron, much resembling iron made at the Adirondac Furnace, New York, and used in Jersey city for the manufacture of steel. H.

Improvement in Laying the Track of Railroads.

A patent was taken out two years since by J. El-nathan Smith, Esq., of the city of New York, for laying rails on vulcanised India rubber. The experiment has now been fully tested by the trial of a year or more on some of the roads, and the results have proved all that were anticipated. By reference to the advertisement of Mr. Smith in another column these may be seen concisely enumerated.

The suitability of the material for the purpose of lessening the wear and tear of rails and cars, as well as of the noise accompanying their motion, by the interposition of an elastic medium, may be inferred from our remarks upon the qualities of this prepared rubber, in the number of this Journal for May 5th.

We have examined a piece of it, that had lain under the rail of the New Orleans and Carrollton Railroad, from August, 1848 to the 30th April following; it had apparently lost none of its elasticity, and was uninjured, except a slight cut on the junction of the two rails. Mr. J. Hampson, the Engineer on this road, in a second letter dated 30th April, speaks of its application in the highest terms.

We have a letter also before us of the 29th Nov., 1848, signed Andrew S. Mathews, Engineer P. and E. R. R., in which the writer speaks in similar terms of the beneficial effects arising from its use on portions of the Stonington Railroad.

The subject no doubt will attract the particular attention of railroad companies, especially of those whose roads, from the imperfect manner in which they are constructed, communicate an oscillatory motion to the car which greatly increases the wear and tear of the road, and annoys the traveller by a most disagreeable noise and jar. H.

The Tuscany Furnaces.

These blast furnaces are somewhat variable in form. They are built round inside, and the basin at the bottom* is terminated behind by a half-circle. In the new furnace of Follonica, called San Leopoldo, and that of Cecina, this basin is longer—from front to back—than wide; but in the old furnace of Follonica it is wider than long. The diameter of the tunnel-head is generally the same as that of the basin, or a mean between its length and width.—The diameter across the boshes is twice and two-thirds that of the tunnel-head. In the furnace of Cecina the boshes are just half way up the stack; in the old furnace of Follonica they are lower by about one-fortieth of the whole height; in the San Leopoldo they are lower than the middle by about one-twenty-second of the whole height. This last furnace, the most modern of all, as it was built in 1836, is the only one, which can really be said to have a hearth. The walls of this are nearly vertical, and their height are about one-third of the space from the top of the basin to the boshes.

The principal dimensions are comprised in the following table.

	Furnace of Cecina.	Old Furnace of Follonica.	Furnace San Leopoldo
	Feet.	Feet	Feet.
Basin—length from front to back.	2-39	2-29	2-29
Basin—width	2-1	2-67	2-1
Diameter at the upper part of the hearth . . . . .	.....	.....	2-87
Diameter at the boshes	5-93	7-1	6-9
Diameter at the tunnel-head	2-1	2-49	2-49
Height of the basin	1-43	1-73	1-77
Height of the hearth above the basin . . . . .	.....	.....	3-1
Height of the boshes above the bottom-stone	11-86	12-8	11-66
Total height of the furnace	23-71	26-96	24-34

The stacks are generally built of common bricks; the lining and lower part (corresponding to the hearth) of refractory slates. All these furnaces being located in low and unhealthy places, which cannot be inhabited in the summer, each blast continues only seven or eight months. Consequently undergoing such changes of temperature, their in-walls rapidly give out; a new hearth has to be put in every year; and the lining lasts only four or five years.

The blowing machines are different at the different works; they have been gradually perfected as the production of iron has increased. At Valpiana and Pescia the blast is raised by wooden tubs (*trompes*). At Cecina the furnace is blown partly by wooden tubs and partly by a hydraulic machine composed of chambers, which are filled alternately with air and water. At Follonica the blowing apparatus is a machine with square pistons moving in marble boxes. That of San Leopoldo consists of cast iron cylinders.

These cylinders for the furnace San Leopoldo are estimated to furnish 1400 cubic feet of air per minute calculated at the temperature of 0° cente. and at a pressure of 1-14 lbs. to the square inch: but the actual amount seems to be short of 1000 cubic feet; and the pressure probably exceeds that given. Two

* In the description of these furnaces a distinction is made between the receptacle at the bottom of the hearth and the hearth itself. The one is called *crucible*, and its depth or height I understand to be that of the dam-stone; the other is called *ouvrage*, and means literally the working place.

tweres are used, one on each side; they incline downward 15°. The blow pipes are rectangular, except the upper edge, which is half circular; their width is 2-1 inches and their height 2 inches. The tweres are of copper, and made hollow for a current of water. There is a heating oven for the blast by the side of the tunnel head; but the arrangement was very imperfect at the time these observations were made. The air carried up in a ten-inch pipe was divided into three pipes in the oven, whose aggregate area was only one-third of the main pipe. The temperature of the blast was supposed to be only 160° Centigrade (320° Fahrenheit).

The old furnace of Follonica was blown by four square marble boxes, measuring 3-82 feet on the side. They are made open at the top. The pistons move alternately, the length of their stroke is 3-34 feet. When blowing cold the number of lifts is 13½ per minute. These should all furnish 2183 cubic feet at 15° Cente. or 2067 cubic feet at 0° Cente. One blow pipe only is used, 3 inches square; the twer is inclined downward 16°. The pressure is rudely estimated at 1½ lbs. to the square inch. From these data the volume of air at 0° Cente. is found to be 1024 cubic feet. This great difference in the calculation is the result of the construction of the machine itself. The blast is heated in an oven directly over the tunnel head. The arrangement of the pipes we should consider very imperfect. The temperature is estimated without any certain data at 230° Cente. (446° Ft.); but the blowing machine being greatly retarded when all the blast passed through the heating pipes, a part is shut off from them; and the machine, running 12 strokes a minute, is estimated to blow 1,114 cubic feet of hot air and cold air mixed, whose supposed temperature is 87° Centigrade (188° Ft.)

It is hardly worth while to enter into the full details of the blowing machinery of all these furnaces, as they are given in the description of M. Garella. The data on which his calculations are based are by no means certain, and the results are only approximate. The Cecina is blown with one twer only; the quantity of air is estimated at 840 cubic feet per minute, the pressure not known. The Valpiana received only about 750 cubic feet. The blast for these furnaces was cold.

The Tuscany furnaces work generally with great regularity, particularly when the furnaces are new; but as they become worn and altered in form by the changes of temperature due to their frequent blowing out, they are more subject to irregularities, especially in the descent of the charges, involving increased consumption of coal and a diminished daily production of iron.

The weight and number of charges per day, and the proportion of the materials which compose them, vary with the dimensions of the furnace and the quality of iron desired.

1. At the San Leopoldo, blowing hot blast and making foundry iron, as is generally the case, the charge consists of—

3 measures of ore....weighing..	266 lbs.
2½ " charcoal, " "	190 "
Calcareous tufa..... " "	13½ "

The number of charges per day are 150; the average yield is 22,770 lbs. of cast iron, with a consumption of 39,847-5 lbs. of ore, and 23,462 lbs. of charcoal; or 57-14 of cast iron for 100 of ore, and 125 of charcoal for 100 of iron.

Making forge pig, the charge consists of—

3 measures of ore....weighing..	266 lbs.
2 " charcoal " "	152 "
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The number of charges per day are 165; the average yield is 25,190 lbs. of cast iron, with a consumption of 43,392 lbs. of ore, and 25,147 lbs. of charcoal; or 58-05 of cast iron for 100 of ore, and 99-43 of charcoal for 100 of iron.

2. At the old furnace of Follonica, blowing hot blast, the charge in 1838 was as follows:

6 measures of ore....weighing..	554 lbs.
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The number of charges per day are 85; the average yield is 29,032 lbs. of cast iron with a consumption of 47,096 lbs. of ore and 25,806 lbs. of charcoal, or 61-63 of cast iron for 100 of ore, and 88-9 of charcoal for 100 of iron.

With cold blast the charge consists of—

3 measures of ore....weighing..	266 lbs.
2 " charcoal " "	152 "
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The number of charges per day are 200; the average yield is 59,654 lbs. of cast iron, with a consumption of 53,130 lbs. of ore, and 30,360 lbs. of charcoal; or 55-81 of cast iron for 100 of ore, and 102-4 of charcoal for 100 of metal.

3. Finally at the furnace of Cecina, blown cold, the charge consists of—

3 measures of ore....weighing..	266 lbs.
2 " charcoal " "	152 "
Quick lime..... " "	7-6 "

With the wind from the machine and from the wooden tubs 138 charges are run every 24 hours: the average yield is 20,873 lbs. of cast iron, with a consumption of 36,660 lbs. of ore, and 20,873 of charcoal; or 56-93 of cast iron for 100 of ore, and 100 of charcoal for 100 of metal.

When the furnace is blown only by the wind from the machine, only 109 charges are run per day, and the yield is 16,520 lbs. of cast iron, with a consumption of 28,996 lbs. of ore, and 16,999 of charcoal; or 56-97 of cast iron for 100 of ore, and 102-9 of charcoal for 100 of metal.

The cinder is for the most part fluid, but small in quantity; so that it has to be worked up about every two hours to facilitate its running and to keep the hearth clean. It is also necessary to keep the passage always open for the flame under the tympan-stone. In making forge-pig the furnace is usually tapped about every three hours. The hearth is never suffered to get very full of metal. The blast is never taken off except when the metal is run out.

In running forge-pig, the most frequent varieties obtained are mottled, ribboned and white irons.—They change with the quality of the charcoal; and it is not desirable to run on either alone. A too great production of white iron indicates a bad running, particularly in the old Follonica furnace. A spongy white iron, sometimes obtained, is always a sign of bad working, coming from an overcharge of ore, or a slip in the furnace.

Grey iron is obtained by increasing by a quarter the proportion of charcoal in the charges: it is never of a very decided grey. In the second fusion it loses its color and becomes white. The grey iron of the first fusion of the furnace San Leopoldo is soft and works well; it has a fine grain and takes readily the most delicate impressions.

The next number will contain the tables of the workings of these furnaces, with further remarks as to the nature of their operations. H.

Adirondac Steel Works.

Through the kindness of our friend, David Henderson, Esq., Agent for the above works in Jersey City, we have been favored with an opportunity of examining them the present week; and as they are

the only works in the United States which have successfully persevered in the manufacture of cast steel, and will consequently have the honor of establishing this highly important branch of manufacture in this country, a short account of the works we think will be received with no little interest by many of our readers.

For several years, the Adirondac Iron Company have been contending with extraordinary perseverance in attempts to reduce with economy the very refractory ores found in enormous quantities on their lands in the northern part of Essex county, in the State of New York. These ores will be particularly described in the papers on the Iron Manufacture of the United States. At present the company have a furnace in operation 50 miles back from Lake Champlain, which makes with great difficulty from 1½ to 3 tons of pig iron a day. This is puddled and made into bar iron on the spot, then transported to Jersey city to be converted into steel. The ores are magnetic iron ores, and charged with titanium, and prove to be well adapted for the manufacture of a superior quality of steel.

The first experiments made with reference to this object, were by Joseph Dixon, Esq., of Jersey City, well known for his original genius in the mechanic arts, as well as for his familiarity with the sciences. His blow pots, or black lead crucibles, manufactured in Jersey City, we believe are unsurpassed for their refractory qualities by any other whatever. We have had occasion to prove them in severe tests in anthracite furnaces. In one of these pots he once melted over 20 lbs. of the bar iron made from the Adirondac ores. Experimenting upon the ores and the iron, he succeeded in making some cast steel of good quality and great hardness. From his success, he was engaged by the Adirondac Company to build furnaces on a considerable scale in Jersey City to submit the matter to a thorough trial. This he undertook on a plan of his own, intending to use anthracite, never before applied to this manufacture—and this in the face of all the failures previously made in this country, as well as the prevalent impressions derived from the English manufactures, that the experience of successive generations of workmen is requisite for success in this difficult art.—Without experience of his own, and without workmen who had ever seen the process of making cast steel, Mr. Dixon commenced the works last summer. They went into operation early the present year and for some months have been going on with complete success.

They consist of a cementing furnace, built of small size, as experimental merely, into which eleven tons of bar iron are charged every two weeks, and taken out converted into blistered steel. This furnace has been at work nearly a year and a considerable quantity of blistered steel is already on hand. This steel is broken up into small pieces, and put into blow pots which hold 40 lbs., or into larger ones holding 60 lbs. These, to the number of 16, are placed in as many little furnaces, whose tops are on a level with the ground, and around which circulates the air before being blown in at the tweres. In two hours, the contents are melted and the steel is poured or "teemed" into the ingot moulds, which are three, and some four inches square.

The ingots are then re heated in small reverberatory and hollow fires, and drawn out under hammers weighing from 125 to 600 lbs., and running at the rate of from 150 to 350 strokes a minute. In this way they are finished into bars of all shapes and sizes. The present production is about 2500 lbs. a day.

seem to offer great inducements for the establishment of furnaces. The Colchester hematite is now mined for a furnace, at Westport, on the other side of Lake Champlain, where it is used to advantage by F. H. Jackson, Esq., in mixture with the magnetic ores of Essex county, New York. Near *Milton* and *Fairfield* there appears to be some promise of opening workable veins of specular iron ore, as this has already been met with in veins of uncertain extent. A specimen I have is of beautiful character, pure and rich, much resembling the iron mountain ore of Missouri. Good ore of several varieties appears to be abundant throughout this section, and its proximity to the lake is certainly very important for convenience of transportation, and for drawing supplies of fuel from the timbered country on its shores. The severities of the climate must necessarily be lessened in leaving the mountains and approaching the lake.

The furnace in *Troy* near Canada is on the serpentine range of the Green Mountains. The ore is a titaniferous magnetic ore, occurring in a vein lying nearly vertical in the serpentine, and following its range, along which it has been traced two miles. The vein is from three to five feet thick.—Professor Emins in the Geological Report of the New York Survey, p. 346, speaks of it as from 10 to 15 feet in thickness, and sinking but a few feet into the serpentine. Veins in this rock generally appear to be very uncertain as to continuance.

In 1844, six hundred tons of pig iron and castings were made, and machinery has since been erected for the manufacture of wrought iron also. The ore is quite free from admixture with the serpentine.—I subjoin an analysis of a specimen by Mr Olmstead.

Per oxide of Iron.....	81.20
Protoxide ".....	13.37
Titanic acid.....	4.10
Silica.....	1.33
	100.00
Metallic Iron.....	66.62

The ore works with great difficulty, making a thick pasty cinder and high iron. In the mass it probably contains a larger per centage of titanium than the specimen analysed afforded.

In the town of *Jay*, which adjoins *Troy*, veins of *Chromic iron ore* occur in the serpentine, which but just discovered by Professor Adams, are as yet too partially developed to determine their real importance. The largest vein is described to be from one to two feet wide. It is anticipated that from the high value of good chromic iron, which Professor Adams states is worth forty dollars per ton, these veins will prove of great consequence.

Concerning the *St. Johnsbury Furnace*, in the north eastern part of the state, I have no details. Professor Adams remarks that in *Waterford*, the adjoining town, some small isolated beds of bog ore have been found in the vicinity of the furnace of *St. Johnsbury*, and nearly exhausted. One yielded a few hundred tons. I understand the furnace is no longer in blast.

Tyson's Furnace in *Plymouth* on the east side of the mountains, owned by Isaac Tyson of Baltimore, Md., runs with hematite ores, which are found only a quarter of a mile distant. They resemble the ore of the west side of the Green Mountains, and like them are associated with manganese, which incrusts and is intimately mixed with them. In the vicinity of the furnace there are found boulders of magnetic iron ore, sometimes of several hundred weight each. They have been so abundant as to have added ma-

terially to the supplies of ore for the furnace; yet no veins have been found, notwithstanding diligent search has been made for them. Their discovery would have been a matter of no small moment, for from its purity and deficiency in manganese, this ore is extremely well adapted to mix with the highly manganese hematites.

Carbonate of iron is found in small veins near the furnace also, which, if it should prove abundant, would prove a valuable ore, though this too has rather a large per centage of manganese in the state of a carbonate. Its analysis, made in the Ecole des Mines, at Paris, in April, 1848, gave the following result:—

Carbonate of Iron.....	75	Iron.....	36.00
Carbonate of Manganese.....	10		
Carbonate of Magnesia.....	13		
Pyritous Copper.....	3	Copper.....	1.00
			100

The furnace was erected in the year 1837, with hot blast, the consumption is said to be one hundred bushels of charcoal to the ton, which means no doubt the amount actually put into the furnace, no allowance being made for the great waste in handling;—with cold blast one hundred and fifty bushels. The iron made, which amounts to about three tons per day, while the furnace is in operation, is for the most part high iron of poor quality. The excess of manganese in the ore is no doubt the cause of the ill success that has attended the operations of this furnace, its effect being the same as in the *Wallingford "black ore,"* before described as used at the *North Dorset Furnace*. The quality of the iron is of that silvery white high iron, much resembling iron made at the *Adirondac Furnace*, New York, and used in *Jersey city* for the manufacture of steel. H.

Improvement in Laying the Track of Railroads.

A patent was taken out two years since by J. Elnathan Smith, Esq., of *Le Roy*, New York, for laying rails on tubular iron rollers. The experiment has now been fully made by the trial of a year or more on some of the rails, and the results have proved all that were anticipated. By reference to the advertisement of Mr. Smith in another column these may be seen more fully enumerated.

The suitability of iron material for the purpose of lessening the wear and tear of rails and cars, as well as of the noise accompanying their motion, by the interposition of an elastic medium, may be inferred from our remarks upon the qualities of this prepared rubber, in the number of this Journal for May 5th.

We have examined a piece of it, that had lain under the rail of the *New Orleans* and *Carrollton* Railroad, from August 1848 to the 30th April following; it had apparently lost none of its elasticity, and was uninjured, except its right end on the junction of the two rails. Mr. J. Hanson, the engineer on this road, in a statement dated 30th April, speaks of its application in the highest terms.

We have a letter of substance of the 29th Nov. 1848, signed Andrew S. Mathews, Engineer P. and E. R. R., in which the writer speaks in similar terms of the benefits of its using upon its use on portions of the *Savannah* Railroad.

The subject no doubt will attract the particular attention of railroad companies, especially of those whose roads from the improper manner in which they are constructed, combine to be an oscillatory motion to the car which greatly increases the wear and tear of the road, and annoys the traveller by a most disagreeable noise and jar.

The Tuscany Furnaces.

These blast furnaces are somewhat variable in form. They are built round inside and the basin at the bottom is terminated behind by a half-circle. In the new furnace of *Follonica*, called *San Leopoldo*, and that of *Cecina*, this basin is longer—from front to back—than wide; but in the old furnace of *Follonica* it is wider than long. The diameter of the tunnel-head is generally the same as that of the basin, or a mean between its length and width.—The diameter across the boshes is twice and two-thirds that of the tunnel-head. In the furnace of *Cecina* the boshes are just half way up the stack; in the old furnace of *Follonica* they are lower by about one-fortieth of the whole height; in the *San Leopoldo* they are lower than the middle by about one twenty-second of the whole height. This last furnace, the most modern of all, as it was built in 1836, is the only one, which can really be said to have a hearth. The walls of this are nearly vertical, and their height are about one-third of the space from the top of the basin to the boshes.

The principal dimensions are comprised in the following table.

	Furnace of Cecina.	Old Furnace of Follonica.	Furnace San Leopoldo.
	Feet.	Feet.	Feet.
Basin—length from front to back.....	2.39	2.29	2.29
Basin—width.....	2.1	2.67	2.1
Diameter at the upper part of the hearth.....			2.87
Diameter at the boshes.....	5.93	7.1	6.9
Diameter at the tunnel-head.....	2.1	2.1	2.19
Height of the basin.....	1.43	1.75	1.77
Height of the hearth above the basin.....			3.1
Height of the boshes above the bottom-stone.....	11.86	12.8	11.66
Total height of the furnace.....	23.71	26.06	24.31

The stacks are generally built of common bricks: the lining and lower part (corresponding to the hearth) of refractory slates. All these furnaces being located in low and unhealthy places, which cannot be inhabited in the summer, each blast continues only seven or eight months. Consequently undergoing such changes of temperature, their in-walls rapidly give out; a new hearth has to be put in every year; and the lining lasts only four or five years.

The blowing machines are different at the different works; they have been gradually perfected as the production of iron has increased. At *Valpiana* and *Pescia* the blast is raised by wooden tubs (*trompes*). At *Cecina* the furnace is blown partly by wooden tubs and partly by a hydraulic machine composed of chambers, which are filled alternately with air and water. At *Follonica* the blowing apparatus is a machine with square pistons moving in marble boxes. That of *San Leopoldo* consists of cast iron cylinders.

These cylinders for the furnace *San Leopoldo* are estimated to furnish 1100 cubic feet of air per minute calculated at the temperature of 0° cente, and at a pressure of 11 lbs. to the square inch; but the actual amount seems to be short of 1000 cubic feet; and the pressure probably exceeds that given. Two

In the description of these furnaces a distinction is made between the receptacle at the bottom of the hearth and the hearth itself. The one is called *acciaio*, and its depth or height I understand to be that of the dam-stone; the other is called *ovatta*, and means literally the working place.

tweres are used, one on each side; they incline downward 15°. The blow pipes are rectangular, except the upper edge, which is half circular; their width is 2 1/2 inches and their height 2 inches. The tweres are of copper, and made hollow for a current of water. There is a heating oven for the blast by the side of the tunnel head; but the arrangement was very imperfect at the time these observations were made. The air carried up in a ten-inch pipe was divided into three pipes in the oven, whose aggregate area was only one-third of the main pipe. The temperature of the blast was supposed to be only 160° Centigrade (320° Fahrenheit).

The old furnace of Follonica was blown by four square marble boxes, measuring 3.82 feet on the side. They are made open at the top. The pistons move alternately, the length of their stroke is 3.34 feet, when blowing cold the number of lifts is 13 1/2 per minute. These should all furnish 2183 cubic feet at 15° Cente. or 2067 cubic feet at 0° Cente. One blow pipe only is used, 3 inches square; the twer is inclined downward 16°. The pressure is rudely estimated at 1 1/2 lbs. to the square inch. From these data the volume of air at 0° Cente. is found to be 1024 cubic feet. This great difference in the calculation is the result of the construction of the machine itself. The blast is heated in an oven directly over the tunnel head. The arrangement of the pipes we should consider very imperfect. The temperature is estimated without any certain data at 230° Cente. (446° Ft.); but the blowing machine being greatly retarded when all the blast passed through the heating pipes, a part is shut off from them; and the machine, running 12 strokes a minute, is estimated to blow 1,111 cubic feet of hot air and cold air mixed, whose supposed temperature is 87° Centigrade (188° Ft.).

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The ingots are then re heated in small reverberatory and hollow fires, and drawn out under hammers weighing from 125 to 600 lbs., and running at the rate of from 150 to 350 strokes a minute. In this way they are finished into bars of all shapes and sizes. The present production is about 2500 lbs. a day.

In this process, the iron bars gain in the converting furnace of carbon absorbed, about 4 per cent. in weight. In melting the loss is about half a pound to a pot of 40 lbs.; and in the re-heating and hammering the loss is from 6 to 8 per cent.

The quality of the steel has been thoroughly tested for many purposes, and no instance of failure is known. It is in demand by those who have been induced to try its qualities, and is now purchased by them in preference to the best English cast steel. The highest testimonials are given by the proprietors of the Novelty Works, of New York City, by Messrs. E. P. Richards and Richardson, of Utica, also by many others.

A small bar was lately sold to Mr. Quillet, of New Brunswick, New Jersey.—He returned with a coil of spring for clocks and watches which he had manufactured from it, which weighed nine pounds. It had been rolled out quite thin to a width of 2½ inches, and was in one piece of several hundred feet in length, making a coil of about 9 inches diameter;—on the edges it was perfectly free from all irregularities, as smooth almost as a finished spring. Mr. Quillet said he could easily have rolled a piece out to the length of 1,400 feet.

It is not at all surprising that this steel should be pronounced superior to the best English steel we get; but it is surprising that with the great variety of magnetic ores we possess, we should not have made such steel for ourselves long ago. In the Transactions of the Institution of Civil Engineers of London, it was shown in the year 1812, that of the 25,000 tons of steel made annually in Great Britain, not more than 2,500 were made from the best quality of Swedish iron; the rest was made from inferior charcoal iron from Russia and Germany and from English iron; which was not well calculated for converting. With ores such as are found in many of our states, no doubt equal to the best Swedish for this purpose, and with a sufficiency of them at the lowest prices, to insure against inferior mixtures, it is to be hoped this successful experiment of Mr. Dixon and the Adirondac Steel Company will so encourage this new branch of manufacture, that we shall soon be independent of foreign supplies of this important article. H.

Ironmasters' Quarterly Meetings.

Wolverhampton, April 11.—The second quarterly meetings of the ironmasters of this district for the current year and quarter took place here to-day; at the first, at Walsall, yesterday, the attendance, as usual, was limited. To-day there was rather a large attendance of the chiefs of the trade, but very little business was doing—indeed, as far as could be ascertained, fewer orders were given than for the last two or three quarter days. Consumers have, seemingly, an idea that the bad state of the home trade and other circumstances will have a tendency to lower the price of the article. The ironmasters themselves, however, profess to be of decidedly a contrary opinion; and, notwithstanding the fact of their orders being upon the whole inconsiderable, they aver that they are at least sufficient to enable them to maintain the advance made in February as the price for the coming quarter. Certain appearances, too, would seem to bear out this conclusion: the works throughout this district, and up into Shropshire, are all apparently in full operation, and we have good authority for stating that stocks, upon the whole, are small, especially pigs, the price of which is very firm. There are a larger number of furnaces in blast than at the corresponding period of last year;—and although the demand both for rails and the export trade has fallen off, still it is quite clear that manufactured iron is much more in request than might reasonably be expected: in short, all things taken into consideration, it appears probable that present prices will stand throughout the quarter.—The miners are seemingly pretty well satisfied just

now; we hear of no complaints on the subject of wages—a circumstance which cannot fail to add to the chances of steadiness in the trade.—*London Mining Journal.*

Birmingham, April 12.—The third meeting of the ironmasters was held here to-day; the attendance was the largest that has been known for several years. Affairs took rather a different turn to what was expected, having in mind their appearance at Wolverhampton yesterday. Here the ironmasters so far from showing a disposition to yield, manifested some of them a disposition to advance. Seeing this, orders were freely given in customary quantities by manufacturers; in fact, they were rather larger than otherwise. Present prices may, therefore, be considered very firm, and, unless under extraordinary circumstances, it may fairly be assumed that they will stand throughout the quarter. The largest ironmasters, who may of course be relied upon, report that the trade is in what may be considered a healthy state. This will convey a better idea of the actual condition of the trade—certainly a more faithful one—than any of the elaborate statements which have been recently put before the public. The present prices are—Staffordshire bars, 7l. 10s; hoop, 9l., and sheets 10l. Lower figures may have been taken, but the foregoing are prices recognised by the great houses. As already stated, pigs are small in stock, and prices have an upward tendency; the present quotation is about 3l. 15s. Accounts have been paid with customary punctuality. The final meeting of the trade takes place at Dudley on Saturday (this day).—*Ibid.*

Engine Drivers.

The duties which the engine driver has to perform are not only of vital importance, but of a nature which peculiarly illustrates the calm, unpretending bull-dog courage, indigenous to the most healthy climate of the British Isles. Even in bright sunshine to stand like a figure-head of a ship—formost on a train of enormous weight, which, with fearful momentum, is rushing forward faster than any race-horse can gallop, requires a cool head and calm heart; but to proceed at this pace in dark and foggy weather into tunnels, along embankments, and through deep cuttings, where it is impossible to foresee any obstruction, is an amount of responsibility which scarcely any other situation in life can exceed; for not only is a driver severely, and occasionally without mercy, punished for any negligence he himself may commit, but he is invariably sentenced personally to suffer on the spot for any accident that from the negligence of others may suddenly befall the road along which he travels, but over which he has not the slightest control. The greatest hardship he has to endure, however, is from cold, especially that produced in winter by evaporation from his drenched clothes passing rapidly through the air. Indeed, when a gale of wind and rain from the northwest, triumphantly sweeping over the surface of the earth at its ordinary rate of say 60 miles an hour, suddenly meets the driver of the London and North-Western, who has not only to withstand such an antagonist, but to dash through him, and in spite of him to proceed in an opposite direction at the rate of say 40 miles an hour—the conflict between the wet Englishman and Æolus, tilting by each other at the combined speed of 100 miles an hour, forms a tournament of extraordinary interest.—*Stokers & Prkers.*

East Tennessee and Georgia Railroad.

We had Saturday the pleasure of seeing and conversing with Wm. G. Bonner, Esq., the Chief Engineer of the Georgia and East Tennessee railroad, who represents that work to be in a flourishing condition. It has finally been determined to intersect the State road at Dalton, from which point to Knoxville the distance is one hundred and twenty miles. The whole road is under contract, and not the least doubt is entertained of its completion within a reasonable time. Mr. Bonner has made some changes in the old location, one of which at a considerable saving of expence, causing it to pass through the flourishing town of Cleveland. The iron for this road will be furnished by the works in Telleco, Tenn., where a rolling apparatus is to be erected for the purpose. When this road shall be completed through Abington to Lynchburg and Richmond, it will present much the shortest route for travellers going north, who find themselves at Atlanta or any

other point of our line of railroads leading from thence into Tennessee.—*Savannah Republican.*

Railroad Improvements.

The Civilian says, the curves on the Baltimore and Ohio Railroad, between Sykesville and Elliott's Mills, will soon be so much straightened as to enable the cars to reach Cumberland in less time, by nearly an hour, than heretofore. In consequence of this, the railroad company are about to erect a Dining House, at Martinsburg, after a northern style in order to enable passengers to refresh themselves at a reasonable hour. We have also heard that the company intend building another engine house at Martinsburg.

Railroad.

A meeting of the stockholders of the Scioto and Hocking Valley railroad, is in session, in this city, as we go to press. There is a goodly representation from Portsmouth, Lancaster, &c., and all appear animated with the prospect ahead.—*Scioto Gazette.*

Railroad Contracts

We learn from the Cumberland Civilian, that on Wednesday, the Board of Directors of the Baltimore and Ohio Railroad made the following awards of work, on the line of the road west of Cumberland.

Graduation.

	Section.
Humbird & Atkinson.....	1
" ".....	2
John McManus.....	6
" ".....	7
" ".....	8
Mulligan & Martin.....	10
Edgerton, Lockwood & Marsh.....	30
Langton, Urban & Long.....	31
Downey, Everett & Hitchcock.....	32
Millikin, Morrison & Urban.....	38
John C. Rodgers.....	34
Zachariah Gatton.....	35
G. B. Sherman & Co.....	35
Langton, Urban & Long.....	36
Downey, Everett & Hitchcock.....	38
Millikin, Morrison & Urban.....	39
Quigg & Clarke.....	40
" ".....	41
Thos. M. Maccubbin.....	42
Samuel Bryan.....	45
<i>Bridge Masonry.</i>	
G. S. Marsh & Co.....	1
William Kelly.....	6
" ".....	7
Patrick Gallagher.....	10
Edgerton, Lockwood & Marsh.....	30
P. Donnelly & Co.....	40
Quigg & Clarke.....	41
Thos. M. Maccubbin.....	42

The next letting will be made in the month of June. We suppose the work will now be commenced at an early period.

Cheshire Railroad.

The following gentlemen were elected Directors of the Cheshire Railroad Company for the current year, at a meeting of the corporation the present week:

T. M. Edwards, B. F. Adams, S. Hale Keene, Thos. Thatcher, Boston, Hiram Howe, Water town, E. Murdock, Jr., Winchester, George Huntington, Watpole.
T. M. Edwards is President of the Company.

The annual meeting of the stockholders of the New York and New Haven railroad company was held in this city on Friday last, for the purpose of electing a board of directors for the ensuing year.—The following named gentlemen were elected: Robert Schuyler, President; Thomas Ketchum, Anson G. Phelps, Elisha Townsend, Jonathan Sturges, of New York; Henry S. Sanford, of Stamford; Wm. P. Burwell, of Bridgeport; Wm. W. Boardman, of New Haven; John E. Thayer, of Boston.

Twelve section of the Western railroad was put under contract on Saturday last, and the work will be commenced immediately. The contracts only embrace the grading.—*Dayton Trans. 25th ult.*

Railway Share List,
ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Dividends in 1848.	Price of shares.	NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Dividends in 1848.	Price of shares.
Atlantic and St. Lawrence	146	36	36	In progress			78 a 81	Mad River and Lake Erie	102	102	102				
Androscoggin & Kenebec	55	16	16	In progress			70	Mansfield and Sandusky	56	56	56	\$1,106,121	19,700		
Albany and Schenectady	16	16	16	\$1,606,196	100,000	1 5-9	82	Michigan Central	21	21	21				
Auburn and Rochester	78	78	78	2,644,521	34,000	8	86	Michigan Southern	70	70	70				
Auburn and Syracuse	26	26	26	1,125,886	43,300	2 9-10	80 a 81	Macon and Western	101	101	101				
Attica and Buffalo	31	31	31	821,313	26,000	4		Mississippi	30	30	30				
Allegheny and Portage	36	36	36					Nashua and Lowell	14	14	14	525,063	36,200	10	
Albany and W. Stockb.	38	33	33	1,924,701	50,000			Northern (Ogdensburg)	12	12	12	unfinished			
Bangor and Oldtown	11	11	11					" (Concord to Leb'n.)	69	69	69				80
Boston and Lowell	25	1	27	2,013,687	73,200	8	116	N. Bedford and Taunton	20	20	20	499,065	24,998	6	
Boston and Maine	74	5	79	3,571,832	45,000	8	105	Norfolk County	26	26	26	621,488	23,900		57
Boston and Worcester	44	22	66	4,650,393	70,000	8	108	N.Y. & N. Haven (14 mls. Har RR)	62	62	62				90
Boston and Providence	41	6	47	3,031,106	63,800	6	91	New Haven Canal	28	28	28				
Bristol Branch	12	12	12					Norwich and Worcester	59	7	66	2,187,829	33,100		37
Bost., Concord and Mont.	90	38	38	In progress				New York and Harlem	80	80	80	3,579,567	44,600		58
Berkshire	21	21	21	600,000	28,500	7		New York and Erie	200	200	200				61 a 62
Buffalo and Niagara	22	22	22	250,396	11,500	6 1-3		New Jersey	29	29	29				107 a 108
Baltimore and Susqueh'a	36	36	36					Newcastle & Frenchtown	17	17	17				
Beaver Meadow	26	26	26					N. Orleans and Carrollton	5	5	5				
Baltimore and Ohio	178	178	178					Old Colony	37	7	45	2,080,903	46,200	6	80
Balt. and Wash. Branch	31	31	31	13,136,940	62,300		40 a 41	Oswego and Syracuse	41	41	41				
Calais and Baring	3	3	3					Portland, Ports and Saco	51	51	51	1,350,000	26,400	6	96
Concord	34	34	34					Peterboro' and Shirley	12	12	12	208,311	17,300		
Cheshire	54	54	54	1,905,456	35,306		72	Pittsfield and N. Adams	18	18	18	447,755	24,000		
Connecticut and Passump.	115	40	40	20,900			85	Providence and Worcester	43	43	43	1,873,895	43,000		82
Connecticut River	50	2	52	1,588,184	30,500	8	97	Providence and Stoning't'n	50	50	50				
Cape Cod Branch	28	28	28	587,116	20,900		62	Patterson and Hudson R.	16	16	16				
Corning and Blossburgh	40	40	40					Philadelphia and Trenton	28	28	28				10
Cayuga and Susquehanna	28	28	28					Philad. Wilm. and Balt.	97	97	97	6,173,851	66,000		54
Camden and Amboy	61	61	61					Philadelphia City	6	6	6				
Trenton Branch	6	96	96	3,200,000	33,000		130 a 135	Philad. Germ. and Nor.	17	17	17				
New Brunswick Br.	29	29	29					Philadelphia and Reading	93	93	93				29
Columbia	82	82	82					Penn Township	2	2	2				
Camden and Woodbury	9	9	9					Petersburg	59	59	59	946,361	16,040		
Cumberland Valley	52	52	52					Portsmouth and Roanoke	76	76	76	1,519,140	20,460		
Carbondale & Honesdale	26	26	26					Ponchartrain	4	4	4				
Chesterfield	12	12	12	150,000	13,500			Pt. Hud., Jack. and Clint.	28	28	28				
City Point	9	9	9	195,867	15,919			Rensselaer and Saratoga	25	25	25	701,827	28,000		
Central of Georgia	191	191	191					Rich. Fred. and Potomac	75	75	75	1,474,004	19,459		
Central of New Jersey	63	36	36					Richmond and Petersburg	22	22	22	877,484	39,886		
Dorchester and Milton	3	3	3	114,224	35,100			Sullivan	28	28	28				
Detroit and Pontiac	25	25	25					South Shore	11	11	11	255,748	22,200		3
Eastern	54	19	73			8	99	Stony Brook	13	13	13	246,659	19,000		
Essex (Salem to Law.)	22	22	22	421,574	18,700			Saratoga and Washington	40	40	40	948,372	23,700		
Erie and Kalamazoo	33	33	33					Syracuse and Utica	53	53	53	1,968,036	37,060		
Fall River	42	42	42	1,145,932	27,300	7	86	Schenectady and Troy	20	20	20	659,668	32,100		
Fitchburgh	49	6	56	2,945,630	52,300	8	112	Saratoga and Schenectady	22	22	22	331,036	15,000		
Franklin	22	22	22	284,115	13,530			Summit	2	2	2				
Greenville and Roanoke	21	21	21					Schuylkill Valley	14	14	14				
Germantown Branch	6	6	6					Shamokin	22	22	22				
Gaston and Raleigh	96	96	96				88 a 90	Swatara	4	4	4				
Georgia (Augusta to At'a)	171	171	171					S. Carolina Main Stem	136	136	136				
Harrisburg and Lancaster	37	37	37				88 a 90	Columbia Branch	68	68	68	5,943,678	24,500		
Hartford and New Haven	62	62	62				104 a 105	Camden Branch	37	37	37				
Housatonic	74	74	74				86	Sangamon and Morgan	53	53	53				
Hudson and Berkshire	31	31	31	818,983	26,500			Taunton Branch	11	11	11	305,085	27,600		
Hickford and Gaston	21	21	21					Tonawanda	43	43	43	974,865	22,400		
Hazleton and Lehigh	10	10	10					Troy and Greenbush	6	6	6	273,625	45,900		
Jackson and Brandon	13	13	13					Tuckahoe James River	4	4	4	69,322	14,999		
Lexington and W. Camb.	6	6	6	252,680	38,900			Tallahassee and Port L.	26	26	26				
Lowell and Lawrence	12	12	12	283,248	22,650			Tuscumbia and Decatur	44	44	44				
Long Island	98	98	98	2,173,646	22,100		23	Utica and Schenectady	78	78	78	3,161,688	40,500	10	120 a 121
Lockport and Niagara	23	23	23	221,000	9,700			Vermont and Mass.	69	69	69				45
Lewiston	3	3	3	33,673	10,300			Vermont Central	121	121	121				53
Lykens Valley	16	16	16					Vicksburg and Clinton	46	46	46				
Little Schuylkill	23	23	23					Western	117	117	117	7,975,452	67,700	8	105
Louisa	50	50	50	474,137	9,482			West Stockbridge	2	2	2	41,515	15,000		
Lexington and Frankfort	29	29	29	450,000	15,600			Worcester and Nashua	45	45	45				52
Little Miami	84	84	84	1,513,402	18,000			Wrightsv. York & Gettys.	13	13	13				
Machiasport	8	8	8					Whitehaven and Wilkes.	20	20	20				
Morris and Essex	23	23	23					Williamsport and Elmira	26	26	26				
Mauch Chunk and R. Run	36	36	36					Westchester Branch	10	10	10				
Mine Hill & Sch. Haven	25	25	25				136	West Feliciana	24	24	24				
Mount Carbon	7	7	7					Westchester and Potomac	32	32	32	509,415	15,919		
Mt. Carbon & Pt. Carbon	2	2	2					Wilmington and Weldon	150	150	150				
Mill Creek	6	6	6					Westminister Branch	10	10	10				
Montgomery & W. Point	67	67	67					Western and Atlantic	100	100	100				
Madison and Indianapolis	86	86	86				110	York and Maryland Line	21	21	21				

Returns of Railroad Companies.

At the recent session of the Legislature of New York, the following law was passed, providing for more full returns from the several railroad corporations in the state:

RAILROAD CORPORATIONS.

AN ACT to amend an act entitled "An act to authorise the formation of Railroad Corporations," passed March 27, 1848. Passed April 11, 1849.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The twenty-eighth section of the act entitled "An act to authorise the formation of Railroad Corporations," passed March 27, 1848, is hereby amended so as to read as follows:

SEC. 28. Every Railroad Corporation shall make an annual report to the State Engineer and Surveyor, of the operations of the year, ending on the first day of January; which report shall be verified by the oaths of the Treasurer and acting Superintendent of operations, and filed in his office by the twentieth day of January, in each year, and shall state,

1. The length of the road in operation; the length of single track; the length of double track; the time when laid, and the weight of the rail per yard;

2. The capital stock, and the amount called and paid in;

3. The whole cost of the road, showing the amount expended for the purchase of lands, for grading, for expenses of engineering, for bridging, for masonry, for iron for superstructure, for buildings, for engines, for passenger and other cars respectively;

4. The amount and nature of its indebtedness, and the amount due to the corporation;

5. The number of through and way passengers;

6. The rate of fare for passengers, charged for the respective classes;

7. The amount received for the transportation of passengers, of property, of the mails, for interest, and from all other sources respectively;

8. The amount of freight, specifying the quantity in tons, of the products of the forest, of animals, of vegetable food, other agricultural products, manufactures, merchandise, and other articles;

9. The amount paid out for construction, for repairs of roadway, of buildings, of engines, of cars, respectively; and for fuel, for taxes, for engines and firemen, for oil, for train conductors, baggage and brakemen, for State tolls, for interest, for salaries, and to what officers, or agents, and the amount paid out for all other purposes incidental to the business of transportation, so as to give a complete statement of the whole annual expenses of the corporation;

10. The number of engine houses and shops; of engines and cars, and their character;

11. The number of miles run by passenger, freight and other trains respectively, and the average rate of speed of passenger and freight trains, respectively;

12. The number of men employed, and their respective occupations;

13. The amount charged for depreciation of road, engines, cars, &c.; the number and amount of dividends, and when made;

14. The number of persons injured in life or limb, and the cause of the injury, and whether passengers or persons employed;

15. Whether any such accidents have arisen from carelessness or negligence of any person in the employ of the corporation, and whether such person is retained in the service of the corporation.

SEC. 2. It shall be the duty of the State Engineer and Surveyor to arrange the information contained in such reports in a tabular form, and prepare the same, together with the said reports, in a single document, for printing for the use of the Legislature.

SEC. 3. The provisions of this act shall apply to all existing railroad corporations, and the report of said existing railroad corporations, made in pursuance of the provisions of this act, shall be deemed to be a full compliance with any existing law or resolution requiring annual reports to be made by such corporation.

SEC. 4. The provisions of any act inconsistent with this act, are hereby repealed.

SEC. 5. This act shall take effect immediately.

From the data to be furnished by the required returns, something like accurate knowledge of the condition and value of each road may be ob-

tained. If the returns were required to show the amount of freight carried each way, they would furnish some interesting data in regard to the trade of the country. By this means, some idea might be formed as to the comparative value of the products of the interior brought to market, the value of property sent from the Atlantic seaboard to the interior for consumption. Information of this sort is of interest and value to the whole country, and is suggestive of important ideas touching upon production and industry. The agency of the railway will be more judiciously sought for wherever the productions of the interior are capable of being rapidly and profitably increased.

Portsmouth and Concord Railroad.

The annual meeting of the stockholders of the Portsmouth and Concord railroad was held at Franklin Hall in Portsmouth, agreeably to notice, on Wednesday, 9th inst., at 2 o'clock in the afternoon. A large number of stockholders attended. J. W. Emery was chosen clerk, and the following persons directors:

Alfred W. Haven, Portsmouth; Alexander Ladd, do; Josiah G. Hadley, do; Joshua W. Peirce, Greenland; Richard H. Aver, Manchester; Joseph P. Stickney, and Josiah Minot, Concord.

The board is the same as last year, with the exception of R. H. Ayer, Esq., in the place of J. N. Handy, Esq., who declined being a candidate.

The annual report of the directors to the stockholders was read and accepted.

The following resolution being offered, was unanimously adopted:

Resolved, That we regard the completion of the main road to Concord as the first and most important object, and that all means and efforts, except those on the line of the branch, should be applied for that purpose, and the directors are requested to act accordingly.

The following resolutions were offered by a stockholder from Concord, and unanimously adopted:

Resolved, that the directors, as soon as practicable, cause the unfinished portions of the road between Raymond and Concord to be put under contract.

Resolved, That the treasurer proceed at once to collect by law all assessments in arrear.

Hon. Isaac Hill was present, and addressed the meeting on the importance of the enterprise, promising to do all in his power towards opening the most direct communication between Concord and the seaboard. He said that the introduction of railroads into New Hampshire has doubled the value of property in our state in the last ten years. No railroad that has been constructed promises to be of greater utility to the state than the Portsmouth and Concord road. He specified the great saving in the expense of the single article of plaster, as illustrative of the general benefits the citizens of the interior will derive from receiving articles of heavy merchandise through Portsmouth. The benefits were not to be confined to our own state; the citizens of Vermont, and the west, would avail themselves of its advantages. He spoke of one establishment in Vermont which anticipates the saving of thousands of dollars a year by receiving their heavy freight over the Portsmouth road, which now comes by the way of Boston. He was gratified by the encouraging statements made in the report, some of which were new to him, and had confidence not only in the speedy completion of the road, but also in the value of the stock.

From the report of the directors we learn that early in the last year the work was commenced at the upper end of the route, near Concord, and has been carried on there and also at the lower end as rapidly as means would allow.

The road is now graded nearly up to Raymond, twenty-three miles, and one-half of the distance from Portsmouth to Concord. Five thousand dollars will complete the grading, ready for the rails to Raymond. The iron and materials for superstructure for the distance from Portsmouth to New Market, ten miles, have been purchased and are ready for use. In addition to which, sufficient iron to complete the track to Epping, 7½ miles, has been con-

tracted for and will be ready for use as soon as needed. The track is now being laid in order for operation, and the directors hope to be able to complete the road to New Market in August, and to Epping in September next, and to put it in operation at that time.

The land damages from Portsmouth to Raymond with the exception of \$4,010 98, have been paid, and depots at Greenland and New Market have been erected, and one at Epping is now building.

Most of the grading and a great portion of the masonry at the upper end of the route between the Merrimac river and Suncook village, a distance of five miles, have been done. Between this last point and Raymond is a distance of seventeen miles, on which little has yet been done.

The whole amount thus far expended on the road is \$263,932 21, of which has been received from assessments on stock the sum of \$215,194 75, leaving an outstanding debt of \$48,737 46. All this debt has arisen from purchases of iron contracted for, in anticipation of assessments. All the funds raised from subscriptions at the upper end of the road are entirely expended there. The amount due on good subscriptions at the present time is estimated at \$330,000.

By deducting from this sum the amount of the present debts and liabilities of the corporation as before stated, there remains of the subscriptions the sum of \$281,000 applicable to the further prosecution of the work. With this amount it is believed that the work may be carried on as fast as practicable, with a safe confidence in the final completion of the road to Concord.

At the last session of the legislature, an act was passed authorising other railroad corporations in this state to make loans to this corporation. Under the authority of this act, a loan of \$50,000 has been made by the Concord railroad, for the term of 14 years, at the same rate of interest as the dividends on the stock of the Portsmouth and Concord road, and payable at the same time. As required by the by laws the individual liability is excepted. By this loan, the above sum in ready means has been placed at the disposal of the corporation in addition to the means above mentioned, and is an important aid to the road.

The cost of the road when completed to Epping, and ready for operation will not exceed \$316,104 21, or the sum of \$18,063 10 per mile—being less than the estimate of the engineer.—*Portsmouth Journal.*

To California Gold Diggers.

As the passion for gold is almost insatiable, and as California with all its abundance may fail to satisfy the appetites of those who go there to dig for it, we have taken pains to complete the outfit of the gold seeker, by procuring for him, from very ancient works on the transmutation of metals, some recipes for converting base substances into pure gold. With these guides he may devote to this process the rainy and winter seasons, when he cannot profitably work at the mines, and may in the end reap as much substantial advantage from it as the business of mining. From our neglect in not giving these recipes sooner, we fear that our merchants who equip the California gold diggers, may not have procured all the materials necessary for this operation, for those who leave in the next steamer; but from their known energy and activity, we have no doubt of their being able to furnish a full supply for those who leave in the subsequent steamer.

In a pamphlet entitled *The True Art of Alchemy*, published in 1524, is the following universal recipe:

"The first work is to unite the four elements by water, taken out of the beams of the sun and moon; then separate the arsenical sulphur and earthy feces—with this, and the common moisture of metals, you come to the philosopher's water, or sopherical fountain, wherein is contained the first principles of Sol, Lune and Mercury; that is, sulphur, salt and mercury; then come to amalgamation, which is the same as calcination or purification; the virgin principles are then separated, the thin from the thick, and the air is converted to a watery nature, and the

watery to an earthy nature; and it is now endowed by such virtues that it will be made into a fire-abiding tincture, which, as it is excited and fermented, will transmute the imperfect metals." In the same work, it is stated that spheric mercury can be transmuted either to gold or silver; this process is excessively easy, and within the reach of every one, it is as follows: "Take common mercury, distil it four times from salt of tar and quicklime, then this mercury becomes cold to the touch and is spheric; take then four parts of this mercury, and dissolve one part of gold or silver leaf in it; then stir it up and it will become heated and the mercury transmuted to gold or silver, as the case may be." Van Helmont, who was a believer in the philosopher's stone, states that, "with red stone, he saw nine ounces of quicksilver transmuted by the addition of half a grain of gold." Sir Kenelm Digby affirmed that he made one of his transmutations according to the following recipe:—"Take good mineral antimony, mortify it with radicated vinegar, then separate its quintessence with pure spirits of wine; with this quintessence dissolve mercury duplication of antimony, which unite with a subtle calx of stone, and bring them to an incombustible oil, which will transmute mercury into gold."

Georgia.

The following is but one of the many instances we meet with in the Georgia papers, of the progress she is making in manufactures. In Georgia, there is more freedom of opinion and action than in almost any other southern state. Fortunately, she has not felt it to be her mission, as have her sister states of South Carolina and Virginia, to vindicate her past history, by refusing for the future all guides that the past does not furnish. Neither does she believe, as do her sisters, that her fathers reached the state of ultimate political and physical perfection, and that her only safety and her great mission consists, in maintaining inviolate the order of things they established. She is not disposed to pay the price of poverty to be consistent. On the other hand she welcomes into her service all the new agents, and contrivances that men are making use of to develop their resources to meliorate their condition and adapt the products of nature to the supply of their wants, though this course should impeach her past conduct, and mortify her vanity, by showing the falseness of her former condition. Mankind always array themselves under two classes, one of which believes that the past contains all the good, the other, the future. The Georgians evidently belong to this latter class, and are willing to adopt for their faith the revelation the future shall make.—They believe that the golden age never has been, but is to be, realised. We are happy to chronicle her progress in the arts, in which she will reap a rich reward, and set an example which will speedily be followed by her sister states.

From the Savannah Republican.

Augusta the Southern Lowell.—If we mistake not, the city of Augusta will in a few years deserve the above appellation, unless indeed Columbus, where we understand three new cotton factories are about going up, disputes the palm of superiority. Standing where we do now, and looking into the future, it is not easy to see any assignable limit to the prosperity of either place.

According to a late article in the Chronicle and Sentinel, Augusta has at a bound placed herself, through her manufacturing enterprise, immensely in advance of her position a few years since. That city for many years past has been able to boast of a class of merchants, whose general intelligence, far reaching sagacity, ability and determination to meet all their obligations, are not surpassed, we will venture to say, by any others in this Union. Her banking institutions, her manufactories and railroads, are well and profitably administered, and generally, everything prospers, even under the most distressing circumstances, through the resolute and judicious enterprise of her citizens. Within the few

years past, too, a race of mechanics has grown up there destined to work an immense deal of good, not only in Augusta, but incidentally and directly in every other part of the state. Success to the enterprise of the citizens of Augusta, say we, in all sincerity, and the sooner we are united with her by railroad, the better it will be for all parties.

These remarks have been suggested by an article in the Chronicle and Sentinel, which states that the Augusta Manufacturing Co. are preparing their \$40,000 worth of additional machinery to fit their extensive mill, while the stock for erecting a new one, capable of turning out 50,000 yards of cloth a week, is rapidly taken up.

Mr. Wm. Eve is pushing forward the excavation of the second level of the canal with a degree of energy no less characteristic than commendable. So soon as this and the outlet on the third level is completed, a third large cotton factory will be put in operation by some of the wealthiest planters in the county of Richmond. Mr. Coleman has already put in motion a part of the machinery in planing, turning and variety works. His splendid granite merchant mill makes steady and most substantial progress. The flouring mill of Mr. Cunningham is farther advanced.

In addition to these improvements, the same paper gives quite a long list of buildings moved, new fire proof warehouses in process of erection, cabinet ware factories, steam bucket factory, etc. The way in which that thing called capital will now accumulate in Augusta, will astonish some thinkers among us—we suspect.

Wonders in Locomotion--New Motive-Power.

We have been favored with the following description of a new discovery, for the propulsion of carriages, on rails and common roads, without engines, steam, air, magnetism, or animal power; and the propelling of ships, without either of the above means, or sails, paddles, or any propellers whatever:—

Sir,—I beg to inform you and your readers, that the patent has for its object a new motive-power, which, for advantages, surpasses by far steam, or any other power actually known; for, if we employ one cubic inch of the patented ingredient, we obtain from it no less a pressure than that of forty-six tons upon the square inch of surface. The gases evolved consist chiefly of carbonic oxide and carbonic acid gas, both gases permanently elastic, so that passing through cold air or water, they do not collapse, but will follow up the piston to the utmost limit of its work. In using this ingredient we require neither fire or water; it creates neither smoke nor any offensive effluvia, and, with the exception of a slight moisture, or pure vapor, it leaves no residuum behind. Neither is there any compound in the gases which could corrode metals, as was presumed by Tschemacher, Porret, Fardos, and Gelis, who seem to have copied from each other the supposition, "that there might be compounds of cyanogen in the gases of this ingredient, JUDGING FROM THE BLUE COLOR OF THE FLAME WHEN SUCH GASES WERE IGNITED," never telling us that the greatest portion was carbonic oxide, which gas is well known to burn with a dark blue flame, very similar to that of ignited cyanogen; while cyanogen is known by its offensive and very peculiar smell, which is not to be traced in the gases of the ingredient in question, which consists, in fact, of all kinds of vegetable fibres, or lignine, such as cotton, flax, hemp, tow, saw dust, straw, hay, rags, paper, &c., rendered explosive by their being dipped for 11 or 15 minutes in nitric acid, strengthened by an admixture of an equal quantity of sulphuric acid, then well washed in pure water, and dried for about two hours. By this simple process all the vegetable fibres in the creation become highly explosive. This fact was first noticed by Professor Otto, of Brunswick, about fourteen years ago; and again by Pelouze, of Paris, in 1838; and finally fully published in the English press about the early part of the year 1845, under the name of *gun cotton* as it was called by Professor Schonbein, or as M. Pelouze called it, *xyloidine*.

Now, considering the very intense power of xyloidine, it is found, on examination, to be the most tractable ingredient we know—for example, compression, or mating, suffices to limit, retard, or entirely prevent its explosion—not like gunpowder, by

one fired grain of which a whole mass of the same powder is instantaneously ignited and exploded; no by slighter or greater degree of compression, I have caused a long sliver of xyloidine to explode in my hand in six and seven degrees of velocity and force; or, by compressing a certain part of the sliver between my fingers, I have limited its explosion to the mere loose and carded parts of it. On one occasion, I put successively small pellets of xyloidine on a table, and compressed each of those pellets in the middle with the back of a knife or finger. I then took a match and exploded the projecting ends of such pellets; this done, I lifted up the knife or finger, and found the middle parts of the pellets, as far as they had undergone the pressure, *unexploded*, and as sound as ever, though just as capable of exploding in a free and unconfined state as the other parts have been. By dint of these properties, therefore, xyloidine becomes so tractable, that its great energies may be completely managed, and its explosive powers may be either limited at discretion, or directed to that spot alone where its motive efficacy is required. These properties indicate to us also an easy mode of preventing accidents; but as the conversion of vegetable fibres into xyloidine is so very simple, and takes up so little time, only small quantities, as wanted, need be constantly making; and if those small quantities of xyloidine, together with those which are actually supplying the working machinery, be inclosed in tight vessels, and kept out of the reach of fire, I cannot see how any accidental explosion could occur; for we never hear, for example, of any explosions of gunpowder taking place in soldiers' cartridge boxes, or in the chests of the artillery, or in the store cabins of the men-of-war and other vessels, which are constantly carrying and using large quantities of that explosive powder, which is more easily scattered in the way of fire than xyloidine. Very different, however, are the facts connected with steam-boilers, and the reasons are obvious; for, where there is an immense volume of steam kept up to the highest possible pressure, that steam is constantly seeking for vent, and in that effort it has only too often found its exit by the bursting of the boiler which had imprisoned its gigantic force; and thus it is that—the most lamentable destruction of human life has occurred. Now, as in the machinery proposed to be worked by xyloidine, there is no boiler—there is nothing to burst; and provided the cylinders of the engine itself be moderately strong, which is generally the case, it is evident that there can arise no danger whatever from xyloidine being employed as motive power.

The plans which may be adopted for the working of xyloidine as motive power are endless in their diversity. One plan, that of inserting a continuous sliver of xyloidine into the chamber of a common steam engine, and exploding it by means of electricity under the piston alternately, is now worked by Mr. Isaac Mickle, of Camden, New Jersey, in America.* For an engine of two-horse power, a thread not larger in size than ladies' sewing cotton is quite sufficient. The working machinery, therefore, need not be larger than a man's hat, and hence the enormous economy of the material, and consequent cheapness of the motive power obtained from it; while during a suspension of work there is no consumption whatever—to this vast economy the great saving of space and metal, and the reduction of weight in locomotive carriages for common roads, which, on account of the great weight of the steam apparatus, (no less than $\frac{1}{2}$ ton to one ton for every horse power) has been found hitherto impracticable, while the small and compact xyloidine engines are easily attached to carriages, street cabs, tradesmen's carts, farmer's waggons, dandy's velocipedes, or the old ladies' Bath chairs. Add to this the incalculable value of this power to the trans-Atlantic navigation, or, indeed, in vessels generally propelled by machinery, where room is a great object, and where fire and smoke are objectionable, as also in manufactories similarly circumstanced—add, I say, all these items, and the patent herein described proves at once to be the most valuable of our age, and, had such a discovery been made about 12 or 14 years ago, it might have proved a real blessing to this country; for, with this beautiful motive power in our possession, railroads would have been useless, for

* See the *Nonconformist* or the *Manchester Examiner*, March 6, 1847.

locomotives on the common roads would have been universally used, and that ruinous outlay on the building of railroads, which has so completely drained England of its capital, would have been prevented, and the money would have been employed in reproductive commerce with foreign countries—so that the panic which is now paralysing every branch of trade, and which is driving Great Britain to the very verge of bankruptcy and starvation, would have been unknown, and in its stead an universal and uninterrupted prosperity would have been the result.

Since writing the above, I have been engaged in constructing an engine and locomotive, to be worked on the common roads by xyloidine, on the following plan:—Small quantities of xyloidine exploded successively into a copper recipient of a spheroidal form of 13 inches diameter, and $\frac{1}{2}$ inch strong in metal. Each separate explosion is adequate to produce, by means of double cylinders, a complete revolution of the crank. The object of the copper recipient is merely to allow the intense gases thrown into it room enough to expand, and thus to change their percussive intensity into a more gentle dynamic power, without in any way losing any of the quantity of that power. I can, therefore, let out from that copper recipient as much of the gases, through a stop-cock, as would produce a pressure of from 30 to 60, or 120 lbs. upon the square inch of the piston; moreover by the very heat accumulated in the metal of the recipient, the gases are kept up to their original strength, so that, the longer the engine continues to work, the greater the comparative economy of xyloidine, on account of the heat of the recipient of the machinery, which serve to keep up great expansion, and consequently great power in the gases.

My experiments with a steam engine of about 2½-horse power, on the above principle, answered admirably; but while these experiments were going on I made a further discovery, and this last one is verging almost on a miracle. The most prominent features of my last discovery are—that the propulsion of carriages on railroads, and on common roads, will be now effected without engines, steam, fire, water, magnetism, air, or animal power, and propelling of ships without either of the above means, sails, or paddles, or any propellers whatever.—I beg to remain, Sir, &c.,

ADOLPH COUNT DE WERDINSKY.
London, April 13. [Lond. Min. Jour.]

AMERICAN RAILROAD JOURNAL.

Saturday, May 19, 1849.

Railway Share List.

Our share list, in another column, is the result of no small amount of labor;—still it is quite incomplete in its details—though we believe it embraces every railroad in operation in the United States.—We respectfully request the officers of every railroad company, who has charge of its concerns, to examine it, and supply us with the means to make it perfect. We particularly request each company, that has not done it already, to send us the last annual report of their Directors, with a list of the officers of the company, its different stations, fares, and running time, the names of conductors employed on each road, and such other information as may be thought advisable, in addition to supplying the facts to complete our list. As soon as we can procure these returns, we shall issue our paper in a form which shall be still more useful to the public and the railway companies. Our Journal reaches every railway company in this country, though in several instances it goes to other officers than the President. Will not the persons intrusted in the procurement of information connected with each road in the country see to it that their own road is not overlooked.

Culture and Manufacture of Cotton.

After the article on the Culture and Manufacture of Cotton in our last paper was in type, we conclu-

ded an arrangement with Gen. James for a connection with this paper. The position occupied by Gen. James, leads us to withhold further comments upon his recent work, though we intend to follow up the subject, giving full details and statistics of the production and manufacture of cotton.

TO THE PATRONS OF THE "AMERICAN RAILROAD JOURNAL."

With the desire to aid, as far as his ability and opportunity will permit, the great cause to which the "AMERICAN RAILROAD JOURNAL" is devoted, the subscriber has become associated with its Editorial Department, and is to be a regular contributor to its columns; and, in that capacity, would ask leave to introduce himself to its patrons and the public.

For nearly a quarter of a century, the subscriber has been a practical mechanic and manufacturer, and, during that period, it has been his constant aim to store his mind with all that is useful and important in the departments in which he has been engaged, to acquire a competent practical as well as theoretical knowledge of mechanical science, and to make a proper application of its principles. To the subject of the manufacture of cotton, with the principles and details of which, the subscriber professes to be thoroughly conversant, it is his purpose to pay particular attention. In doing so, he flatters himself that he will be able to furnish much matter of interest to the general reader, and valuable to the manufacturer. To the general mechanical sciences he will also give attention, and from this broad field will endeavor, from time to time, to present to the readers of this paper such facts, principles, combinations, results, etc., as may be deemed most useful. Being extensively acquainted on most of the principal stages, steamboat and railroad routes in the United States, his facilities for information respecting them, are neither few nor small. On this subject, therefore, he will bestow attention, and offer such remarks as circumstances may dictate, or the public good seem to demand.

Fully aware of the responsibility he assumes, though but a subordinate in the editorial department, the subscriber hopes to make himself useful to its readers, by calling to his aid the fruits of his experience, and his knowledge of the subjects on which he proposes to write. Truly American, in every sense of the word; by birth, by education, by feeling, and in principle—from habit and from sympathy, as a practical mechanic and working man, affiliated with the industrial body of the American people—the subscriber entertains a deep solicitude for the promotion of American enterprise, the protection and reward of American industry, the advancement of mechanical science; in short, for all that can add to the welfare and happiness of the American people, the honor, the interest, and the true greatness of our common country. To these great objects he will devote his best endeavors, and engages to give to them all the support that industry and his ability can command.

CHAS. T. JAMES.

Providence, R. I., May 15, 1849.

Mechanical Science--The Steam Engine.

(No. 1.)

Astronomy, chemistry and some other branches of science, seem by common consent, and especially by the learned, to have been placed above that of mechanics. Why this should have been the case, seems difficult to imagine, unless it were because mechanics and manual labor were associated together. If any distinction should be made, it should be in favor of mechanics; for, without an acquaint-

ance with them, and without their aid, no other field of science can, by any possible means, be explored, or its principles be accurately defined.—Mechanical science has done more for the benefit of the human race, than all other branches of science combined. It has done more for human comfort and human civilization, and stands foremost in all that is useful, elegant or ornamental. Mechanical science, if we may reckon from its important and mighty results, is worthy the highest energies and aspirations of the genius of man.

What invention or discovery, ancient or modern, can equal that of the steam engine? What prodigious changes have already been wrought by it! What wonderful results it is yet to accomplish in ameliorating the condition of the human race! And what gave birth to this wonder-working prodigy? It is emphatically, in all its stages, in all its parts, in all its details, in all its operations, and in all its improvements, the joint offspring of mechanical science and human genius. For ages, the astronomer might have swept the heavens with his gigantic telescope—to the end of time, the chemist might have bent over his crucible, and mingled, and decomposed his multifarious ingredients—the geologist might have penetrated to the earth's core, and the mathematician have strung out his plus and minus, equivalents, roots and tables, till he had carpeted the globe with them—and yet, the steam engine, the greatest and the noblest of all inventions and discoveries, would, despite of all the scientific lore, have remained unknown as long as the world shall stand, unknown.

This great product of mechanical science was the work of mechanical genius, unaided almost entirely by the speculative technical science of the schoolmen. In its rudest form, in fact, it astonished the so-called scientific world. During its progress even up to the present moment, a vast proportion of all the useful improvements made on it, have been the work of practical mechanics—self-made men, who have become imbued with the principles of mechanical science, by means of study in their workshops, with the implements of their industrial calling in their hands. Even a Silliman, a Hare, a Davy, and a Lardner, mighty in scientific knowledge, have done little more than examine the inventions and discoveries of the self-made scientific mechanic, as relates to the steam engine, and to explore their principles and operations.

Mechanical science is better and more extensively understood than any other. The reason is that it enters into all industrial operations, and is always throwing out hints and suggestions, of which the mechanic is ever ready to take the advantage. The difference between the mechanic of the school and the mechanic of the workshop is this—The former speculates on mechanical principles, forces, powers, &c., but makes no advance in discovery, and knows nothing of the practice. His knowledge is the *ipse dixit* of books and lectures. The practical mechanic makes deductions from one operation which give the clue to further discoveries. His first essay is at invention. He deduces mechanical laws from the constructions of his own hands. In their actual results he cannot be mistaken. Thus he enters the field of mechanical science, and thus he progresses, till at length, without the least smattering of technology, he becomes qualified to instruct the most learned professor of the school. It is thus the steam engine has become what it is. It is thus that improvements will go on. It is thus that mechanical science has won its most important triumphs, and done more than all other sciences to

promote the welfare of the human race. Practically, it has been but little fostered by the scholastic world; but as it daily increases in honor, as well as importance, the time must soon arrive, when it will assume its legitimate position in the arts.

C. T. J.

Mr. Hudson and the Eastern Counties Railway.

Our readers will recollect an account of the semi-annual meeting of the Eastern Counties railway, a few weeks ago, when Mr. Hudson was so violently assailed for certain transactions in making sales of shares. The *Bankers' Magazine* of a more recent date says:—The result of the investigation then ordered, has shown Mr. Hudson's conduct to have been in the highest degree reprehensible, and that the effect has been to seriously depress railway securities in the market.

Wilmer & Smith's European Times says:—The report of the committee has disclosed the most frightful delinquencies and machinations perpetrated by Mr. Hudson and Mr. Waddington, and that both these gentlemen must retire from Parliament on account of them. A new law is proposed in Parliament so as to prevent a recurrence of similar frauds.

Possibly some people in this country may have known the facts in regard to Hudson's management with the stock of the *Great Western Railway of Canada*, by which the prospects of that road have been seriously impaired. Those who took an interest in that matter will feel no surprise at these recent disclosures in England.

☞ We are happy to acknowledge the receipt of a copy of the Constitution of the South Carolina Institute for the Promotion of Art, Mechanical Ingenuity and Industry, with their very interesting address appended to the same, which we shall endeavor to present to our readers in our next number.

Death of Col. George W. Whistler.

Few men have lived in our day who have acquired a more enviable position and reputation than COL. GEORGE W. WHISTLER, whose death in Russia has recently been made known in this country.

The tendency of our institutions and the spirit of our people has led us to attach an under importance to political honors, and to regard the highest attainments in the professions as less worthy objects of ambition than political success and political renown.

We are happy to believe that this feeling is gradually passing away. However attractive political distinction may be to the ardent young men of our day, it is found to confer far less real honor, and bring fewer rewards than the attainments of professional eminence. Every day, too, the merely learned professions are losing their importance in public estimation in comparison with the permanent hold which the useful professions devoted to scientific inquiry or mechanical industry have attained. The career of Col. Whistler is an illustration of this remark.—He was admitted to the confidence of the Emperor of Russia, and held a social position equal to that attained in any ordinary walk of life.

The following brief notice of Col. Whistler from the *Baltimore American*, in the concise and expressive language, for which its pages are conspicuous, gives us, in few words, a just tribute to his memory:

It is our painful duty to record, under the obituary head, the death of Col. George W. Whistler, Chief Engineer of the Petersburg and Moscow railroad, and for many years a past resident of St. Petersburg. Few persons have done more to illustrate the

American character for talent, skill and integrity, in a foreign land, than Col. Whistler; and from all that we have learned, from very many sources, it has been the lot of few, dying among strangers, and away from their homes, to leave behind them so many scolding friends.

Col. Whistler was a graduate of West Point, and was one of those who left the army, when the internal improvement system of our country began to be developed, to devote themselves to Civil Engineering. For a while he was in the service of the Baltimore and Ohio Railroad Company, soon after its organization, and was engaged also, for a season, on the Susquehanna railroad. Subsequently he removed to the eastward, and after very active duty in various companies, became the Chief Engineer on the Western Railroad, between Boston and Albany. He had just completed this great work, when the Emperor of Russia sent a commission to the United States, with a view of obtaining here a suitable person to construct the railroad between St. Petersburg and Moscow. Col. Whistler was selected and having accepted the appointment, left this country, never to return. This was in 1842: since which he has been constantly engaged in the duties of his station; and had his life been spared for one year more, he would have seen the completion of the road which he had located and urged forward with so much energy and skill. In addition to his post of Chief Engineer of the road in question, he had lately been appointed to plan and construct extensive National dock yards at St. Petersburg, which might have still detained him for many years abroad. An appointment which was, in itself, the best proof that could be given of the high standing which he had obtained in Russia.

But it has pleased the Almighty to cut him off in the prime of life, and in the midst of a career of eminent usefulness. That an American should have been selected for the post that he filled, was a tribute to his country, which made his success a matter of public interest at home; and the concurrent testimony of all who knew him, from boyhood to manhood, at home and abroad, testifies to a character in which the highest professional attainments were united with the most estimable qualities of private life—a character which made his admirers his friends, and which, in a position where envy might have made him its mark, saved him from all unkind attacks, and surrounded him with those who served, because they loved him.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Ful-ler's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyger & Helms' patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 19, 1849.

Rolling Mills for Sale.

THE MASSACHUSETTS IRON COMPY offer for sale their two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 ft. by 174, including sheds. The two contain 15 double Puddling furnaces, and 9 Heating Furnaces.—There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with, and will be sold at the same time, about 400,000 feet of upland, on which are erected, besides the mills, 4 blocks, containing each 4 brick dwelling houses for workmen; a wooden counting room with dwelling adjoining, a horse stable, and a coal shed 210 feet long by 70 feet wide now containing 2967 chaldrons Pictou coal and 933 tons of pig iron.

The terms of sale will be made liberal. For further information, apply to B. T. REED, Treasurer, Suffolk Buildings.
May 17, 1849.

Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesborough, West Newton.

May 19, 1849.

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Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address

JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address

E. S. NORRIS.

May 16, 1849.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.

All fit to re-lay. For sale cheap by
PETTEE & MANN,
228 South St., New York.

May 16, 1849.

American Railroad Journal.

Steam Navigation, Commerce, Mining, Manufactures.

ESTABLISHED IN 1831.
At Five Dollars Per Annum in Advance.

THE AMERICAN RAILROAD JOURNAL is published at 54 Wall St., New York, under charge of HENRY V. POOR, Esq., Editor. Several gentlemen are engaged as regular contributors, known as leading Railroad men in the country.

The Railroad Journal was commenced before any similar publication was attempted in this country, or elsewhere, devoted to the Railway interest; and it has recorded the progress of the Railway System from its humble beginnings, and contributed to carry it forward till the whole civilized world has become more dependent upon it than upon any other agency whatever.

The Locomotive Railway System has now become the great necessity of man—the great instrument of civilization and progress—the great idea of modern times. It has already done more to relieve the burdens of labor—to minister to man's wants and necessities, and to elevate him in the scale of being, than any other agency that has ever been exerted.

The Locomotive Steam Engine, we regard as the greatest achievement of man—the most extraordinary instrument for good the world has yet reached. It traverses the earth with a speed outstripping the swiftest bird upon the wing, carrying—not thought or language alone, but—man, living, breathing, sensitive man—instinct with new life—new energy—new powers, conscious almost of new faculties and a new creation. Without danger, and without fatigue, it enables man to transfer himself to distant regions of space, and participate in the enjoyments, the physical gratifications, and the various pleasures of social existence,

n a manner heretofore unknown. It gives to every community the productions, and ideas of every other—disclosing or creating new sources of enjoyment, and multiplying, to an infinite degree, every susceptibility to pleasurable emotion.

It will not have achieved its highest work till it has harmonised political differences, and elevated all men to the highest social condition of which they are capable. By making distant places one neighborhood, it practically prolongs our being, not to one, but to a fourfold degree, enhancing in the same ratio, all the joys of existence.

Whoever, therefore, labors in this field, has more than the ordinary rewards for exertion. He is working for humanity—for progress—for the highest good of his race. Profoundly impressed with these views, we intend, in accordance with their spirit to conduct the Journal.

The history, the influence, and the improvements of the railway, with statistics, showing its extent, cost and productiveness, as well as a careful inquiry into its management; scientific discoveries, the mechanic arts, steam navigation, commerce and mining—especially in connection with locomotion and the progress of industry—are embraced in the range of our labors.

Under the mining head, the readers of the Journal will find a series of articles on the *Iron Ores and Iron Manufacture of the United States*, from the pen of J. T. HODGE, Esq., who is an Assistant Editor of the Journal, for the department of Mining and Metallurgy.

Mr. Hodge has for many years been engaged in the preparation of a work on the Iron Ores and Iron Manufactures of the United States, embracing descriptions in detail of the different localities of ore, the expense of working different mines, the structure and location of the several blast furnaces and the results of their working. This work is to be published in a condensed form in the Journal, in a series of weekly papers, conveniently arranged under appropriate heads, with statistical tables of different districts, and such plans and drawings as may be found desirable.

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J. H. SCHULTZ & CO.

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Arrowsmith, A. T.,
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Berrien, John M.,
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Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

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Fitchburgh Railroad, Boston, Mass.

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New York and Boston Railroad, Middletown Ct.

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Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

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South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
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Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
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Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

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IRON.

Pig and Bloom Iron.
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A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.
RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by
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4 South Front St., Philadelphia.

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Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ¼ Flat Bars.
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FOR STEAMBOATS.**

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AND ALSO

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THOMAS PROSSER, C. E.
28 Platt street, New York.

May 6, 1848.

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1½ to 15 inches diame-
ter, and any length not exceeding 17 feet—manufac-
tured by the Caledonian Tube Company, Glasgow, and
for sale by **IRVING VAN WART,**
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
Government, and by the principal Engineers and Steam
Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN, }
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1748

Mattewan Machine Works.

THE Mattewan Company have added to their Ma-
chine Works an extensive LOCOMOTIVE ENGINE
department, and are prepared to execute orders for Lo-
comotive Engines of every size and pattern—also Tend-
ers, Wheels, Axles, and other railroad machinery, to
which they ask the attention of those who wish such
articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favora-
ble terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern im-
provements, second in quality to none in this or any
other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
this company has probably the most extensive assort-
ment of patterns in this line, in any section of the
country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
gether with all other tools required in machine shops,
may be had at the Mattewan Company's Shops, Fish-
kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's
"Patent Lubricating Oil"—price 80c. per gallon
4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Nor-
ris Brothers, in whose works, any one by calling can
see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during
the last six weeks, "Devlan's Lubricating Oil," and so
far as we have been able to judge from its use, we think
it preferable to the sperm oil generally used, for both
heavy and light bearings. NORRIS, BROTHERS.

For sale by **ALLEN & NEEDLES,**
22 & 23 South Wharves,
Philadelphia Pa.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and man-
ufacture as those so extensively used in England,
Scotland, France and Germany, for Locomotive,
Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York,

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the
town of Newcastle, Del., Locomotive and other steam
engines, Jack Screws, Wrought Iron Work and Brass
and Iron Castings, of all kinds connected with Steam-
boats, Railroads, etc.; Mill Gearing of every descrip-
tion; Cast Wheels (chilled) of any pattern and size,
with Axles fitted, also with wrought tires, Springs,
Boxes and bolts for Cars; Driving and other wheels
for Locomotives.

The works being on an extensive scale, all orders
will be executed with promptness and despatch. Com-
munications addressed to Mr. William H. Dobbs, Su-
perintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANU-
facturers of Railroad Machinery. The subscri-
bers have for sale American and English Bar Iron, of
all sizes; English Blister, Cast, Shear and Spring
Steel; Juniata Rods; Car Axles, made of double re-
fined iron; Sheet and Boiler Iron, cut to pattern;
Tires for Locomotive Engines, and other railroad car-
riage wheels, made from common and double refined
B. O. Iron; the latter a very superior article. The
Tires are made by Messrs. Baldwin and Whitney, Lo-
comotive Engine Manufacturers of this city. Orders
addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in
the order, a fit to those wheels is guaranteed, saving
to the purchaser the expense of turning them out in-
side.

THOMAS & EDMUND GEORGE,

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NICOLL'S PATENT SAFETY SWITCH FOR
Railroad Turnouts. This invention for some time
in successful operation on one of the principal rail-
roads in the country, effectually prevents engines and
their trains from running off the track at a switch, left
wrong by accident or design. It acts independently
of the main track rails; being laid down or removed
without cutting or displacing them.

It is never touched by passing trains, except when
in use, preventing their running off the track. It is
simple in its construction and operation, requiring only
two castings and two rails; the latter, even if much
worn or used, not objectionable.

Working models of the Safety Switch may be seen
at Messrs. Davenport, Bridges & Kirk's Cambridge
Port, Mass., and at the office of the Railroad Journal,
New York.

Plans, Specifications, and all information obtained,
on application to the Subscriber, Inventor and Paten-
tee. G. A. NICOLLS,
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**MACHINE WORKS OF ROGERS KETCHUM
& GROSVENOR, Patterson, N. J.**

The un-
dersigned receive orders for the following articles man-
ufactured by them of the most superior description in
every particular. Their works being extensive, and
the number of hands employed being large, they are
enabled to execute both large and small orders with
promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and
Tenders; Driving and other Locomotive Wheels, Axles
Springs and Flange Tires; Car Wheels of Cast Iron
a variety of patterns and chills; Car Wheels of Cast
Iron with wrought tires; Axles of best American re-
fined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions
and of the most improved patterns, style and work-
manship.

Mill gearing and millwright work generally, hydraulic
and other presses; press screws; callenders; lathes
and tools of all kinds; iron and brass castings of all
descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

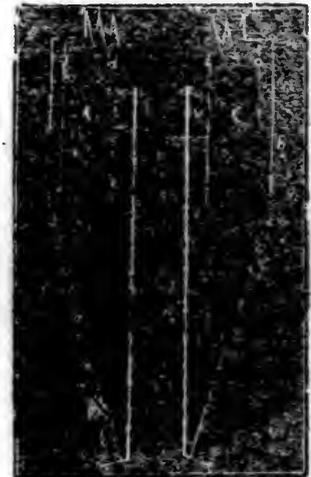
IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York.
having at great expense established a manufactory with
every facility of Machinery for Manufacturing Iron
Bridges, Bridge and Roof Bolts, together with all kinds
of the larger sizes of Screw Bolts, Iron Railings, Steam
Boilers, and every description of Wrought Iron Work,
are prepared to furnish to order, on the shortest notice,
any of the above branches, of the very best of Amer-
ican Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished sever-
al Iron Bridges for the Erie Canal, Albany Basin, etc.
—and a large amount of Railroad Bridge Bolts, all of
which have given the most perfect satisfaction.

They are permitted to refer to the following gentle-
men:

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|-------------------------|---|
| Charles Cook, | } Canal Commissioners
of the
State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | } Engineer of the Bridges for
the Albany Basin. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer & Bridge Builder,
Utica, N. Y. |
| January 1, 1849. | |

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respect-
fully invited to examine an improved Spark Arrester re-
cently patented by the undersigned.

Our improved Spark Arresters have been exten-
sively used during the last year on both Passenger and
Freight Engines, and have been brought to such a
state of perfection, that no annoyance from sparks or
dust from the chimney of engines on which they are
used is experienced.

These Arresters are constructed on an entirely differ-
ent principle from any heretofore offered to the pub-
lic. The form is such that a rotary motion is imparted
to the heated air, smoke and sparks passing through
the chimney, and by the centrifugal force thus acquir-
ed by the sparks and dust, they are separated from the
smoke and steam, and thrown into an outer chamber
of the chimney through openings near its top, from
whence they fall by their own gravity to the bottom of
this chamber; the smoke and steam passing off at the
top of the chimney, through a capacious and unob-
structed passage, thus arresting the sparks without im-
pairing the power of the engine by diminishing the
draught or activity of the fire in the furnace.

in a manner heretofore unknown. It gives to every community the productions, and ideas of every other—discussing or creating new sources of employment, and multiplying to an infinite degree every susceptible to profitable employment.

It will not have behind it its highest work, till it has harmonized political differences, and elevated all men to the highest social condition of which they are capable. By making distant places one neighborhood, it practically prolongs our being, not to one, but to a couple of generations, in the same ratio, all the joys of existence.

Whoever, therefore, labors in this field, has more than the ordinary rewards for exertion. He is working for humanity—for progress—for the highest good of his race. Profoundly impressed with these views, we intend, in accordance with their spirit to conduct the Journal.

The history, the influence, and the improvements of the railway, with statistics, showing its extent, cost and productiveness, as well as a careful inquiry into its management; scientific discoveries, the mechanic arts, steam navigation, commerce and mining—especially in connection with locomotion and the progress of industries—are embraced in the range of our labors.

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These Tubes are extensively used by the British
Government, and by the principal Engineers and Steam
Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN, }
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1848

Mattewan Machine Works.

THE Mattewan Company have added to their Ma-
chine Works an extensive LOCOMOTIVE ENGINE
department, and are prepared to execute orders for Lo-
comotive Engines of every size and pattern—also Tend-
ers, Wheels, Axles, and other railroad machinery, to
which they ask the attention of those who wish such
articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favor-
able terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern im-
provements, second in quality to none in this or any
other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
this company has probably the most extensive assort-
ment of patterns in this line, in any section of the
country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
gether with all other tools required in machine shops,
may be had at the Mattewan Company's Shops, Fish-
kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, *Agent.*

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's
"Patent Lubricating Oil"—price 50c. per gallon
4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Nor-
ris Brothers, in whose works, any one by calling can
see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. {
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during
the last six weeks, "Devlan's Lubricating Oil," and so
far as we have been able to judge from its use, we think it
preferable to the sperm oil generally used, for both
heavy and light bearings.

NORRIS, BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and man-
ufacture as those so extensively used in England,
Scotland, France and Germany, for Locomotive,
Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the
town of Newcastle, Del., Locomotive and other steam
engines, Jack Screws, Wrought Iron Work and Brass
and Iron Castings, of all kinds connected with Steam-
boats, Railroads, etc.; Mill Gearing of every descrip-
tion; Cast Wheels (chilled) of any pattern and size,
with Axles fitted, also with wrought tires, Springs,
Boxes and bolts for Cars; Driving and other wheels
for Locomotives.

The works being on an extensive scale, all orders
will be executed with promptness and despatch. Com-
munications addressed to Mr. William H. Dolbis, Su-
perintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

**TO RAILROAD COMPANIES AND MANU-
facturers of Railroad Machinery.** The subscri-
bers have for sale American and English Bar Iron, of
all sizes; English Blister, Cast, Shear and Spring
Steel; Juniata Rods; Car Axles, made of double re-
fined iron; Sheet and Boiler Iron, cut to pattern;
Tires for Locomotive Engines, and other railroad car-
riage wheels, made from common and double refined
B. O. Iron; the latter a very superior article. The
Tires are made by Messrs. Baldwin and Whitney, Lo-
comotive Engine Manufacturers of this city. Orders
addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in
the order, a fit to those wheels is guaranteed, saving
to the purchaser the expense of turning them out in-
side.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

**NICOLL'S PATENT SAFETY SWITCH FOR
Railroad Turnouts.** This invention for some time
in successful operation on one of the principal rail-
roads in the country, effectually prevents engines and
their trains from running off the track at a switch, left
wrong by accident or design. It acts independently
of the main track rails; being laid down or removed
without cutting or displacing them.

It is never touched by passing trains, except when
in use, preventing their running off the track. It is
simple in its construction and operation, requiring only
two castings and two rails; the latter, even if much
worn or used, not objectionable.

Working models of the Safety Switch may be seen
at Messrs. Day, upon, Bridges & Kirk's Cambridge
Port, Mass., and at the office of the Railroad Journal,
New York.

Plans, Specifications, and all information obtained,
on application to the Subscriber, Inventor and Paten-
tee.

G. A. NICOLL,

Reading, Pa.

**MACHINE WORKS OF ROGERS KETCHUM
& GROSVENOR, Patterson, N. J.** The un-
derigned receive orders for the following articles man-
ufactured by them of the most superior description in
every particular. Their works being extensive, and
the number of hands employed being large, they are
enabled to execute both large and small orders with
promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and
Tenders; Driving and other Locomotive Wheels, Axles,
Springs and Flange Tires; Car Wheels of Cast Iron
with wrought tires; Axles of best American re-
fined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions
and of the most improved patterns, style and work-
manship.

Mill gearing and millwright work generally, hydrau-
lic and other presses; press screws; callenders; lathes
and tools of all kinds; iron and brass castings of all
descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

**IRON BRIDGES, BRIDGE & ROOF BOLTS,
STARKS & PRYAN, of Albany, New York,**
having at their extensive establishment a manufacturing
every facility of Machinery for Manufacturing Iron
Bridges, Bridge and Roof Bolts, together with all kinds
of the largest size of Screw Bolts, Iron Rollings, Steam
Boilers, and every description of Wrought Iron Work,
are prepared to furnish to order, on the shortest notice
any of the above branches, of the very best of Ameri-
can Refined Iron, and at the lowest rates.

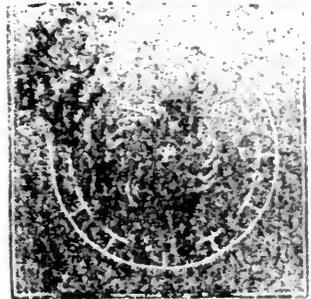
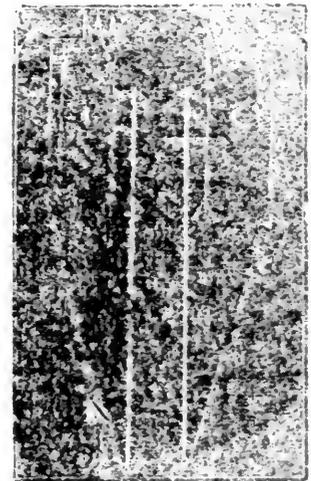
During the past year, S. & P. have furnished sev-
eral Iron Bridges for the Erie Canal, Albany Basin, etc.
—and a large amount of Railroad Bridge Bolts, all of
which have given the most perfect satisfaction.

They are permitted to refer to the following gentle-
men:

- | | | |
|-------------------------|---|-----------------------------|
| Charles Cook, | } | Canal Commissioners |
| Nelson J. Beach, | | of the |
| Jacob Hinds, | } | State of New York, |
| Willard Smith, Esq., | | Engineer of the Bridges for |
| Messrs. Stone & Harris, | } | the Albany Basin. |
| Mr. Wm. Howe, | | Railroad Bridge Builders, |
| Mr. S. Whipple, | } | Springfield, Mass. |
| | | Engineer & Bridge Builder, |
| | | Utica, N. Y. |

January 1, 1849.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respectfully
invited to examine an improved Spark Arrester re-
cently patented by the undersigned.

Our improved Spark Arresters have been exten-
sively used during the last year on both Passenger and
Freight Engines, and have been brought to such a
state of perfection, that no annoyance from sparks or
dust from the chimney of engines on which they are
used is experienced.

These Arresters are constructed on an entirely dif-
ferent principle from any heretofore offered to the pub-
lic. The form is such that a rotary motion is imparted
to the heated air, smoke and sparks passing through
the chimney, and by the centrifugal force thus acquir-
ed by the sparks and dust, they are separated from the
smoke and steam, and thrown into an outer chamber
of the chimney through a small near its top, from
whence they fall by their own gravity to the bottom of
this chamber; the smoke and steam passing off at the
top of the chimney, through a capacious and unob-
structed passage, thus arresting the sparks without im-
pairing the power of the engine by diminishing the
draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cnyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

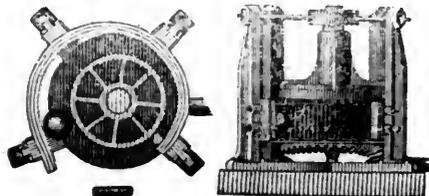
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent.

(Troy Iron and Nail Factory, Troy, N. Y.)

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

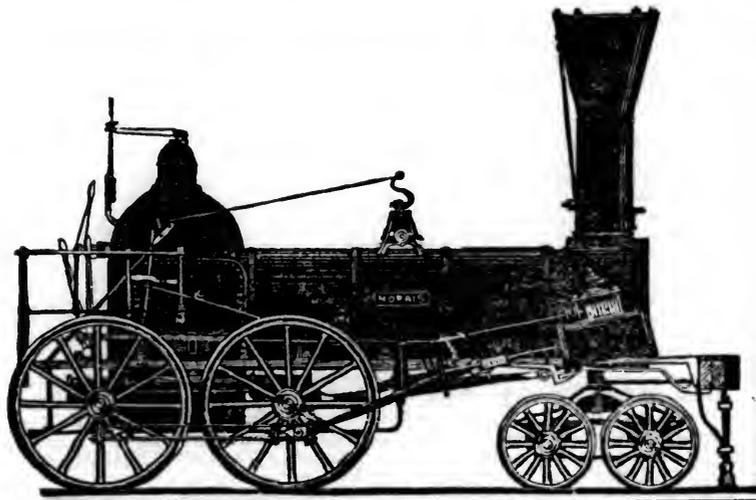
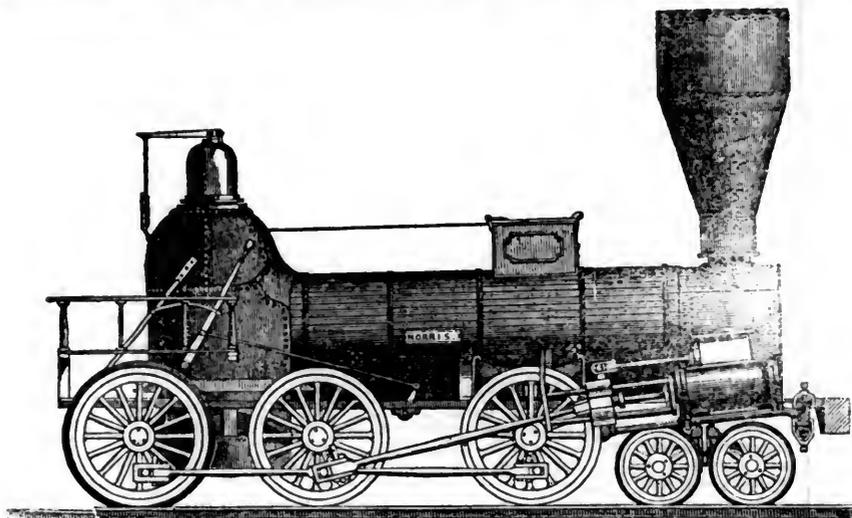
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Rollers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA.



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

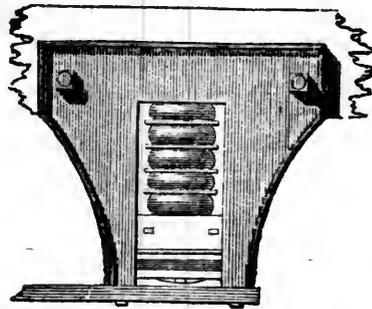
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

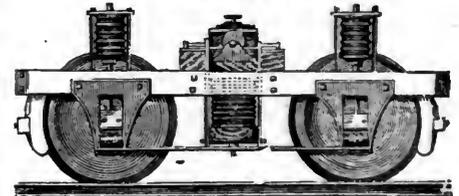
[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.
 "Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

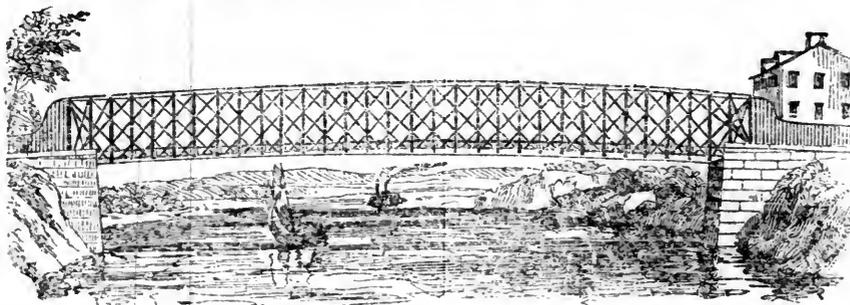
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

These chimneys and arresters are simple, durable and need no repair. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, super Georgia railroad, Augusta, Ga.; G. A. Nicolls, pres't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart and N. H. railroad; W. R. McKee, sup't Lexington and Ono railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philad. and Wilm. railroad; J. O. Storms, sup't Elizabethtown and Somersville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, Ga. railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't no. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

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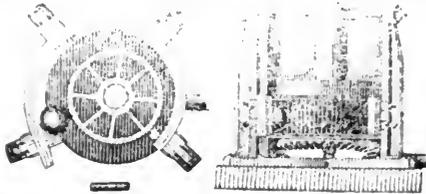
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

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This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous; considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown out, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set on, and is blown off, and the machine is then when allowed to run, it is ready to begin. The iron being discharged from the machine soon, rolls better and is much easier on the rollers and machinery. The bars and rounds are much better finished. The subscribers are invited to those persons who will examine for themselves the machine in operation, will find it to be a superior advantage, than have been communicated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owners of Henry Burden's Patent Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, all made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
(Troy Iron and Nail Factory, Troy, N. Y.)

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

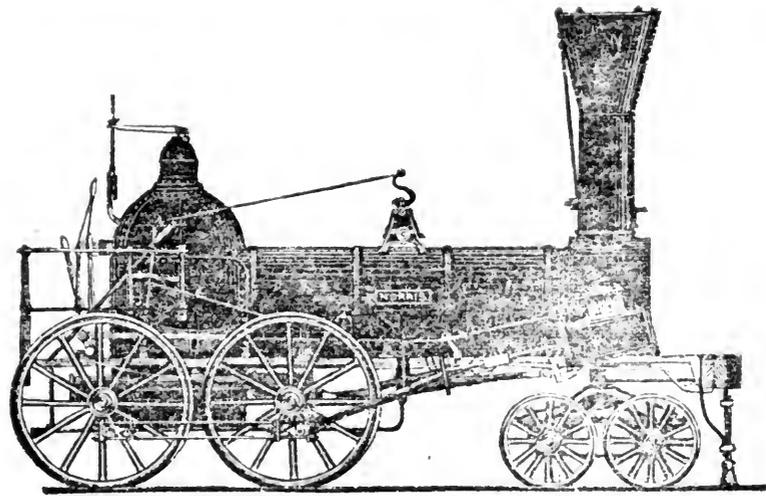
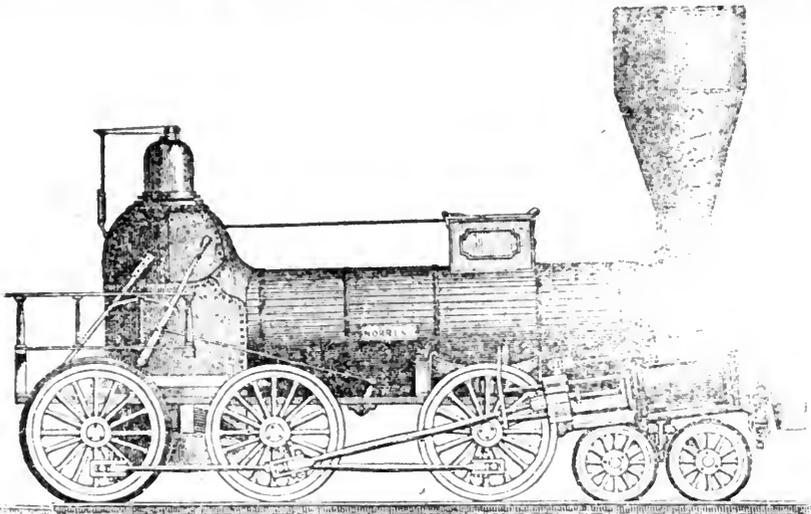
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Rollers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every five or six minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK,

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHKILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

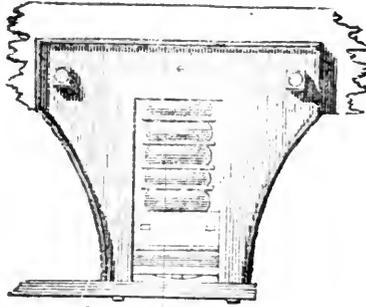
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable - there being less friction in this than in other kinds; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other, because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring, nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Engagements are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders, Bumpers and Draw Springs, are always kept on hand, which merely require to be hung to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 78 Broad st., New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing this article, omitting, however, a very important part: It is therefore given in full now, and the omission of the New England Car Company is to be regretted, that the public may judge for themselves, as to whether this "company" pervert Mr. Hale's meaning.

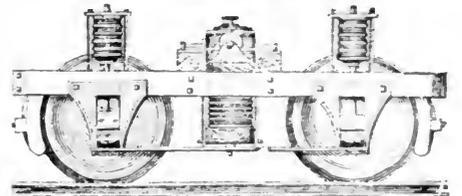
[From the Boston Advertiser of the 5th June]. INDIA RUBBER SPRINGS FOR RAILROAD CARS.

Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad. It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and prevents it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a bi-metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knerrill, of New York, is the agent for the patent in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country - with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1841. In proof of which we give the deposition of Osmond Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days a few days. It was a kind of wood with rings of India rubber, and some layers of India-rubber, with iron washers between them, such as are used under the nuts at cars. These were put on to a spindle running through the truck, which worked in the hole. The model now exhibited to me by the New England Car Company, was made by Mr. Ray. After the model had been put in a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of metal, and refused to use of Gooden's Metal Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knerrill refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knerrill, as will be seen by the following from his paper of June 5, 1844. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER Iron Bridge having been built on the Harlem Railroad by constant use for about eighteen months, and found to answer the different conditions of the most sanguine friends, is now offered to the public with the utmost confidence by its inventor, and in every way over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combination of the Arch, Suspension and Truss, all under each controlling power as possible, and in the most safe and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on equal conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 71 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 55 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most to the other roads terminating in this city."

And yet Mr. Kneivitt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.
EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.
 Boston, May 8, 1849.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.

On and after **MONDAY, APRIL 2d**, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8½ am., and 4 pm.

Dedham Trains—Leave Boston at 8½ am, 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, am., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5½ pm. Leave Stoughton at 1½ am., and 3½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the **DEDHAM TRAIN** will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.

Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm. Leave Worcester at 7½ and 10½ am., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars.

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT.

On and after **MONDAY, Oct. 2, 1848**, Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 1¼, a.m., 12, 2½, 3½, 4½, 6, p.m.
 Salem, 7, 9, 11½, a.m., 12, 2½, 3½, 4½, 6, p.m.
 Manchester, 9, a.m., 3½, p.m.
 Gloucester, 9, a.m., 3½, p.m.
 Newburyport, 7, 11½, a.m., 2½, 4½, p.m.
 Portsmouth, 7, am., 2½, 4½, pm.
 Portland, Me., 7, am., 2½, pm.

And for Boston, From Portland, 7½ am., 3, pm.
 Portsmouth, 7, 9½, am., 5½, pm.
 Newburyport, 7½, 10½, am., 2, 6, pm.
 Gloucester, 7½, am., 3½, pm.
 Manchester, 8, am., 3½, pm.,
 Salem, 7½, 8½, 9, 10½, 11-40, am., 2½, 3, 4½, 7, pm.
 Lynn, 7½, 8½, 9, 10½, 11-55, am., 2½, 3½, 4½, 7, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave **EAST BOSTON** for Lynn and Salem, at 10½ o'clock, p.m.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave Marblehead for Salem, 7½, 8½, 10, 11-25, am. 2, 4½, 6½, pm.
 Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 9½ am., 4½, pm. Salem for Gloucester at 9½ am., 4½, pm.
 Trains leave Gloucester for Salem at 7½ am., 3½ pm. Manchester for Salem at 8, am., 3½ pm. Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. **JOHN KINSMAN**, Superintendent.

SSEX RAILROAD—SALEM TO LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after **Monday, Oct. 2, 1848**, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
 Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
 Salem for Lawrence, 9, am., 3.15, pm.
 Danvers " 9.10, am., 3.15, pm.
 North Danvers " 9.20, am., 3.35, pm.
 Middleton " 9.30, am., 3.45, pm.
 North Andover " 10, am., 4.20, pm.
 South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.55, pm.
 North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
 Middleton " 11, am., 4.30, pm.
 North Andover " 10.35, am., 5.05, pm.
 Lawrence " 10.30, am., 5, pm.

*These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
 Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.

Outward Trains from Boston

For Portland at 6½ am. and 2½ pm.
 For Rochester at 6½ am., 2½ pm.
 For Great Falls at 6½ am., 2½, 4½ pm.
 For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
 For Lawrence at 6½, 9, am., 12 m., 2½, 4½, 6, 7½ pm.
 For Reading 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½ pm.

Inward trains for Boston From Portland at 7½ am., 3 pm.
 From Rochester at 9 am., 4½ pm.
 From Great Falls at 6½, 9½ am., 4½ pm.
 From Haverhill at 7, 8½ 11 am., 3, 6½ pm.
 From Lawrence at 6, 7½, 8½, 11½, am., 1½, 3½, 7 pm.
 From Reading at 6½, 7½, 9, am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½ pm. Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.

CHAS. MINOT, Super't.
 Boston, March 27 1849.

NEW YORK AND ERIE RAILROAD.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave **NEW YORK**, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
 January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.

On and after December 1st, 1848, the Cars will run

as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.

Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.

Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will be at 7.40 and Morrisiana and Harlem at 8 o'clock

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.
 The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8½ a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3½ p.m.
 The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10½ a.m., leaving St. Hyacinthe at 4 p.m., reaching Montreal at 5½ p.m.
 THOMAS STEERS, Secretary.
 March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:
 Leave Baltimore at - - - 9 am. and 3½ pm.
 Arrive at - - - 9 am. and 6½ pm.
 Leave York at - - - 5 am. and 3 pm.
 Arrive at - - - 12½ pm. & 8 pm.
 Leave York for Columbia at - 1½ pm. & 8 am.
 Leave Columbia for York at - 8 am. & 2 pm.
 Fare:
 Fare to York - - - \$1 50
 " Wrightsville - - - 2 00
 " Columbia - - - 2 12½
 Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
 Or via Lancaster by railroad - 10
 Through tickets to Harrisburg or Gettysburg - 3
 In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - 5½ pm.
 Returning, leaves Owing's Mills at - 7 am.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.
 This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 403 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hoghead - " barrel -	8 50	13 50
	" " "	2 50	4 25
	Salt per bushel	0 13	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.
 Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payables at Dalton.
 F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.
 On and after Thursday, November 9th, 1843, until further notice, Passenger Trains will run as follows:
 Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
 Returning, leave Springfield, at 2½ o'clock, and 9½ o'clock, am.
 Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.
 Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:
 A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.
 The 2½ pm., Train from Cincinnati, and 2½ am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.
 Fare from Cincinnati to Xenia - \$1 90
 Do do Springfield - 2 50
 Do do Sandusky City - 6 50
 Do do Buffalo - 10 00
 Do do Columbus - 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.
 W. H. CLEMENTS, Superintendent.
 The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
 April 1st, 1849.—Fare \$3.
 Leave Philadelphia 8½ am., and 10 pm.
 Leave Baltimore 9 am, and 8 pm.
 Sunday—Leave Philadelphia at 10 pm.
 " " Baltimore at 8 pm.
 Trains stop at way stations.
 Charleston, S. C.
 Through tickets Philadelphia to Charleston, \$20.
 Pittsburg and Wheeling.
 Through ticket, Philadelphia to Pittsburg, \$12.
 " " Wheeling, 13.
 Through tickets sold at Philadelphia office only.
 Wilmington Accommodation.
 Leave Philadelphia at 12 m. 4 and 7 pm.
 Leave Wilmington at 7½ am., 4½ and 7 pm.
 Newcastle Line.
 Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm.
 Fare \$3.—Second class, \$2.
 N.B.—Extra baggage charged for.
 I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
 The Train from Philadelphia arrives at Reading at 12 18 m.
 The Train from Pottsville arrives at Reading at 10 43 am.
 Fares. Miles. No. 1. No. 2
 Between Phila. and Pottsville, 92 \$3.50 and \$3.00
 " " Reading 58 2.25 and 1.90
 " Pottsville " 34 1.40 and 1.20
 Five minutes allowed at Reading, and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON.

Distance 190 miles.
 This Road is open for the transportation of Passengers & Freight.
 Rate of Passage - \$8 00. Freight—
 On weight goods generally, 50 cts. per hundred
 On measurement goods - 13 cts. per cubic ft.
 On brls. wet (except molasses and oil) 1 50 per barrel.
 On brls. dry (except lime) - 80 cts. per barrel.
 On iron in pigs or bars, castings for mills, and unboxed machinery - 40 cts. per hundred
 On hhds. and pipes of liquor, not over 120 gallons - \$5 00 per hhd.
 On molasses and oil - \$6 00 per hhd.
 Goods addressed to F. WINTER, Agent, forwarded free of commission.
 THOMAS PURSE, Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN

runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.
 Fare through from Charleston to Montgomery daily - \$26 50
 Fare through from Charleston to Huntsville, Decatur and Tuscumbia - 22 00
 The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
 JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.

This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.
 From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.
 On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
 This is the most expeditious route from the east to any of these places.
 CHAS. F. M. GARNETT, Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.
 Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
 P. A. BURDEN, Agent.
 Troy Iron and Nail Factory, Troy, N. Y.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by
 MORRIS, TASKER & MORRIS,
 Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

Ma. Hale:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most to the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 93 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.

F. M. RAY, Agent, New York.

Boston, May 8, 1849.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, APRIL 2d, the

 Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8 1/2 a.m., and 4 pm.

Dedham Trains—Leave Boston at 8 1/2 am, 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7 1/2 a.m., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5 1/2 pm. Leave Stoughton at 1 1/2 am., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.
Summer Arrangement.—1849.

 Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 6 am., 12 m., and 2 55 pm.
Leave Worcester at 7 1/2 and 10 1/2 am., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 am., from Norwich at 7 am.

Fares are Less when paid for Tickets than when paid in the Cars. 

S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

 Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 1 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Salem, 7, 9, 11 1/2, a.m., 12, 2 1/2, 3 1/2, 4 1/2, 6, p.m.
Manchester, 9, a.m., 3 1/2, p.m.
Gloucester, 9, a.m., 3 1/2, p.m.
Newburyport, 7, 11 1/2, a.m., 2 1/2, 4 1/2, p.m.
Portsmouth, 7, a.m., 2 1/2, 4 1/2, p.m.
Portland, Me., 7, a.m., 2 1/2, p.m.

And for Boston,
From Portland, 7 1/2, a.m., 3, p.m.
Portsmouth, 7, 9 1/2, a.m., 5 1/2, p.m.
Newburyport, 7 1/2, 10 1/2, a.m., 2, 6, p.m.
Gloucester, 7 1/2, a.m., 3 1/2, p.m.
Manchester, 8, a.m., 3 1/2, p.m.,
Salem, 7 1/2, 8 1/2, 9, 10 1/2, 11-40, a.m., 2 1/2, 3, 4 1/2, 7, p.m.
Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, a.m., 2 1/2, 3 1/2, 4 1/2, 7 1/2, p.m.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10 1/2 o'clock, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7 1/2, 8 1/2, 10, 11-25, am.
2, 4 1/2, 6 1/2, pm.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 9 1/2, am., 4 1/2, pm.
Salem for Gloucester at 9 1/2, am., 4 1/2, pm.
Trains leave
Gloucester for Salem at 7 1/2, a.m., 3 1/2 pm.
Manchester for Salem at 8, am., 3 1/2 pm.
Freight Trains each way daily. Office 1 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover.
On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9, am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9, am., 12.45, 3.15, pm.
Salem for Lawrence, 9, am., 3.15, pm.
Danvers " 9.10, am., 3.15, pm.
North Danvers " 9.20, am., 3.35, pm.
Middleton " 9.30, am., 3.45, pm.
North Andover " 10, am., 4.20, pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am., 2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11, am., 4.30, pm.
North Andover " 10.35, am., 5.05, pm.
Lawrence " 10.30, am., 5, pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
Outward Trains from Boston

For Portland at 6 1/2 am. and 2 1/2 pm.
For Rochester at 6 1/2 am., 2 1/2 pm.
For Great Falls at 6 1/2 am., 2 1/2, 4 1/2 pm.
For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2, 6 pm.
For Lawrence at 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm.
For Reading 6 1/2, 9, am., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2 pm.

Inward trains from Boston
From Portland at 7 1/2 am., 3 pm.
From Rochester at 9 am., 4 1/2 pm.
From Great Falls at 6 1/2, 9 1/2 am., 4 1/2 pm.
From Haverhill at 7, 8 1/2, 11 am., 3, 6 1/2 pm.
From Lawrence at 6, 7 1/2, 8 1/2, 11, am., 1 1/2, 3 1/2, 7 pm.
From Reading at 6 1/2, 7 1/2, 9, am., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9 1/2 am., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2 pm.
Leave Medford at 6 1/2, 8, 10 1/2 am., 2, 4, 5 1/2, 6 1/2, pm.
* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

NEW YORK AND ERIE RAILROAD.
WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave NEW YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steamboat towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steamboat New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.

January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.
WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

 Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.
Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.
Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.
Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 96th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will be omitted, and Morrisiana and Harlem at 8 o'clock.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.
 The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8½ a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3½ p.m.
 The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10½ a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5½ p.m.
 THOMAS STEERS, Secretary.
 March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:
 Leave Baltimore at - - - 9 am. and 3½ pm.
 Arrive at - - - - - 9 am. and 6½ pm.
 Leave York at - - - - - 5 am. and 3 pm.
 Arrive at - - - - - 12½ pm. & 8 pm.
 Leave York for Columbia at - 1½ pm. & 8 pm.
 Leave Columbia for York at - 8 am. & 2 pm.
 Fare:
 Fare to York - - - - - \$1 50
 " Wrightsville - - - - - 2 00
 " Columbia - - - - - 2 12½
 Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - - - - - \$9
 Or via Lancaster by railroad - - - - - 10
 Through tickets to Harrisburg or Gettysburg - 3
 In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - - - 5½ pm.
 Returning, leaves Owing's Mills at - - - 7 am.
 D. C. H. BORDLEY, Sup't.
 Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.
 This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 403 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.
 Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payables at Dalton.
 F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.
 Train and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:
 Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
 Returning, leave Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.
 Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:
 A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½ pm., Train from Cincinnati, and 2½ am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.
 Fare from Cincinnati to Xenia - - - \$1 90
 Do do Springfield - - - 2 50
 Do do Sandusky City - - - 6 50
 Do do Buffalo - - - 10 00
 Do do Columbus - - - 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.
 W. H. CLEMENTS, Superintendent.
 The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
 Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
 April 1st, 1849.—Fare \$3.
 Leave Philadelphia 8½ am., and 10 pm.
 Leave Baltimore 9 am., and 8 pm.
 Sunday—Leave Philadelphia at 10 pm.
 Baltimore at 8 pm.
 Trains stop at way stations.

Charleston, S. C.
 Through tickets Philadelphia to Charleston, \$20.
 Pittsburg and Wheeling.
 Through ticket, Philadelphia to Pittsburg, \$12.
 " " Wheeling, 13.
 Through tickets sold at Philadelphia office only.
 Wilmington Accommodation.
 Leave Philadelphia at 12 m. 4 and 7 pm.
 Leave Wilmington at 7½ am., 4½ and 7 pm.
 Newcastle Line.
 Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm.
 Fare \$3.—Second class, \$2.
 N.B.—Extra baggage charged for.
 I. R. TRIMBLE, Gen. Sup't.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
 The Train from Philadelphia arrives at Reading at 12 18 m.
 The Train from Pottsville arrives at Reading at 10 43 am.

	Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and	\$3.00
" " Reading	58	2.25	and	1.90
" " Pottsville	34	1.40	and	1.20

Five minutes allowed at Reading, and three at other way stations.
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 On weight goods generally, 50 cts. per hundred
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Fare through from Charleston to Montgomery daily - - - \$26 50
 Fare through from Charleston to Huntsville, Decatur and Tusculum - - - 22 00
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 On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
 This is the most expeditious route from the east to any of these places.
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April 11, 1849.

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Sole Agents for the New England States and State of New York. 1y14



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an **ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE** has been levied on the **STOCK OF THE UPPER CANADA MINING COMPANY**—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the *First Day of April* next, and the other half on the *First day of July* next ensuing. By order, **J. D. BRONDGEEST,** Secretary U. C. M. C.

Hamilton, 24th February, 1849. 12tf

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CELEBRATED CAST-STEEL.

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PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

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NORWICH, CONNECTICUT,

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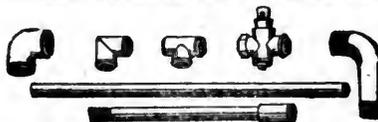
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From 4 inches to ½ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FIRES.



Manufactured and for sale by **MORRIS, TASKER & MORRIS.** Warehouse S. E. Corner of Third & Walnut Street. PHILADELPHIA.

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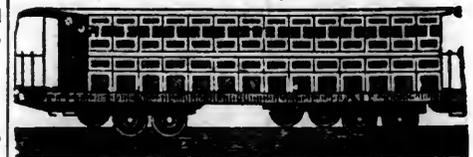
CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the *Original Inventor of the Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

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Kensington, Philadelphia Co., }
March 12, 1848. }

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Cincinnati, Ohio, Oct. 2, 1848. 44tf

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These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
NOS. 9 & 10 PRIME'S BUILDINGS,
(THIRD FLOOR,)
54 WALL STREET,
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LETTERS and COMMUNICATIONS

this Journal may be directed to the *Editor,* **HENRY V. POOR, 54 WALL ST.**

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STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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SATURDAY, MAY 26, 1849

[WHOLE No 683 VOL. XXII

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, May 26, 1849.

**Railways in Massachusetts.
 RETURNS OF RAILROAD COMPANIES.**

In our paper of March 31, we gave a full abstract of the returns made by the different Massachusetts railway companies for the year 1848, intending to make some comments thereon at an earlier day, but have deferred them till we could see the final action of the Legislature upon the subject of railways.

Three years has brought some experience to the railway companies of New England, and the minuteness required in future returns over that in the law of 1846 by the present law of Mass., hereafter given conclusively proves that the confidence of the community in the doings of directors has, in several instances been somewhat shaken the last few years. The surest remedy for the correction of all errors of this sort, is found in the publicity given to the proceedings of railway directors. We see no reason why the doings of the directors of railway companies should not be open to the inspection of the stockholders as much as those of municipal corporations. They should not be allowed to become trading companies, or like banks and manufactories. They have far higher duties to perform in furnishing assistance to all the great industrial and commercial interests of the country. For this purpose they are allowed the right of taking land for the road way and station houses, and generally relieved of taxation. The principle of the law giving them these rights is justified on the ground that the lands are taken for public uses.

We commend this subject to the consideration of the Legislatures of the different states, and hope to see a law enacted containing similar provisions in each state in the Union. The Massachusetts statute requires more minuteness in the returns than the New York law published by us last week.—There are some requirements in the New York law which are not contained in the Massachusetts statute providing for classifying the different articles of freight, specifying the products of agriculture and other branches of industry. We repeat the suggestions before made, that the returns should give not only the different descriptions of freight, but also the direction in which it is carried.

It would be quite satisfactory, for example, to know the comparative value and amount of freight sent from or arriving at tide water by the Boston and Worcester railroad, and the direction in which the manufactures of Lowell and Chicopee are sent to market. All information of this sort is valuable as far as it shows the course of trade in the country.

We should have been better pleased with the Report of the Railway Committee of the Massachusetts Legislature had they given the proper authority for their statement as to the extent and cost of railways in this country and England, and the comparative cost of the running of roads.

They copied from this Journal verbatim, without giving any credit, their statement as to the extent and cost of the English railways, and the statement also of the extent of railroads in the United States, but they have added some errors that we are not anxious to be held responsible for. Our estimate of the cost of the English railways finished, was at the rate of \$145,000,000 per mile, at the end of the year 1848, and the amount actually expended in the month of July, 1848, was equal to \$142,000,000. The committee, it seems, confounded the two statements together. Again, the committee say, "the miles of railway finished in New York, it is believed, do not exceed 750," while they claim 1043 miles within the state of Massachusetts.

The number of this Journal from which they took their statements as to the extent of the American and English railways, gives a list of roads in operation in New York amounting to 1019 miles, and shows the Massachusetts roads to be equal to 876½ miles.

In order to make out the number of miles claimed by the committee as Massachusetts roads, they

include the entire distance of the Providence and Worcester, the Boston and Maine, the Cheshire and several other roads, partly lying in other states.—The Providence and Worcester railroad, for example, was but a very small part of it built by Massachusetts capital, and so of many others included in the list. We make these corrections, or rather call attention to them with a view to put future committees on a more careful inquiry. As much as we admire Boston capital and Massachusetts industry, we see a disposition sometimes to claim a little more than their share of what joins them.

But coming back to the point from which we started, we propose to speak of the causes that have led to these stringent requirements in Massachusetts. Each company was required by the old law to return the amount of interest paid on its "funded and floating" debt. Many of the returns omitted to state the average rate of interest paid by the company, and a special call was made for this information by the Legislature.

The following, taken from the Report of the Legislative Committee, shows the amount borrowed by the Massachusetts railway companies during 1848, with the rates of interest paid thereon:

	Amount.	Rates.
Boston and Lowell.....	\$50,000 00	6 per ct.
" " Maine.....	197,257 01	6 "
" " Providence.....	227,000 00	6 to 15
" " Worcester.....	67,715 52	no rate giv'n
Cape Cod Branch.....	132,117 50	" "
Cheshire.....	264,477 97	6 to 18
Connecticut River.....	511,865 00	6 to 15
Dorchester and Milton...	17,000 00	6 per ct.
Eastern.....	1,054,185 00	av. 10 5 100
Essex.....	52,000 00	12 to 18
Fall River.....	256,394 68	
Fitchburg.....	82,000 00	6 per ct.
Grand Junction.....	39,239 12	6 "
Hartford and N. Haven...	75,000 00	6 to 7
Lexington and W. Can- bridge.....	12,000 00	6 to 18
Lowell and Lawrence...	71,250 00	6 to 12
Nashua and Lowell.....	has borrowed	no money.
Norfolk Co.....	40,900 00	21 per ct.
Norwich and Worcester...	17,000 00	6 per ct.
Old Colony.....	1,155,457 00	
Petersboro' and Shirley...	13,510 00	6 per ct.
Prov. and Worcester....	72,231 48	8 1 20
South Shore.....	139,706 55	
Stony Brook.....	96,324 11	6 to 12
Vt. and Mass.....	220,930 25	
Worcester and Nashua..	87,756 50	6 to 18

The whole amount borrowed, as above, is \$5,027,349, 32, at rates varying, as above, from 6 to 21 per cent. Some of the corporations, it will be seen,

still declined, to state the rates of interest paid. Of course we cannot know what they were; but if they were the legal rates, it is strange that they were not fully reported.

The return of the Old Colony railroad Company states in answer to the call for the "average rate of interest per annum," "the company paid no fixed rates of interest, but paid from day to day the current rates to complete the construction, and on construction account."

The stock of several of these roads declined rapidly in the market as the returns came in.

The following table shows the comparative prices at different periods during the last fourteen months, of the leading Massachusetts roads:

	March 31, 1848.	March 31, 1849.	May 15, 1849.
Boston and Lowell.....	114½	112	116½
Boston and Maine.....	117½	103½	105½
Boston and Worcester.....	117	105½	108½
Boston and Providence.....	100	89	91
Fitchburg.....	117½	109	112½
Western.....	104	100½	105

One leading cause of the decline of the stock on some of these roads, was the fact that the companies divided in January more than the amount of their net earnings.

The following statement shows the amount of net earnings of the six leading roads named, compared with the amount of dividends paid in 1848:

	Net Earnings.	Dividends.
Boston and Lowell.....	\$192,631	\$144,000
Boston and Worcester....	310,080	325,520
Boston and Maine.....	247,093	252,793
Boston and Providence...	171,013	175,349
Fitchburg.....	200,219	201,029
Western.....	413,330	366,000

It will be seen that four of these roads divided more than their net earnings. The advance of stock to May 15 is a trifle only above the probable earnings since March.

Another cause of a decline was the fact that the amount paid for renewals and repairs was less than the supposed actual depreciation of several of the roads.

We give the following comparison, showing the length of line, including branches, and the amount paid for repairs and maintenance of way in 1848, on the six roads before named:

	Length of Line.	Paid for maintenance of way, 1848.
Boston and Lowell.....	27½	\$56,046
Boston and Worcester.....	66½	50,519
Boston and Maine.....	79½	41,303
Boston and Providence.....	47½	35,800
Fitchburg.....	56	26,365
Western.....	117½	122,734

The return of the Western road estimates the depreciation of way beyond the renewals at \$52,000. In neither of the other roads named is any such estimate made.

The dividends on the same roads in 1847-8 were as follows:

	1847.	1848.
Boston and Lowell.....	8 per ct.	8½ per ct.
Boston and Maine.....	9 "	8½ "
Boston and Worcester....	10 "	8½ "
Boston and Providence....	7½ "	6½ "
Fitchburg.....	9 "	8½ "
Western.....	8 "	8 "

The following statement shows the time each road was finished, and the entire amount divided by each

company since the time of opening the same, and the amount of the debt of each company more than the surplus on hand:

	Road completed.	Am. of Dividends paid.	Debt over surplus.
Boston and Worcester....	1835	93½	\$255,144
Boston and Maine.....	1843	81½	249,718
Boston and Providence....	1835	95½	26,879
Fitchburg.....	1845	36½	67,504
Western.....	1842	30	
Boston and Lowell.....	1835	95½	

The Western railroad owes a funded debt of \$5,319,250, but has a surplus to the construction account, and to the sinking fund, equal to \$567,367, reducing the cost of the road to this extent below its apparent indebtedness. The Boston and Lowell railroad has an actual surplus of \$191,576 above its debts.

We selected these six Massachusetts roads as examples, from the fact of their being regarded as among the best managed roads in New England, and their stock commanded the highest price.

The expense of running trains differed materially on different roads, depending much upon the comparative number of passengers carried per mile.—The working of branch lines has increased the expense of running roads, beyond the income derived. We give below the comparative cost per mile on the seven different lines running into the city of Boston:

	Cost of running for 1848, in cents, per mile.
Boston and Lowell per mile.....	100 cents.
Boston and Worcester ".....	82 "
Boston and Providence ".....	74 "
Boston and Maine ".....	69 "
Eastern ".....	68 "
Fitchburg ".....	55 "
Old Colony ".....	63 "

The two last named lines having the latest equipment, show the lowest scale of expense. The entrance into Boston adds of course to the expense of each of them. The expense of running the Western road in 1848 was 81 cents per mile.

The foregoing table shows that the net earnings of a road depend less upon the expense of running them per mile than another causes, such as the number carried per mile in each train.

The following figures showing the number of passengers and tons of freight carried one mile on the before mentioned roads, may be of interest in illustration to our previous remarks:

	No. passengers carried one mile in 1848.	Tons of freight.	Length of road.
Boston and Lowell.....	10,496,226	7,809,126	27½
Boston and Maine....	16,991,088	3,725,445	79½
Boston and Worcester..	15,540,022	10,195,309	66½
Boston and Providence..	8,783,106	1,706,426	47½
Fitchburg.....	11,425,963	6,743,039	56
Western.....	19,871,774	24,656,129	117½

The opening of two new roads from Worcester, one to Providence and the other to Nashua, has already had an influence in the business of the Boston and Worcester railroad. The following comparison of the condition and the business of this road, for the years 1847-8, we give in the following table:

	Length of line.	Gross Capital.	Net earnings.	Gross earnings.	Net earnings.
1847..	58½	\$3,500,000	\$722,170	\$381,985	\$340,184
1848..	66½	4,500,000	716,284	406,203	310,080

The stock of the Boston and Maine railroad was said to be affected by the determination of certain

suits against it, amounting to some \$100,000 or more.

Comparing the business of 1847-8 on the Boston and Maine railroad, the following result is exhibited.

	Length of line.	Capital.	Gross earnings.	Expenses.	Net earnings.
1847..	78	\$2,974,100	\$511,504	\$220,259	\$291,245
1848..	79½	3,540,800	511,627	264,534	247,093

Without pursuing these remarks further in the present number, we think our readers will see that the most stringent requirements should be imposed upon all railway companies, and that the Legislatures of the several states should enact laws similar to those of New York and Massachusetts.—The investment of capital in the stock of these roads at 18 per cent. advance, can hardly be justified by the facts set forth in their reports. It may be fairly questioned whether railway companies should ever be allowed to divide more than six per cent. per annum on their capital, or whatever sum may be the legal rate of interest in the state where they are located. The necessities of the community require the extension of railways into every portion of the country capable of supporting one, and the disposition to make extravagant gains on the more fortunate lines, not only stimulates speculation in railway shares, but diverts capital from the ordinary channels of business into over investment in local enterprises, producing in the end revulsions in trade and a sacrifice of property. Speculation in railway shares, has been one great cause of the stringency of money matters in New England the past 18 months, and the chief cause of the commercial revulsions in England.

Every Legislature in the Union should look to this matter, and provide for the proper exhibition of the doings of railway companies annually, or oftener, as the only safeguard against an inflation of the price of railway shares, and an inconside- rate extension of questionable enterprises.

The following is the Law passed by the Legislature of Massachusetts, at its recent session, in regard to Railroad Companies.

An Act to amend the Act relating to Railroad Corporations.

Be it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same, as follows:

Section 1. The annual report now by law required to be made by the directors of the several railroad corporations, within this Commonwealth, shall hereafter contain full information upon the several items hereinafter enumerated, to wit:

FORM OF RAILROAD RETURN TO THE LEGISLATURE:
Capital stock, \$—,
Increase of capital since last report, \$—,
Capital paid in per last report, \$—,
Capital paid in since last report,
Total amount of capital stock paid in,
Funded debt per last report,
Funded debt paid since last report,
Funded debt, increase of, since last report,
Total present amount of funded debt,
Floating debt, per last report,
Floating debt paid since last report,
Floating debt, increase of, since last report,
Total present amount of floating debt,
Total present amount of funded and floating debt,
Average rate of interest per annum paid during the year,
Maximum amount of debt for each month during the year, viz: January, \$—, February, \$—, March, \$—, April, \$—, May, \$—, June, \$—, July, \$—, August, \$—, September, \$—, October, \$—, November, \$—, December, \$—.

COST OF ROAD AND EQUIPMENT. For graduation and masonry, per last report,

For graduation and masonry paid during the past year,
 Total amount expended for graduation and masonry,
 For wooden bridges, per last report,
 For wooden bridges, paid during the past year,
 Total amount expended for wooden bridges,
 Total amount expended for iron bridges, (if any.)
 For superstructure including iron, per last report,
 For superstructure, including iron, paid during the past year,
 Total amount expended for superstructure, including iron,
 For stations, buildings and fixtures, per last report,
 For stations, buildings and fixtures, paid during the past year,
 Total amount expended for stations, buildings and fixtures,
 For land, land damages and fences, per last report,
 For land, land damages and fences, paid during the past year,
 Total amount expended for land, land damages and fences,
 For locomotives, per last report,
 For locomotives, paid during the past year,
 Total amount expended for locomotives,
 For passenger and baggage cars, per last report,
 For passenger and baggage cars, paid during the past year,
 Total amount expended for passenger and baggage cars,
 For merchandize cars, per last report,
 For merchandize cars paid during the past year,
 Total amount expended for merchandize cars,
 For engineering, per last report,
 For engineering, paid during the past year,
 Total amount expended for engineering,
 For agencies and other expenses, per last report,
 For agencies and other expenses, paid during the past year,
 Total amount expended for agencies and other expenses,
 Total cost of road and equipment,

CHARACTERISTICS OF ROAD.

Length of road,
 Length of single main track,
 Length of double main track,
 Length of branches owned by the company, stating whether they have a single or double track,
 Aggregate length of sidings and other tracks, excepting main track and branches,
 Weight of rail per yard in main road, specifying the different weights per yard,
 Weight of rail per yard in branch roads, do. do.,
 Maximum grade, with its length in main road,
 Maximum grade, with its length in branch roads,
 Total rise and fall in main road,
 Total rise and fall in branch roads,
 Shortest radius of curvature, with length of curve in main road,
 Shortest radius of curvature, with length of curve in branch roads,
 Total degrees of curvature in main road,
 Total degrees of curvature in branch roads,
 Total length of straight line in main road,
 Total length of straight line in branches,
 Aggregate length of wooden truss bridges,
 Aggregate length of other wooden bridges,
 Aggregate length of iron bridges,
 Whole length of road unfenced on both sides.
 Number of public ways crossed at grade,
 Number of railroads crossed at grade,
 Remarks,
 Way stations for express trains,
 Way stations for accommodation trains,
 Flag stations,
 Whole number of way stations,
 Whole number of flag stations.

DOINGS DURING THE YEAR.

Miles run by passenger trains,
 Miles run by freight trains,
 Miles run by other trains,
 Total miles run
 Number of passengers carried in the cars,
 Number of passengers carried one mile,
 Number of tons of merchandise carried in the cars,
 Number of tons of merchandise carried one mile,
 Number of passengers carried one mile, to and from other roads,

Number of tons carried one mile to and from other roads,
 Rate of speed adopted for express passenger trains, including stops,
 Average rate of speed actually attained by express passenger trains, including stops and detentions,
 Rate of speed adopted for accommodation trains,
 Rate of speed actually attained by special accommodation trains, including stops and detentions,
 Average rate of speed actually attained by special trains, including stops and detentions,
 Average rate of speed adopted for freight trains, including stops,
 Estimated weight, in tons, of passenger cars, not including passengers, hauled one mile,
 Estimated weight, in tons, of merchandise cars not including freight, hauled one mile,

EXPENDITURES FOR WORKING THE ROAD.

For repairs of road, maintenance of way, exclusive of wooden truss bridges and renewals of iron,
 For repairs of wooden bridges,
 For renewals of iron, including laying down,
 For wages of switchmen, (av. pr month, \$)
 For wages of gatekeepers, (av. pr month, \$)
 For wages of signalmen, (av. pr month, \$)
 For wages of watchmen, (av. pr month, \$) } Total
 Number of men employed, exclusive of those engaged in construction,
 For removing ice and snow, (this item to include all labor, tools, repairs and extra steam power used.)
 For repairs of fences, gates, houses for signal men, gate keepers, switchmen, tool houses,
 Total for maintenance of way,

MOTIVE POWER AND CARS.

For repairs of locomotives,
 For new locomotives to cover depreciation,
 For repairs of passenger cars,
 For new passenger cars to cover depreciation,
 For repairs of merchandise cars,
 For new merchandise cars to cover depreciation,
 For repairs of gravel and other cars,
 Total for maintenance of motive power and cars,
 Number of engines,
 Number of passenger cars,
 Number of baggage cars,
 Number of merchandise cars,
 Number of gravel cars.

MISCELLANEOUS.

For fuel used by engines during the year, viz:—
 Wood,
 Coal,
 For oil used by cars and engines,
 For waste and other material for cleaning,
 For salaries, wages and incidental expenses, chargeable to passenger department,
 For salaries, wages and incidental expenses, chargeable to freight department,
 For gratuities and damages,
 For taxes and insurance,
 For ferries,
 For repairs of station buildings, aqueducts, fixtures, furniture,
 For interest,
 For amount paid other companies, in tolls, for passengers and freight carried on their roads, specifying each company,
 For amount paid other companies as rent for use of their roads, specifying each company,
 For salaries of president, treasurer, superintendent, law expenses, office expenses of the above offices, and all other expenses not included in any of the foregoing items,
 Total miscellaneous.
 Total expenditures for working the road,

INCOME DURING THE YEAR.

For passengers:—
 1. On the main road, including branches owned by company,
 2. To and from other roads, specifying what:
 For freight:—
 1. On main road and branches owned by company.
 2. To and from other connecting roads:
 U. S. mails,
 Rents,
 Total income,
 Net earnings after deducting expenses,

DIVIDENDS.

— per cent., total \$—,
 Surplus not divided,
 Surplus last year,
 Total surplus,

ESTIMATED DEPRECIATION BEYOND THE RENEWALS, VIZ
 Road and bridges,
 Buildings,
 Engines and cars,

Section 2. Any person who shall fraudulently evade, or attempt to evade, the payment of any toll or fare, lawfully established by any railroad corporation, either by giving a false answer to the collector of the toll or fare, or by travelling beyond the point to which he may have paid his toll or fare established for the distance travelled, or otherwise, shall, upon conviction thereof, before any justice of the peace, in any county where such offence may have been committed, be punished by a fine of not less than five nor more than twenty dollars for every such offence, together with the costs of prosecution. And no person, who shall not, upon demand, first pay such established toll or fare, shall be entitled to be transported over said railroad. Every railroad corporation shall be held to furnish reasonable accommodations for passengers, with reference to their convenience and safety; and in every case of wilful neglect of the same, any corporation so offending, shall be subject to a penalty of not less than five nor more than twenty dollars, to be recovered as provided in this section.

Section 3. The first section of the two hundred and fifty-first chapter of the laws, passed in the year one thousand eight hundred and forty-six, is hereby repealed.

Section 4. The duties enjoined by the second, third and fourth sections of the act, to which this act is an addition, and applicable to the first section thereof, shall continue and be applicable to the first section of this act.

Approved by the Governor, May 1, 1849.

Iron Ores and the Iron Manufacture of the United States. MASSACHUSETTS.

The iron works and mines of this State will be treated of under the separate heads of *Early Operations; Primary Ores; The Hematite Region; and Blast Furnaces.*

Early Operations.—The smelting of iron ores appears to have commenced at an early date in the western part of Massachusetts; and to have been prosecuted with remarkable vigor considering the inferior resources of the country in the materials required for the business. The first smelting furnace known in the county of Plymouth was erected in the year 1702 by Lambert Despard at the outlet of Mattakeset pond, in the town of Pembroke. In the early part of the present century there were in the county ten blast furnaces in operation, all of which have since been abandoned. As the precarious supply of ore failed, on which they depended, the labor and capital engaged in smelting appear to have been turned to the refining of pig iron and working the metal into finished articles, as nails, tacks, and the numerous utensils, whose manufacture is still there industriously prosecuted. The ores used were bog ores obtained from the ponds, which were mixed with similar ores brought from Egg Harbor, New Jersey, in vessels, and landed at Plymouth. These were carted back into what was then a thick pine wood district, thickly studded with numerous ponds.

The grandfather of the writer, James Thacher, M. D., owned, with others, a furnace in Carver, Plymouth county, and in the year 1804, he published in the "Collections of the Massachusetts Historical Society," an account of the business, as it was then conducted. From his article the following information is obtained.

"There are in the county of Plymouth several ponds, in which are found copious beds of iron ore.

of these, Assawampsit in Middleboro', Monponsett in Halifax, and Sampson's pond in Carver, are the most distinguished for their prolific virtues in this respect. It is now about 60 years since ore was first taken from the ponds, the former of which, during a considerable period, afforded an annual supply of 600 tons, but it is now so far exhausted, that not more than 300 tons can be procured; and about 100 tons is also taken annually from each of the others.

The period of its growth is supposed to be about twenty-five years; and it is found in various depths of water, from two to twenty feet. A man accustomed to the employment being in a small boat, with an instrument similar to oyster tongs, can raise from its watery bed about half a ton of this ore in a day."

A description is then given of three varieties of the ore, which are distinguished by the size of the pieces in which they occur, and their color. The variety found in ledges of rock in shoal water and called *ledge or shot ore*, is of a reddish brown color, and of the size of peas and bullets, and yields near twenty five per cent. of iron; the next found in from two to six feet of water, is of a dark brown color, and in pieces shaped like figs; this was called *pancake ore*, and it is of about the same percentage with the former. The last, called *black ore*, from its dirty black color, occurs in a muddy bottom in deep water, is of an earthy and crumbly character, melts easily and promotes the fusion of the most refractory ores. The average price of these ores delivered at the furnace was six dollars per ton. The ore brought from New Jersey is described as being produced in large masses compact and ponderous, some weighing 100 lbs. each, of a reddish brown color, yielding from 30 to 40 per cent. The usual price was six and a half dollars per ton.

"Bog ore abounds in swamps and other low places subject to an overflow of water issuing from springs, particularly in the vicinity of the several ore ponds, between which and the sea almost every bog is impregnated with it, extending even to the margin of salt marshes. Its growth is observed to be more rapid where springs most abound; and diverting the course of the water subverts the production of ore no less effectually than vegetation is destroyed by depriving the stamina of its nutriment. This ore is disposed in beds or strata of various depths from the surface, and of divers irregular shapes.—From some strata, four feet thick, masses have been digged weighing from one hundred to five hundred pounds; more frequently, however, it is found widely disseminated and intermixed with a kind of loam. Veins of this ore have been traced from bogs to the adjacent hills, the natural matrix of minerals and probably the generating source of bog ores. It is of a rusty brown color, yielding about 18 per cent., and worth four dollars per ton at the furnace.

There is another kind found in bogs and swamps which the workmen call *swamp or mud ore*: it is a ferruginous earth or glebe resembling black mould, externally destitute of any metallic appearance, but being washed with water, small granulated particles of iron subside to the bottom. On examining a quantity of this earth, my attention was attracted by some pieces of a beautiful sky blue. It is found four feet below the surface, and when first discovered is of a pale yellow; but coming in contact with the air is soon changed to that of native Prussian blue. This admixture affords some iron, and is deemed an indispensable ingredient to qualify and render more fusible hard and refractory ores. Bog ore being all digged from its bed, the workmen are careful to cover the cavity with loose earth, leaves,

bushes and other rubbish, calculating upon another growth in ten or fifteen years; not unfrequently, however, this expectation is realized in seven years."

The operations at this early period appear to have been conducted in the rudest manner. The furnaces were of good size, about twenty feet high above the hearth, and eight feet across the boshes, but the blast was raised by "two large bellows, twenty-two feet long and four feet wide, which being kept in constant alternate motion by the agency of a water wheel twenty-five feet diameter, a powerful current of air is excited."

The flux used was sea shells, carted up from the coast. The iron appears to have been run at once into castings of a great variety of patterns, as machinery, stoves, cannon balls, hollow ware, &c.—Twelve hundred pounds of these were called a ton, and of these tons three hundred and sixty were manufactured in the two or three blasts, which occupied about six months of the year, and at the following estimate:

"2,130 cords of wood converted into 1,420 Dolls. cts.	
loads of charcoal, at \$2,50.....	3,550 00
726 tons of ore at \$6.....	4,356 00
Two sets of stone for hearth.....	153 32
Compensation to the founder at \$1 per ton	360 00
" " moulders and other	
workmen.....	2,331 00
	10,750 32

To be continued.

Tuscan Furnaces.

The concluding paper on these furnaces will be given in the next number of the Journal. H.

Literature.

"A TOUR OF DUTY IN CALIFORNIA; including a Description of the Gold Region; and an Account of the Voyage around Cape Horn."

The above is the title of an interesting work by Lieut. J. W. Revere, lately published by Messrs. C. S. Francis & Co., of New York. The author was on service under Commodore Stockton, on the coast of California during the years 1846-7. He had responsible duties to perform in taking possession of the country; and for a considerable part of the time was stationed on shore, in command of a portion of the forces employed. The opportunities afforded him of becoming familiar with the character of the different races inhabiting the territory, as well as of its productions, climate, &c., were well improved; and his remarks, while they are written in the free and easy style of a sailor off duty, are interspersed with many observations of practical interest to those who are seeking information respecting the country, and, moreover, with thoughts bespeaking an acquaintance and a sympathy with the productions of the highest minds. By his talent in sketching from nature, he has been able to embellish

* In Poggendorff's *Annalen des Physick und Chemie*, vol. xxxvii. page 203, are some interesting remarks on the formation of this variety of ore by M. Kindler. He noticed that the roots of rotten trees found in a ferruginous sand had gradually taken up the iron of this sand, so that after some time the sand had become colorless at the distance of an inch or so from the root.

M. Kindler was of opinion that an organic acid formed, which reduced the peroxide of iron and dissolved it in the state of the protoxide. By the influence of the air this changed into a basic insoluble salt, which precipitating, collected in the low marshes.—(Quoted in the *Annales des Mines*, Livraison iv. of 1846.)

The country around the ponds furnishing the ores above described is wholly composed of sands often highly ferruginous.

pots are inverted over a heap of ore laid on an iron grate, beneath which a stream of water is made to pass. The edges of the pots being luted to the hearth in which the grate is fixed, a fire is made on the outside of the pots, and the dense mercurial vapor evolved from the ore, as it bakes, finding no vent save through the interstices of the grate, is condensed, and falls into its metallic form of quicksilver to the bottom of the little well or stream beneath. The vein is very rich, and the whole surrounding hills appear from their reddish color, as if they contained inexhaustible quantities of ore. The cavity in the mountain, of about 20 cubic feet, was at this time worked by two Indians, with picks, who threw out quantities of ore as fast as it could be broken up. This place has been resorted to by the Indians from time immemorial for vermilion, to apply to their interesting persons."

As no mention is made of other localities of this ore, it may be questioned whether other veins of it will be readily found—the red color of the surrounding hills not being very likely to be positive evidence of their produce, any more than the stains of the green carbonate of copper upon many of our the work with pleasing views of different towns and scenes on the coast and in the interior. We have, beside a valuable map of the Bay of San Francisco, a lithographic view of Monterey, the capitol of California; one of the quicksilver mines near Sanat Clara; one of Monte Diablo, from the Sacramento River; one of the capture of a bear by a Rancho: a "Pui" Day; and Sutter's Fort, New Helvetia. Unfortunately, the sketch of the town of Yerba Buena, or San Francisco, was lost after the manuscript was prepared for the press.

The only published account of the mercury mine is to be found in this work. The depot of the ore is described as being situated in a secluded and romantic glen, about three leagues from San Jose. "The mine itself is on the top of a high mountain, and the ore is brought down on mules, the path being very precipitous. The ore is the red cinnabar, and the quality is extremely rich, yielding from 30 to 40 per cent. even by the rude and inadequate process which is adopted by the miners, although all the quicksilver might be easily disengaged from the ore. The process is as follows: large whaler's try-rocks indicate the proximity of veins of this metal. Still, the persevering energy of American explorers may open them, where the Indians have failed to discover them. Yet, if we are to believe the traditions current in nine-tenths of the towns of the United States, that the Indians used in former times to find lead ore nearby—the traditions singularly accompanied with the same circumstances and stories in each—then are we sadly deficient in the mining skill of the ancient aborigines; and their descendants too must have greatly degenerated, inasmuch as very few of them have any knowledge of lead ore, and probably none of them, unless taught by the whites, would have had an idea of the process of reducing it.

The gold mines of California were not discovered at the time of our author's visit. His remarks upon the soil, minerals, cattle, horses, timber and other vegetable productions, would seem to show that the country was rich enough without them. H.

To the Editor of the American Railroad Journal:

I enclose a slip cut from the Lynchburg Republican, containing the proceedings of a meeting of the stockholders of the Lynchburg and Tennessee railroad, with the request that you publish them in your paper.

I also have an editorial from the Lynchburg Virginian. It is worthy of notice that the very large subscription of five hundred thousand dollars made to the works of the Lynchburg and Tennessee railroad company, was made by the citizens of an inland town containing a population of 3,933 white inhabitants. This fact shows conclusively that Virginia has awoke from her slumber, allowing no longer to permit her unrivaled natural advantages for great commercial distinction, to remain unimproved.

A SUBSCRIBER.

**Lynchburg and Tennessee Railroad.
MEETING OF THE STOCKHOLDERS.**

At a called meeting of the stockholders of the Lynchburg and Tennessee railroad company, held on Monday, the 30th day of April, 1849, at the Masonic Hall, in the town of Lynchburg—

The meeting was called to order, and on motion, Richard G. Morriss, Esq., was appointed Chairman and F. G. Morriss and Daniel A. Wilson, Jr., Secretaries.

The list of the stockholders being called, there was found to be present 878 shares entitled to 414 votes, and, by proxy, 612 shares entitled to 495 votes—making, in the aggregate, 1490 shares entitled to 909 votes, the whole number of votes which could legally be given being 1425.

The Chairman then appointed Messrs. Samuel Garland, Jeremiah Kyle, and Samuel McCorkle, a committee under the 4th By-Law, to examine the proxies, who, having performed that duty, reported them to be correct.

The President then read his Report to the meeting, explaining the object of the call, which, with sundry documents, was referred to a committee, consisting of the following gentlemen, viz:

Judge D. A. Wilson, Eli Phlegar, John G. Meem, Rev. John Early, Christopher Winfree, Samuel Garland, Richard G. Morriss, Robert J. Davis, J. M. Speed and Wm. T. Yancey, with instructions to make such report, upon the recommendations therein contained as to them might seem most expedient, to the meeting on to-morrow morning.

On motion of Rev. John Early—
Resolved, That, when this meeting adjourn, to adjourn to meet at 10 o'clock to-morrow morning. The meeting then adjourned.

RICHARD G. MORRIS, Chairman.

F. G. MORRISON,
and
D. A. WILSON, } Secretaries.

TUESDAY MORNING, 10 o'clock.

The stockholders having assembled, the Chairman called the meeting to order.

Judge Wilson, Chairman of the committee on the report of the President, presented a report, which was read and a motion made to adopt, on which the ayes and noes were called for, and it was carried unanimously—ayes 1073.

REPORT:

The committee, to whom was referred the communication of the President of the Lynchburg and Tennessee railroad company and the accompanying documents, have performed the duty assigned them, and after a careful consideration thereof, and the subjects embraced by them, have directed me to report the following preamble and resolutions:

Whereas the Legislature of Virginia, by an act, passed on the 6th day of March, 1849, entitled "An act authorising a subscription for the Commonwealth to the stock of the Virginia and Tennessee railroad company" has enacted certain provisions, by way of amendment, to the charter of the Lynchburg and Tennessee railroad company, which provisions are deemed by the meeting highly important and promotive of the welfare of this company, therefore,

1st. Resolved, That the stockholders of the Lynchburg and Tennessee railroad company do hereby accept the provisions of said act of Assembly, passed as aforesaid.

2d. Resolved, That the Board of Directors be instructed to make application to the Legislature of Virginia, at its adjourned session, to be held in the month of May, 1849, for the passage of an act, correcting a manifest error in the 2d section of an act, passed on the 6th March last, so as to make the

subscription of the commonwealth three fifths of the company, as it was evidently designed to be, instead of the sum mentioned in the said sections.

DANIEL A. WILSON, Chairman.

On motion of Judge Wilson,

1. Resolved, That the Hon. Wm. C. Rives, Hon. John Y. Mason, Hon. Wm. S. Archer and Lieut. M. F. Maury, U. S. Navy, be appointed delegates to represent the Virginia and Tennessee railroad company, in the convention, to be held at Memphis, in the State of Tennessee, on the 4th of July next.

2. Resolved, That the Chairman of this meeting be requested to communicate the foregoing resolution to the gentlemen therein named, with the request, that they will accept the appointment and be present at the convention if within their power.

On motion of Rev. Mr. Early,

Resolved, That the President's report be recorded and published.

On motion of R. E. Manson, Esq.,

Resolved, That the thanks of this meeting be tendered the Chairman for the able and faithful manner in which he has presided over it during its continuance.

On motion, the meeting then adjourned.

RICHARD G. MORRIS, Chairman.

F. G. MORRISON,
D. A. WILSON, } Secretaries.
May 1st, 1849.

Virginia and Tennessee Railroad.

APPEAL TO THE SOUTHWEST.

Though the vote upon the act, authorising a subscription on behalf of the commonwealth to this important improvement, proves that it was very popular with the Legislature, yet the State subscription was made, and the corporate privileges were granted, after a most careful examination into the merits of the improvement, and upon conditions more stringent than are usually imposed upon works proposed to be constructed upon the joint stock of principle. With every disposition to be liberal to the south west, the Legislature wished to secure to the public and to the commonwealth, the fullest participation in the advantages of the work, if successful, whilst it guarded against contributing to the construction of a work, merely local in its character, by requiring the large preliminary subscription of seven hundred and fifty thousand dollars! From this severe and unusual test of their ability and sincerity, the advocates of the Virginia and Tennessee railroad have never shrunk. They never desired that the munificence of the State should be perverted to local or selfish purposes; nor did they doubt, for a moment, the ability and the inclination of the country interested in the road to comply with the conditions imposed upon them. That they were not mistaken, the result has, so far, established.—Lynchburg has shown that the declarations, made upon her behalf, were neither idly nor improvidently made. She has, with quiet resolution, complied with every assurance, and nobly redeemed, to herself and the State, the pledge of devotion to the noble enterprise, in which she is so deeply interested. Her prosperous citizens have poured out the rich accumulations of industrious thrift at the demand of public duty, and have exhibited the rare example of a capacity to acquire by enterprise united with the disposition to contribute with a wise liberality.

Having, by the subscription of five hundred thousand dollars, or two-thirds of the whole amount necessary to receive the State subscription, performed her part of the compact, Lynchburg must now regard with interest the contributions of south western Virginia—the region most deeply and immediately concerned in the success of this work. We do not doubt that the subscriptions of that region of country will convince the sceptical friend, or obstinate foe, of internal improvement, that the mineral resources, agricultural capacity, and public interest in their improvement, have not been overrated by its advocates. We are confident that the south west will do its duty. Indeed, it is under obligations to do so, which may not be disregarded. The long delayed justice to the claims of that country has been ample. The State has provided for the construction of a turnpike road, and this has occasioned the expenditure of a large sum of public money, for the labor and provisions of the south west, whilst it has en-

hanced the value of its lands by making them more accessible. We hope that a portion of this will be added to the subscriptions of the large landholders and capitalists, that the State may reap the reward of having the money expended in the construction of one improvement contribute to the construction of another and more efficient one.

The remainder of the subscription is, we learn, less than 200,000, and this will be readily raised in the rich counties of Bedford, Roanoke, Montgomery, Pulaski, Wythe, Washington and Smyth, upon the line of the road and those adjacent. Indeed, it will require little more than \$25,000 each from the counties upon the immediate line—a sum, insignificant in comparison with the ability of these counties, and the extent to which their interests will be promoted by the construction of the road. These counties will not disregard the example set them by the counties of East Tennessee, engaged in constructing another section another section of the same great line. South western Virginia holds the key of the greatest commercial thoroughfare in the United States. We are convinced that, unless the experience of similar improvements is vain, and the anticipations of scientific intelligence be an illusion, the intercourse of the South western States of the Union and its territories—from Memphis to Mexico—will be carried and passed, in a rich and inexhaustible stream, along this magnificent improvement. That the north and south, that Asia and Europe, will adopt it as the medium for interchanging manufactures and merchandise, for the irvaluable productions of the mine or the soil. That the Federal Government will employ the Virginia and Tennessee railroad, for the purpose of transporting the glittering results of its southern acquisitions, or the munitions of war which are to defend them, as the messenger by which to despatch the daily interchange of intelligence between the members of this great confederacy, and along whose rapid pathway the representative of distant and embryo States may forget, in the rapidity and comfort of his transit, the distance which separates him from his home.—When we think of the magnificent destinies of this improvement, we cannot believe that any portion of Virginia can be indifferent to the success of the work. We know that the south west appreciates the liberality of the Legislature, the fidelity of her friends, and the deep stake she has in the result.—We are confident that her rich men will put down their thousands—those in more moderate circumstances will put down smaller sums, and that shares and half-shares will attest the universal approbation of the people. They will recollect that every dollar paid to a railroad reduces freight; gives them more access to market at any time; gives them more for what they have to sell and reduces the price of what they have to buy; raises the value of their lands by bringing them into demand amongst emigrants—in a word, diminishes their labor and enhances their comforts; increases their wealth and reduces the cost of living. Such has been its invariable effect elsewhere—and such must be its result in South-western Virginia.

In giving place to the foregoing account of the proceedings of the shareholders of Virginia and Tennessee railroad, and to the eloquent appeal of its friends to the south-west, we are unwilling to withhold the expression of an opinion long entertained by us, and often expressed, that the line of this road is to become the most important link in the GREAT CENTRAL RAILWAY of the Union;—that line, which must directly connect New Orleans and the south with Washington and the northern cities. From New York to New Orleans, a straight course is almost directly in the line of this road, and it will be but a few years before the city of New Orleans will move to connect with it in the valley of the Tennessee river.

We congratulate the friends of public improvement in Virginia, on the auspicious prospects of this great enterprise. Virginia has reached a turning point in her history, and if true to herself nothing can arrest or delay her onward march towards commercial greatness.

Railway Share List,
ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Capital stock paid in.	Debits more than surplus.	Ruling grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Madison and Indianapolis	86	...	86	.....	.....	.....	.....	..	.....	.....	.....	.....	110	
Mad River and Lake Erie	102	...	102	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mansfield and Sandusky.	...	...	56	\$1,106,121	19,700	.....	.....	..	.....	.....	.....	.....	.....
Michigan Central	...	...	221	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Michigan Southern	...	...	70	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tecumseh Branch	10	...	...	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Macon and Western	...	...	101	.....	.....	.....	.....	30	.....	.....	.....	.....	55	
Mississippi	...	...	30	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Nashua and Lowell	...	...	14½	525,063	36,200	525,000	.....	13	109,599	109,799	59,888	10	.....
Northern (Ogdensburg)	...	...	12	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
" (Concord to Leb'n.)	...	...	69	.....	.....	.....	.....	..	.....	.....	.....	.....	80½	
N. Bedford and Taunton.	...	...	20	499,065	24,990	400,000	.....	40	136,151	96,220	39,225	6	.....
Norfolk County	...	...	26	621,488	23,900	414,256	.....	35	.....	.....	.....	.....	20	
N.Y. & N. Haven (14 mls. Har R.R.)	...	...	62	.....	.....	.....	.....	..	.....	.....	.....	.....	90	
New Haven Canal	...	...	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Norwich and Worcester	59	7	66	2,187,829	33,100	.....	.....	..	218,073	170,297	.....	.....	37	
New York and Harlem	...	...	80½	3,579,567	44,600	.....	.....	..	.....	.....	.....	.....	58½	
New York and Erie	...	...	200	.....	.....	.....	.....	..	.....	.....	.....	.....	61 a 62	
New Jersey	...	...	29	.....	.....	.....	.....	..	.....	.....	.....	.....	107 a 108	
Newcastle & Frenchtown	...	...	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
N. Orleans and Carrollton	...	...	5½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Old Colony	37½	7½	45	2,080,903	46,200	1,601,415	683,648	40	227,350	139,592	87,757	6½	80½	
Oswego and Syracuse	...	...	41	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Portland, Ports, and Saco.	51	...	51	1,350,000	26,400	.....	.....	..	.....	.....	.....	6	96½	
Peterboro' and Shirley	12	...	12	208,311	17,300	.....	.....	..	.....	.....	.....	.....	.....
Pittsfield and N. Adams.	18½	...	18½	447,755	24,000	.....	.....	66	.....	.....	.....	.....	.....
Providence and Worcester	43½	...	43½	1,873,895	43,000	.....	573,058	26	193,844	83,889	109,954	.....	82½	
Paterson and Hudson R.	16½	...	16½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philadelphia and Trenton	28	...	28	.....	.....	.....	.....	..	.....	.....	.....	10	130 a 140	
Philad. Wilm. and Balt.	97	...	97	6,173,851	66,000	.....	.....	..	638,142	382,608	.....	.....	54	
Philadelphia City	6	...	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philad. Germ. and Nor.	17	...	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philadelphia and Reading	93	...	93	.....	.....	.....	.....	..	.....	.....	.....	.....	29½	
Penn Township	2	...	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Petersburg	59	...	59	946,361	16,040	.....	.....	..	163,092	87,131	.....	.....	.....
Ponchartraine	4½	...	4½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Pt. Hud., Jack. and Clint.	28	...	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rensselaer and Saratoga.	25	...	25	661,910	26,400	.....	.....	..	.....	.....	.....	.....	.....
Ramapo and Patterson	15	...	15	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rich. Fred. and Potomac.	75½	...	75½	1,474,004	19,459	.....	.....	..	206,858	100,568	.....	.....	.....
Richmond and Petersburg	22	...	22	877,484	39,886	.....	.....	..	.....	.....	.....	.....	.....
Sullivan	28	...	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
South Shore	11½	...	11½	255,748	22,200	135,935	128,075	35	.....	.....	.....	.....	3½	
Stony Brook	13	...	13	246,659	19,000	216,829	29,189	40	.....	.....	.....	.....	.....
Stonington	50	...	50	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Saratoga and Washington	40	...	40	948,372	23,700	.....	.....	..	.....	.....	.....	.....	.....
Syracuse and Utica	53	...	53	1,968,036	37,060	.....	.....	..	677,671	.....	.....	.....	.....
Schenectady and Troy	20½	...	20½	659,668	32,100	.....	.....	..	47,025	.....	.....	.....	.....
Saratoga and Schenectady	22	...	22	331,036	15,000	.....	.....	..	57,018	.....	.....	.....	.....
Summit	2	...	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Schuylkill Valley	14	...	14	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Shamokin	22	...	22	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Swatara	4	...	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Seaboard and Roanoke	...	...	76½	1,519,140	20,460	.....	.....	..	.....	.....	.....	.....	.....
S. Carolina Main Stem	136	...	136	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Columbia Branch	68½	242	5,943,678	24,500	.....	.....	.....	..	800,073	308,802	401,271	.....	.....
Camden Branch	37½	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Sangamon and Morgan	53	...	53	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Taunton Branch	11	...	11	305,085	27,600	250,000	.....	..	108,101	90,485	17,615	.....	.....
Tonawanda	43½	...	43½	974,865	22,400	.....	.....	..	218,301	.....	.....	.....	.....
Troy and Greenbush	6	...	6	273,625	45,900	.....	.....	..	60,055	.....	.....	.....	.....
Tuckahoe & James River	4½	...	4½	69,322	14,999	.....	.....	..	.....	.....	.....	.....	.....
Tallahassee and Port L.	...	...	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tuscumbia and Decatur	...	...	44	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Utica and Schenectady	78	...	78	3,161,688	40,500	.....	.....	..	795,239	.....	.....	10	120 a 121	
Vermont and Mass	69	...	69	.....	.....	.....	.....	..	.....	.....	.....	.....	45½	
Vermont Central	121	...	69	In progress	.....	.....	.....	..	.....	.....	.....	.....	53½	
Vicksburg and Clinton	...	...	46	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Western	117½	...	117½	7,975,452	67,700	.....	.....	..	1,332,068	.....	.....	8	105	
West Stockbridge	2½	...	2½	41,515	15,000	.....	.....	..	.....	.....	.....	.....	.....
Worcester and Nashua	45	...	45	.....	.....	.....	.....	..	.....	.....	.....	.....	52	
Wrightsv, York & Gettys.	...	...	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Whitehaven and Wilkes.	...	...	20	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Williamsport and Elmira	...	...	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westchester Branch	...	...	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
West Feliciana	...	...	24	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Winchester and Potomac.	...	...	32	509,415	15,919	.....	.....	..	.....	.....	.....	.....	.....
Wilmington and Weldon	163	...	163	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westminster Branch	...	...	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Western and Atlantic	100	...	100	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
York and Maryland Line	...	...	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

AMERICAN RAILROAD JOURNAL.

Saturday, May 26, 1849.

Mr. Hodge, Assistant Editor of this paper, being about to visit Lake Superior, will collect for publication matters of interest relating to the railroads and steamboats on the route, as well as of the mines he will visit. We trust that his exertions will be the means of extending the influence of the Journal at the west, as also of adding to our knowledge at the east, of the resources and facilities of travel in that region. We bespeak for him such attention and information as may be the object and for the interest of companies to impart. His professional services at the mines may be secured by letter addressed to him at either of the Post Offices on the Lake within one month.

Improvement for Lessening Friction on Railroads.

Every one who has ridden on a railway, has felt annoyed by the ceaseless jar or trembling of the car, and the perpetual "click" "click" "click" of the wheels, as they strike upon the rigid points at the joints or ends of the rails.

In the last number of our paper we alluded to an improvement patented by J. E. Smith, Esq., of this city, to remedy the evil referred to, by placing a lining of vulcanized India rubber under the rail.—The advertisement then referred to, will be found in this week's paper, together with a drawing illustrating the mode of its use, which was not in season for our last issue. The attention of railroad directors and other parties interested in railroads, is invited to this matter.

Railway Progress.

Our share list, in the present number of the Journal, embraces an aggregate of 6,674½ miles of railway in actual operation in the United States. The completion of the Michigan Central railroad to the shores of Lake Michigan, at New Buffalo, gives a line of 221 miles from Detroit, or 75 miles more than has been given in any aggregate published.—The Norfolk County railroad, in Massachusetts, is just opened to Blackstone, 26 miles, and has recently for some as yet unexplained cause, assigned its property. Both of these roads are included in the list.

We shall soon have to add to it the *Naugatuck railroad*, in Connecticut, which is about to be opened to Humphreysville, and will be opened to Winsted, 57 miles, during the summer, and the *Galena and Chicago railroad*, which is now run upon for some 12 miles from the latter city, and several others rapidly advancing towards completion.

Friends of the different railways will do us a favor by sending us the latest information in regard to their roads.

Railroad Iron.

The Canada, Capt. Judkins, which arrived on Thursday last week brought advices from Liverpool to the 5th inst. The news from England show a decline in metals generally. Scotch pig, No. 1 Gartsherrie can be bought for 47 and 48s. Rails are dull of sale at £5 15s. in Wales.

In the United States, four mills only are now engaged in making rails, of the sixteen which were got up with this view in 1846-7.

Messrs. COOPER & HEWITT are making about three hundred tons per week, at the Trenton Iron Company's Works. Messrs. REEVES, BUCK & Co. are running both their mills, the Phoenix Iron Works, on the Scuykill, and the Safe Harbor Iron Works, on the Susquehanna. The Tredgeor Works, at Rich-

mond, are also making a strap rail for the Richmond and Danville Railroad.

All the other mills are lying idle. New parties have recently purchased into the *Montour Company* at Danville, and their mill is to be put at work making rails the present year.

Such is the preference now given to American iron, by the best informed railway companies, that they readily pay from \$7 to \$10 per ton for rails made at the mills above named more than the price asked for ordinary English rails in this market.

If sufficient protection existed against foreign competition, to enable our sixteen rail mills to resume operations, the price of iron might be kept at uniform rates year after year, and the price would never long remain as high as \$60 a ton. In two years we saw it decline from \$80 to \$40 per ton. The owners of mills prefer to keep them in operation rather than to suffer them to lie idle when prices will barely remunerate the expense of working them.

By referring to our advertising columns our readers will see that the Massachusetts Rolling Mill, at South Boston, is for sale.

Improvements in the Make of Iron.

Under this head, in the number of this Journal for April 14th of the present year, allusion is made to a small blast furnace, producing an unusual yield, in Yorkshire, England, which has excited no little attention among those interested in this business.

A friend engaged in the manufacture of Iron in this country, saw last year the furnace alluded to, and has favored us with a short account of it, the accuracy of which may be relied upon.

The furnace belongs to Messrs. Yates & Co., and is situated 12 miles from Chesterfield. It is 27 feet high, instead of 20, as reported in the previous number of the Journal, and across the widest diameter of the interior is 14 feet. Its shape is much like that of an egg, standing on its little end. The height of its hearth, if it can be said to have any, can hardly be defined; its width across the twerces is 4 feet.—The tunnel head is 3 feet in diameter. The charges are introduced through two flues passing into the furnace below the tunnel head, like the gas flues at many of our furnaces, only of larger size. It has 8 twerces, but only four were in use, the nozzle of these was 3 inches in diameter; pressure of the blast 27 ounces to the square inch.

The blowing apparatus consists of two fans attached to the shaft of the engine; their revolutions were 2,000 a minute; but this arrangement was to be replaced by blowing cylinders.

The ores were those of the coal formation, poor argillaceous ores, yielding about 30 per cent. of iron. The charges were from 35 to 40 every 12 hours, each charge consisting of 4 barrels of coke, and 4 barrels of ore and flux mixed. The yield is about 100 tons of pig iron per week.

With such a result from a furnace so totally different in form from those in common use, the high importance often attached to slight differences in the angle of the slopes of the boshes, or to a little greater or less diameter in proportion to the height of the stack, cannot but seem idle; and the true secret of success will no doubt ultimately be found to consist rather in correct proportions of the materials used, with allowance of plenty of room for the reduction of all the ore, and a sufficiency of blast carefully regulated, and as little interrupted as possible. H.

Railroad Collision Suit.

Supreme Judicial Court, Plymouth County, Massachusetts; May term, 1849. *Burrows vs. Fall River*

er Railroad. This was an action on the case, in which the plaintiff claimed of the defendants damages for injuries to himself and his horse and carriage in consequence, as he alleged, of the neglect of the servants of the defendants, in not ringing the engine-bell in season to give notice of the approach of the train, when near a crossing of the railroad over the highway, at a place about two miles from Myrick's Corner, so called, in Taunton. There was much conflict of testimony as to whether the bell was or was not rung; and if rung, whether it was rung eighty rods before reaching the crossing, as by law they were bound to do it. This was the chief point of contest in the case, and much testimony was introduced on both sides.

The presiding Judge ruled as matter of law—That it was incumbent upon the plaintiff to prove and to satisfy the jury affirmatively—

1st. That he used ordinary care and prudence in driving his horse, and in his conduct and judgment, on his part:—

2d. That the defendants or their servants were guilty of negligence in the matter alleged in the plaintiff's declaration—viz: in not ringing the engine-bell as required by law:—

3d. That in consequence of such negligence, (if they found negligence on the part of the defendants or their servants), the accident and injuries happened to the plaintiff. And that if the plaintiff failed to prove and satisfy the jury in any one of these particulars, their verdict must be for the defendants.—If, on the other hand, these three points were proved to their reasonable satisfaction, they would give to the plaintiff their verdict, with such damages as he had proved he had sustained in consequence of the conduct of the defendant or their servants.

The jury, after being out through the afternoon and all night, were discharged by the court at eight o'clock Thursday morning, not being able to agree.

It was understood that they were—three for plaintiff and nine for defendants. H.

The London correspondent of the *Philadelphia North American*, in a recent letter thus speaks of Col. Baker's improvement of the steam boiler:

The American invention recently introduced in England is likely to prove very valuable and highly profitable to the inventor, Henry F. Baker, Esq., of Boston, who has patented in this country a steam boiler furnace, which is not only capable of effecting a great saving of fuel, but an almost total consumption of smoke, which is vastly important. The first furnace introduced here was erected last year at the East London Water Works, when Mr. Wicksteed, the well-known engineer, made a most flattering report, showing that Bakers furnace saved 37 per cent. of fuel. Another furnace has recently been erected at the extensive works of Hoyle & Sons, of Dukinfield, which gives much satisfaction. There is also one at Hargreaves, Brothers, Broad Oak print works at Accrington, and Col. J. Amory, the agent in this country for these furnaces, has several orders to supply this valuable invention to other large establishments.

RAILROAD

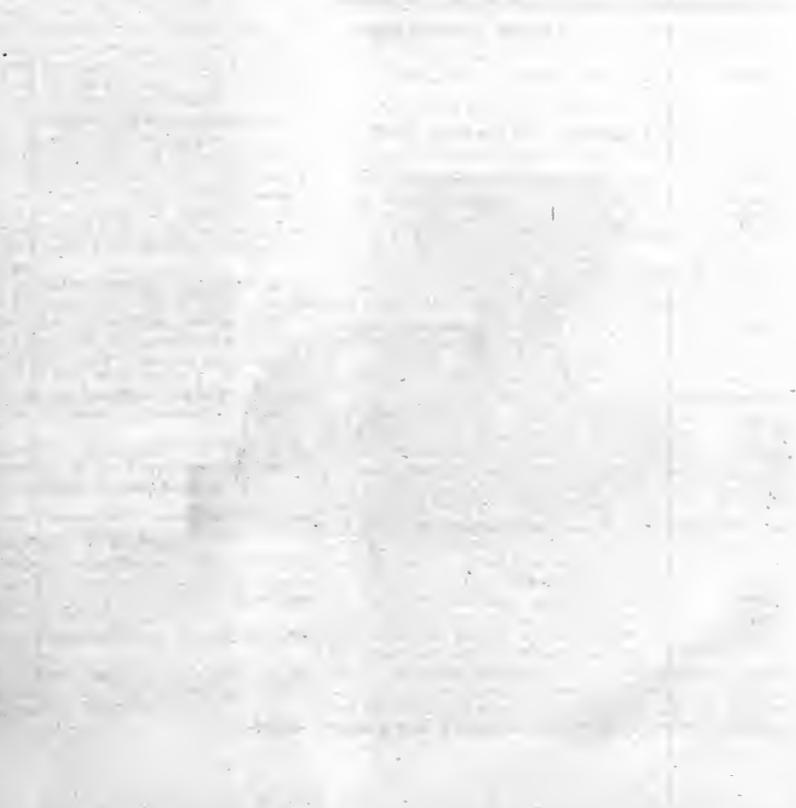
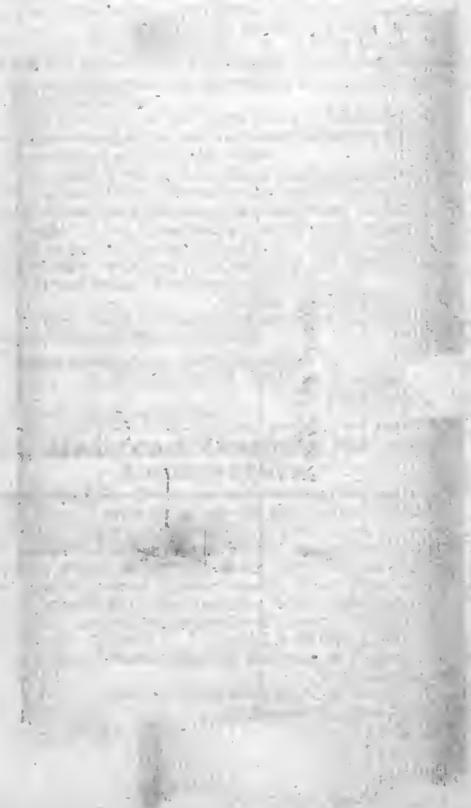
India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

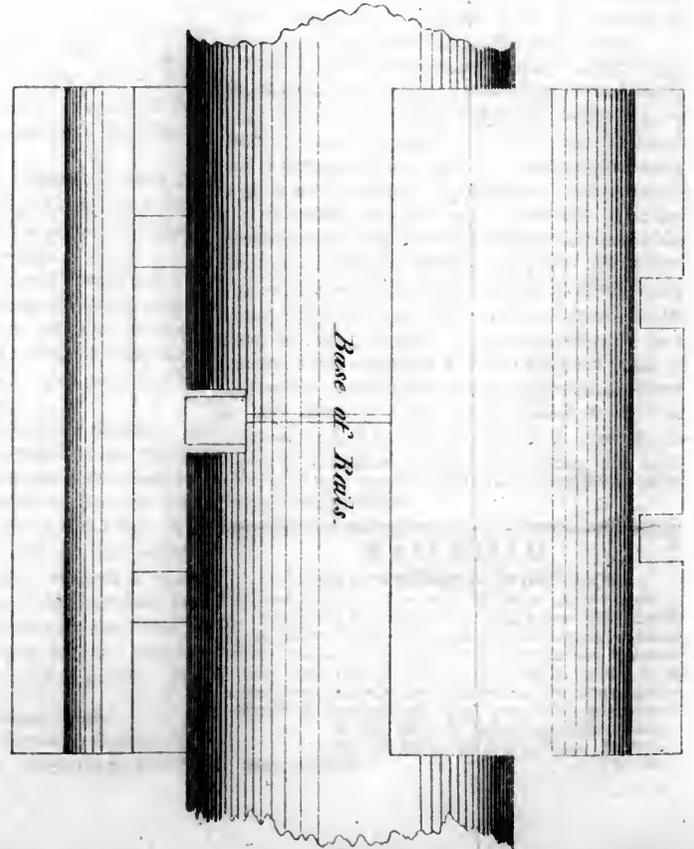
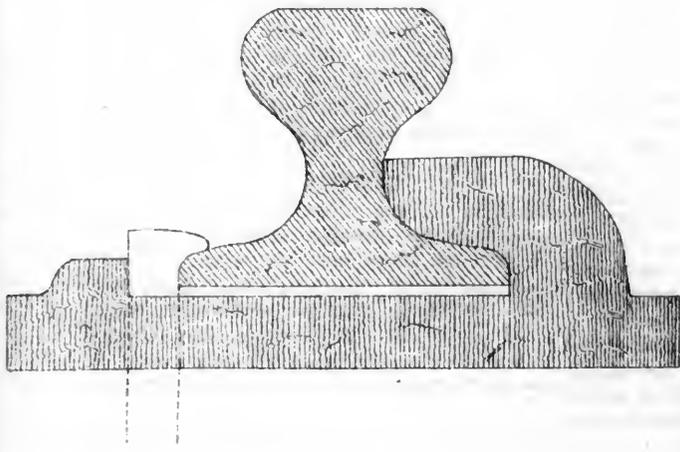
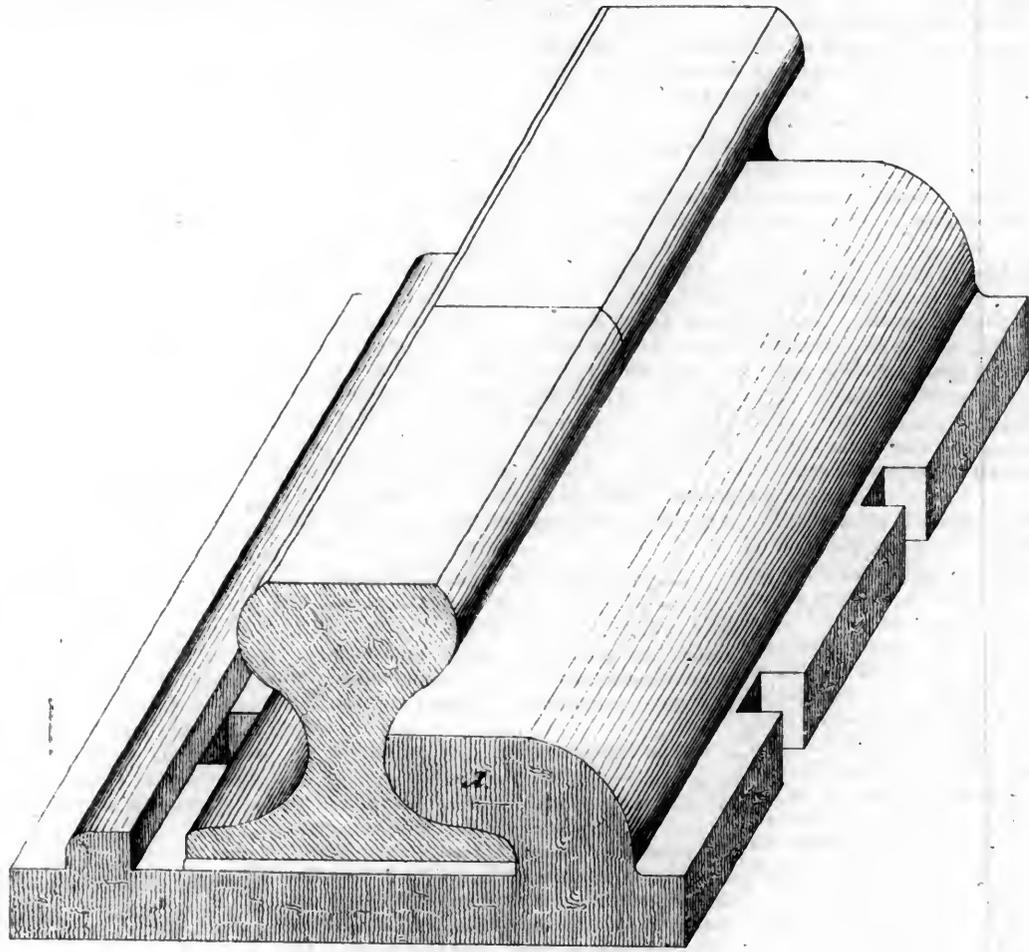
F. M. Ray, 98 Broadway, New York.

E. CRANE, 99 State Street, Boston.

May 24, 1849.



J.E. Smith's improvement for lessening Friction on Rail Roads.



Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.

2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.

3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.

4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relating the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3 1/2 by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,

Eng. New Orleans and Carrollton Railroad,"
New Orleans, March 14, 1849.

Orders received and full information by
J. ELNATHAN SMITH, Patentee,
22 John street,

New York, May 26, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address

JAMES ROWLAND,
Philadelph.

or, L. CHAMBERLAIN, Sec'y,

at Beaver Meadow, Pa.

May 19, 1849.

20tf

Patent India-rubber Springs.

FULLER & CO. beg that parties interested in the use of these Springs will not be misled by the separate statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Spring *gs.hey* have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India-rubber, and apparently think because Mr. Goodyear made an invention some years since, that no person can make any other now. A patent was granted in January last to Messrs. Iyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties using Ray's spring, for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston.
May 26, 1849.

Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesborough, West Newton.

May 19, 1849.

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Rolling Mills for Sale.

THE MASSACHUSETTS IRON COMPANY offer for sale their two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 ft. by 174, including sheds. The two contain 15 double Puddling furnaces, and 9 Heating Furnaces.—There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment.

There is connected with, and will be sold at the same time, about 400,000 feet of upland, on which are erected, besides the mills, 4 blocks, containing each 4 brick dwelling houses for workmen; a wooden counting room with dwelling adjoining, a horse stable, and a coal shed 210 feet long by 70 feet wide now containing 2967 chaldrons Pictou coal and 933 tons of pig iron.

The terms of sale will be made liberal. For further information, apply to B. T. REED, Treasurer, Suffolk Buildings.

May 17, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

American Railroad Journal.

Steam Navigation, Commerce, Mining, Manufactures.

ESTABLISHED IN 1831.

At Five Dollars Per Annum in Advance.

THE AMERICAN RAILROAD JOURNAL is published at 54 Wall St., New York, under charge of HENRY V. POOR, Esq., Editor. Several gentlemen are engaged as regular contributors, known as leading Railroad men in the country.

The Railroad Journal was commenced before any similar publication was attempted in this country, or elsewhere, devoted to the Railway interest; and it has recorded the progress of the Railway System from its humble beginnings, and contributed to carry it forward till the whole civilized world has become more dependent upon it than upon any other agency whatever.

The Locomotive Railway System has now become the great necessity of man—the great instrument of civilization and progress—the great idea of modern times. It has already done more to relieve the burdens of labor—to minister to man's wants and necessities, and to elevate him in the scale of being, than any other agency that has ever been exerted.

The Locomotive Steam Engine, we regard as the greatest achievement of man—the most extraordinary instrument for good the world has yet reached. It traverses the earth with a speed outstripping the swiftest bird upon the wing, carrying—not thought or language alone, but—man, living, breathing, sensitive man—instinct with new life—new energy—new powers, conscious almost of new faculties and a new creation. Without danger, and without fatigue, it enables man to transfer himself to distant regions of space, and participate in the enjoyments, the physical gratifications, and the various pleasures of social existence,

n a manner heretofore unknown. It gives to every community the productions, and ideas of every other—disclosing or creating new sources of enjoyment, and multiplying, to an infinite degree, every susceptibility to pleasurable emotion.

It will not have achieved its highest work till it has harmonised political differences, and elevated all men to the highest social condition of which they are capable. By making distant places one neighborhood, it practically prolongs our being, not to one, but to a fourfold degree, enhancing, in the same ratio, all the joys of existence.

Whoever, therefore, labors in this field, has more than the ordinary rewards for exertion. He is working for humanity—for progress—for the highest good of his race. Profoundly impressed with these views, we intend, in accordance with their spirit to conduct the Journal.

The history, the influence, and the improvements of the railway, with statistics, showing its extent, cost and productiveness, as well as a careful inquiry into its management; scientific discoveries, the mechanic arts, steam navigation, commerce and mining—especially in connection with locomotion and the progress of industry—are embraced in the range of our labors.

Under the mining head, the readers of the Journal will find a series of articles on the *Iron Ores and Iron Manufacture* of the United States, from the pen of J. T. HODGE, Esq., who is an Assistant Editor of the Journal, for the department of Mining and Metallurgy.

Mr. Hodge has for many years been engaged in the preparation of a work on the Iron Ores and Iron Manufactures of the United States, embracing descriptions in detail of the different localities of ore, the expense of working different mines, the structure and location of the several blast furnaces and the results of their working. This work is to be published in a condensed form in the Journal, in a series of weekly papers, conveniently arranged under appropriate heads, with statistical tables of different districts, and such plans and drawings as may be found desirable.

Besides this work on iron, Mr. Hodge is to furnish to the Journal detailed accounts of the *Copper and Lead Mines of the United States*, which have been carefully examined by him, with information on mining subjects generally.

These works will be found indispensable to all parties engaged in mining and the iron manufacture.—This is the first attempt yet made to give, in an elaborate and practical form, a scientific work on the iron ores, the iron manufacture, and mining resources of the whole country.

GEN. C. T. JAMES, of Providence, has also been engaged as an Assistant Editor of the Journal. He will furnish to the Journal full accounts of the progress of mechanical invention, and of the condition of the manufacturing interests of the country. His reputation as a practical mechanic, a successful manufacturer and an able writer, are already well known to the public. He will also furnish valuable information touching other branches of industry and of business.

Great Britain owes her present commercial and political importance more to the mechanical invention of her people than to any other cause.

American skill, industry and enterprise, are giving us a distinguished rank in the community of nations. To these interests, and to the Railway, as the most valuable of all, this Journal will be earnestly devoted.

J. H. SCHULTZ & CO.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac K.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Bulder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848.

6m*

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,

PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

IRON.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Junlata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES

R imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,

22 South William street,

February 3, 1849.

New York.

Railroad Iron.

100 Tons 2½ x ½, | 30 Tons Railroad.

All fit to re-lay. For sale cheap by

PETTEE & MANN,

228 South St., New York.

May 16, 1849.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Allegheny county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, *President*

Troy, N. Y.

ERASTUS CORNING, Albany.

WARREN DELANO, Jr., N. Y.

JOHN M. FORBES, Boston.

ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2½ by ½ Flat Bars.

25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Gartsberrie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.

No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,

45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.

41 Broad street.

March 29, 1849.

3m.13

Railroad Iron.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

DUDLEY B. FULLER, *Agent,*

139 Greenwich street.

New York, October 25, 1848.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, *Agents.*

17 Burling Slip, New York.

October 30, 1848.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,

No. 5½ Pine St., New York.

May 12, 1849.

1ml9

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—*Ful-ler's Patent*—Hose from 1 to 12 inches diameter. **Suction Hose.** *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyger & Helms' patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 19, 1849.

LAP-WELDED WROUGHT IRON TUBES

For Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1748

Mattewan Machine Works.

The Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also *Tenders, Wheels, Axles,* and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, *Agent.*

Devlan's Machinery Oil.

The Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

**LAP — WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steam-boats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J.

The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|-------------------------|---|
| Charles Cook, | } Canal Commissioners
of the
State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | } Engineer of the Bridges for
the Albany Basin. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer & Bridge Builder,
Utica, N. Y. |
| January 1, 1849. | |

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS. Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

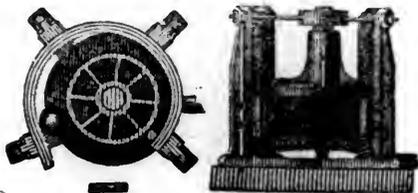
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

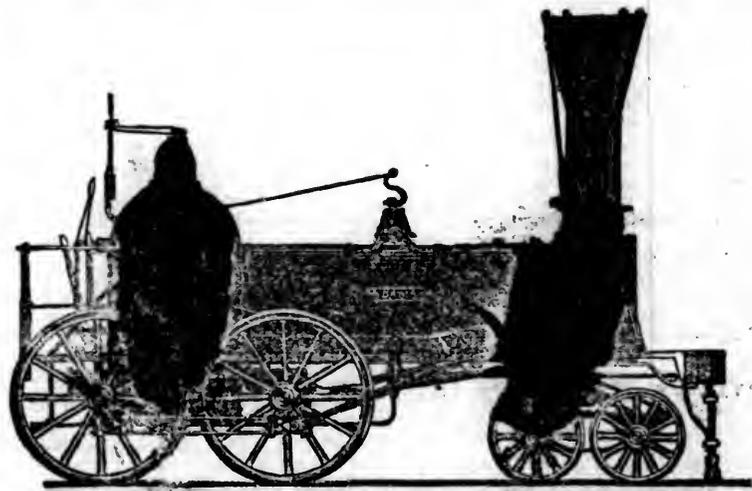
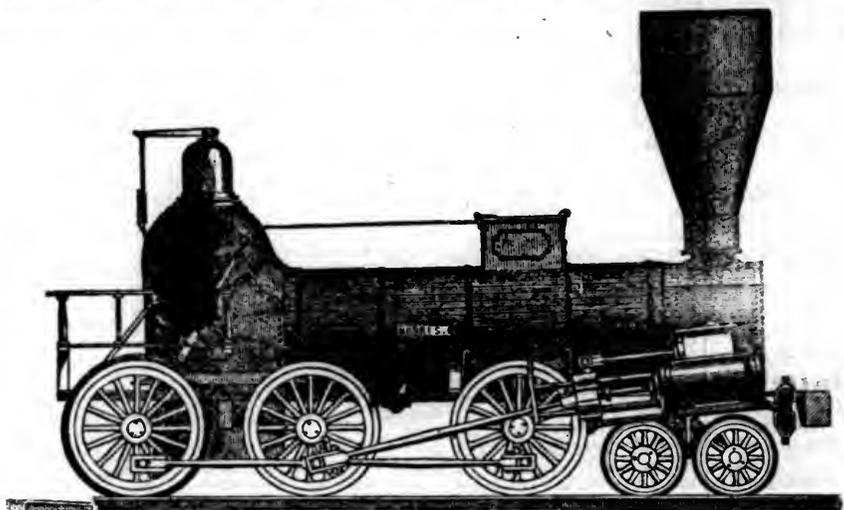
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

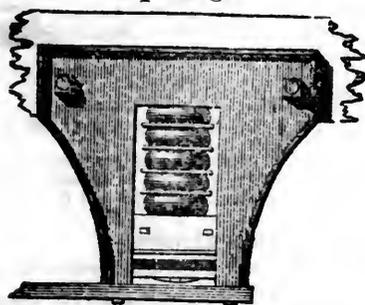
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Fuller's Patent India-Rubber Springs.



THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring nor is any spiral spring required. The Patentee is able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 38 Broadway, New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

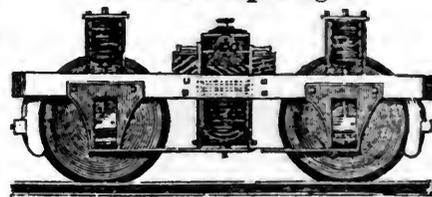
[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.
 "Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844. In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

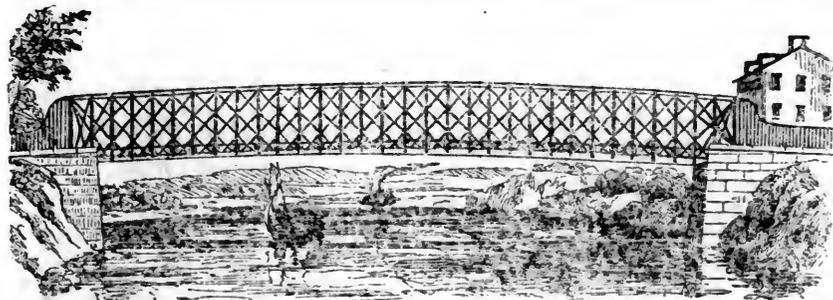
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 53 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most of the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

RAILROADS.

BOSTON AND PROVIDENCE RAILROAD.
On and after MONDAY, APRIL 2d, the

Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8½ a.m., and 4 pm.

Dedham Trains—Leave Boston at 8½ am, 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, am., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5½ pm. Leave Stoughton at 11½ am., and 3½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7, 40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

NORWICH AND WORCESTER RAILROAD.
Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 5 am., and 5 pm.
Leave Worcester at 10½ am., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 9 am.

32 ly
S. H. P. LEE, Jr., Sup't.
May 20, 1849.

EASTERN RAILROAD, WINTER ARRANGEMENT. On and after MONDAY, Oct. 2, 1848,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 9 11½ a.m., 12, 2½, 3½, 4½, 6, p.m.
Salem, 7, 9, 11½ a.m., 12, 2½, 3½, 4½, 6, p.m.
Manchester, 9 a.m., 3½ p.m.
Gloucester, 9 a.m., 3½ p.m.
Newburyport, 7, 11½ a.m., 2½, 4½ p.m.
Portsmouth, 7, am., 2½, 4½ pm.
Portland, Me., 7, am., 2½ pm.

And for Boston,
From Portland, 7½ am., 3 pm.
Portsmouth, 7, 9½ am., 5½ pm.
Newburyport, 7½, 10½ am., 2, 6 pm.
Gloucester, 7½ am., 3½ pm.
Manchester, 8 am., 3½ pm.
Salem, 7½, 8½, 9, 10½, 11-40*, am., 2½, 3*, 4½*, 7*, pm.
Lynn, 7½, 8½, 9½, 10½, 11-55*, am., 2½, 3½, 4½*, 7½, pm.

On Monday, Wednesday, and Friday, a train will leave Boston for Lynn and Salem, at 7 o'clock, p.m.

On Tuesday, Thursday, and Saturday, a train will leave EAST BOSTON for Lynn and Salem, at 10½ o'clock, pm.
*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains to leave
Marblehead for Salem, 7½, 9½, 10, 11-25, am.
2, 4½, 6½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains to leave
Salem for Manchester at 9½ am., 4½ pm.
Salem for Gloucester at 9½ am., 4½ pm.
Trains to leave
Gloucester for Salem at 7½ am., 3½ pm.
Manchester for Salem at 8 am., 3½ pm.
Freight Trains each way daily. Office Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ESSEX RAILROAD—SALEM TO LAWRENCE.
through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Monday, Oct. 2, 1848, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 7.45, 9 am., 12.45, 3.15, 6.45, pm.
Salem for North Danvers at 7.45, 9 am., 12.45, 3.15, pm.
Salem for Lawrence, 9* am., 3.15* pm.
Danvers " 9.10 am., 3.15 pm.
North Danvers " 9.20 am., 3.35 pm.
Middleton " 9.30 am., 3.45 pm.
North Andover " 10 am., 4.20 pm.
South Danvers for Salem at 7.45, 8.45, 11.30, am. 2, 4.55, pm.
North Danvers " 8.20, 11.10, am., 1.40, 5.40, pm.
Middleton " 11 am., 4.30 pm.
North Andover " 10.35 am., 5.05 pm.
Lawrence " 10.30* am., 5* pm.

* These trains will not stop at Frye's Mills nor Grove-st.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
Outward Trains from Boston

For Portland at 6½ am. and 2½ pm.
For Rochester at 6½ am., 2½ pm.
For Great Falls at 6½ am., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½ pm.
For Lawrence at 6½, 9 am., 12 m., 2½, 4½, 6, 7½ pm.
For Reading 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½ pm.

Inward trains for Boston
From Portland at 7½ am., 3 pm.
From Rochester at 9 am., 4½ pm.
From Great Falls at 6½, 9½ am., 4½ pm.
From Haverhill at 7, 8½ 11 am., 3, 6½ pm.
From Lawrence at 6, 7½, 8½, 11½ am., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9 am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½* pm.
Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½ pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

NEW YORK AND ERIE RAILROAD.
WINTER ARRANGEMENT.

On Monday, January 1st, and until further notice, the trains will run as follows:

FOR PASSENGERS.

Leave New YORK, (foot of Duane street,) at 7 o'clock, am., by steamer Erie. Leave Port Jervis at 6 o'clock am.

An Accommodation Train, for passengers and milk, will run in connection with the steambot towing the Freight Barge, leaving New York and Port Jervis at 4 o'clock pm.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., per steambot New Haven, and Barges.

The Road will be opened to Binghamton and intermediate places on Monday, the 8th January, 1849, on which day, and until further notice, the through trains will run as follows:

FOR PASSENGERS.

Leave New York from Duane street Pier, at eight o'clock, and Binghamton at 7 o'clock, am., daily.

FOR FREIGHT.

Leave New York at 4 o'clock, pm., and Binghamton at 7 o'clock, am., daily, Sundays excepted.

H. C. SEYMOUR, Superintendent.
January 1st, 1849. ja3

NEW YORK & HARLEM RAILROAD, DAILY.
WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12 m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20 am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams' Bridge will run at 7.40 and Morrisiana and Harlem at 8 o'clock.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

The first train starts from St. Hyacinthe at 7 o'clock a.m., reaching Montreal at 8½ a.m., leaving Montreal at 2 p.m., and reaching St. Hyacinthe at 3½ p.m.

The second train leaves Montreal at 9 o'clock, a.m., reaching St. Hyacinthe at 10½ a.m., leaving St. Hyacinthe at 4 p.m., reaches Montreal at 5½ p.m.

THOMAS STEERS, Secretary.

March 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leave Baltimore at	9 am. and 3½ pm.
Arrive at	9 am. and 6½ pm.
Leave York at	5 am. and 3 pm.
Arrive at	12½ pm. & 8 pm.
Leave York for Columbia at	1½ pm. & 8 am.
Leave Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	\$1 50
Wrightsville	2 00
Columbia	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg Or via Lancaster by railroad

Through tickets to Harrisburg or Gettysburg	3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at	5½ pm.
Returning, leaves Owing's Mills at	7 am.

D. C. H. BORDLEY, Sup't.

31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO-ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton.	Between Charleston, and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 23
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hoghead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, Sup't of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours.

On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.

Returning, leave Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½, pm., Train from Cincinnati, and 2½, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.

April 1st, 1849.—Fare \$3.

Leave Philadelphia 8½ am., and 10 pm. Leave Baltimore 9 am, and 8 pm. Sunday—Leave Philadelphia at 10 pm. " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20. Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12. " Wheeling, 13.

Through tickets sold at Philadelphia office only. Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm. Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line.

Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm. Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for. I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	\$3.00
" " Reading	58	2.25	1.90
" " Pottsville	34	1.40	1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8ft.

CENTRAL RAILROAD—FROM SAVANNAH TO MACON.

Distance 190 miles.

This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$3 00.	Freight—
On weight goods generally,	50 cts.	per hundred
On measurement goods	13 cts.	per cubic ft.
On brls. wet (except molasses and oil)	1 50	per barrel.
On brls. dry (except lime)	80 cts.	per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts.	per hundred
On hhds. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE, Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PASSENGER TRAIN

runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily

Fare through from Charleston to Huntsville, Decatur and Tusculum	22 00
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The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.

This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculum, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT, Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

Troy Iron and Nail Factory, Troy, N. Y.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.
THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.
 Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
 Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.
 Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by **E. S. NORRIS.**

April 11, 1849.

P. S. DEVLAN & CO'S
Patent Lubricating Oil.
THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. **KENNEDY & GELSTON,** 5½ Pine street, New York.
 Sole Agents for the New England States and State of New York. 1y14



INCORPORATED BY ACT OF PARLIAMENT.

NOTICE is hereby given, that an **ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE** has been levied on the **STOCK OF THE UPPER CANADA MINING COMPANY**—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the **First Day of April** next, and the other half on the **First day of July** next ensuing. By order, **J. D. BRONDOZEET,** Secretary U. C. M. C.

Hamilton, 24th February, 1849. 12tf

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other purposes.
 German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
 Genuine "Sykes," L Bliester Steel.
 Best English Bliester Steel, etc., etc., etc.
 All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

Norwich Car Factory,
 NORWICH, CONNECTICUT,
AT the head of navigation on the River Thames, and on the line of the **Norwich & Worcester Railroad,** established for the manufactory of
RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
 PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
 ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES
 Furnished and fitted at short notice.
 Orders executed with promptness and despatch.
 Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,
 Will meet with immediate attention. 1y6

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.
WELDED WROUGHT IRON TUBES
 From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER Flows.

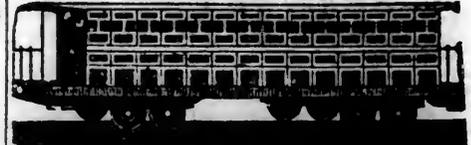
Manufactured and for sale by
MORRIS, TASKER & MORRIS.
 Warehouse S. E. Corner of Third & Walnut Street.
PHILADELPHIA.

Practical Geology and Metallurgy.
JAMES T. HODGE WILL EXAMINE AND report upon Mines and Ores; construct and conduct Blast-furnaces; and give important information as to the best localities for their establishment. To parties desirous of building the nearest furnaces to New York city he can furnish the control of ores, which will warrant the enterprise.
 Office at No. 1 New St., corner of Wall. When absent from the city, inquiry may be made at the office of this Journal, 54 Wall St.

RAILROAD WHEELS.
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HENRY V. POOR, Editor.

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 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, June 2, 1849.

The Great Russian Railway from St. Petersburg to Moscow.

The greatest work of modern times, undertaken as a public improvement and not directly as a war measure, was the project by the Emperor Nicholas of Russia, for a line of railway to connect the great Capitals of the Empire. The distance was generally stated at 500 miles, but the location of the railway has been effected in a distance of only 420 miles.

The plan adopted, contemplated the construction of a road perfect in all its parts, and equipped to its utmost necessity, regardless of expense or of the time requisite to its completion. The estimates were on a scale of imperial grandeur, and contemplated the expenditure of *thirty-eight millions of dollars.* The work was entrusted to Col. Geo. W. Whistler with unlimited authority, and *forty millions of dollars* set aside for the work.

Seven years was the shortest estimate made for the time of its completion, and all parts of the work were so distributed as to give time for every thing to take its appropriate position when required.

These advantages were fully appreciated by Col. Whistler, and all his plans were matured upon a scale of comprehensive economy suited to so important an undertaking. The line selected for the route had no reference to intermediate localities, and is the shortest one attainable without sacrificing more valuable requirements for the road. It is nearly straight, and passes over so level a country as to encounter no obstacles requiring a grade ex-

ceeding *twenty feet* to the mile, and most of the distance upon a level. The roadway taken is *four hundred feet* in width throughout the entire length, the road bed elevated from 6 to 10 feet above the ordinary level of the country, and is thirty feet wide on the top. The road is laid with a double track a five feet gauge and a rail of 69 lbs. to the lineal yard, on a ballasting of gravel 2 feet in depth. The bridges have no spans exceeding *two hundred feet*, and are of wood, built after the plan of "*Howe's Improved Patent*," so well known on the New England roads, with a truss 24 feet in depth.

The work had so far advanced at the time of Col. Whistler's death, that a large portion of it will be in use the present year, unless this event shall delay the prosecution of the work. Under these circumstances, the death of Col. Whistler was received in this country with an universal expression of sympathy and sorrow. It is fortunate, however, that the enterprise is so far completed that his fame and his works are safe from the accidents of time or of change. His successor will share largely in the same American spirit that he possessed, and will see no reason to change or modify any thing that had been attempted by a man who united to the rarest mechanical genius, the most eminent practical ability.

MR. WILLIAM L. WINANS of Baltimore, recently arrived from Russia by the way of Paris, left St. Petersburg a few days only before Col. Whistler's death. He has in conversation with us given information such as has not been before detailed in this country, and we feel more than ordinary pleasure in giving some account of the road to our readers. Mr. Winans is of the firm of Harrison, Winans & Eastwick, who are so well known in this country as the contractors for furnishing the equipment of this road. They have already supplied it with

162 Locomotive Engines, averaging 25 tons weight.

72 Passenger Cars.

2,580 Freight Cars.

2 Imperial Saloon Carriages, capable each of carrying the Imperial Court of Russia.

This equipment has been built in Russia in shops prepared by the contractors, and supplied by them with Russian labor. The whole contract with Messrs. Harrison, Winans & Eastwick has amounted to between *four and five millions of dollars.* They engaged to instruct a suitable number of Russian

mechanics to take charge of engines when completed.

The engines are of two classes, 62 are eight-wheel engines for passenger travel, and 100 eight-wheel engines for freight. The passenger engines are of one uniform pattern throughout, so that any part of a machine will fit the same position on any other. They have each 4 driving wheels coupled 6 feet in diameter, and trucks in front similar to the modern engines on the New England and New York roads. Their general dimensions are as follows:

Waist of boiler.....	47 inches
Length of tubes.....	10½ feet
Number of tubes.....	186
Diameter of tubes.....	2 inches
Diameter of cylinders.....	16 inches
Length of stroke.....	22 inches

The freight engines have the same capacity of boiler, the same number and length of tubes with three pair of driving wheels and a pair of small wheels in front. The driving wheels are only 4½ feet diameter, with 18 inch cylinders, and 22 inch stroke, all uniform throughout in workmanship and finish.

The passenger cars have the same uniformity. They are all 56 feet in length by 9½ feet in width, and divided into three classes. The first class carrying 33 passengers, the second class 54, and the third class 80 passengers each. They are all provided with 8 truck wheels each, with elliptic steel springs. The freight cars are all of them 30 by 9½ feet, made in an uniform manner, having 8 wheel trucks under each.

The IMPERIAL SALOON CARRIAGES are of 80 feet length and 9½ ft. width having double trucks with 16 wheels under each. They are finished into *five* different compartments, the Imperial mansion in the centre, 25 feet in length, fitted up with every luxury for sitting or reclining, and with every comfort in every part of it that the most ingenious mind can devise, or the most refined taste can desire. Spacious platforms are provided in front and rear. The whole cost of them exceeds *fifteen thousand dollars each.*

The depots at each terminus, and the station houses and engine houses along the line are on a plan uniform throughout, and on a scale equally imposing. Fuel and water stations are placed at suitable points. Engine houses are provided at the distance of *fifty miles* apart, built of the most substantial masonry, of circular form 180 feet in

diameter, surmounted with a dome, containing stalls for 23 engines each. Engines are to run from one engine house to another only, under one heat and are run back and forth from station to station, so that they are kept constantly in charge of the same persons. Repair shops are attached to every engine house, furnished with every tool or implement, that the wants of the road can require.

Engine drivers have to go through the appropriate training before they are allowed to take charge of an engine, and every arrangement provided, that skill, experience or ingenuity can demand.

Col. Whistler looked forward to the completion of this great work with the eye of a Christian and a man. The greatest work of civil engineering that the world had yet demanded, was entrusted to his care. He never forgot his country or the duties he owed to his reputation. He needed only to await the consummation of his labors, and transport the Imperial Court of Russia from the banks of the Neva to the Palace of the Kremlin in ten hours time, to have had a fortune at his disposal from the munificence of the Emperor. Though receiving a large salary during his engagement, this was barely enough in that country to sustain the proper dignity of his position. He resigned these rewards and all the honors of the world at the fearful summons of death, leaving the inheritance of a spotless name to his children, his profession and his country.

It needs no other testimony to show the estimation in which he was held, than the fact that his successor is to be an American also! We confess the pride of our hearts, that our country presents so glorious a spectacle to the genius and the learning of Europe. The fact that the unobtrusive citizen of republican America could, by the force of genius and of merit, attain a rank and a position in the proudest monarchy of Europe, and a power for good beyond any thing that hereditary greatness or titled nobility could command, causes a reflection that gives us far more pleasure than the recollections of any triumph of arms, or any attainment of titles, that are within the gift of power.

Tuscany Furnaces.

The peculiarities of the different cinders and of the changes of the flame at the tunnel head, accompanying the changes in the iron produced, do not appear to vary especially from what is common in other well running furnaces. They are particularly described, however, in the article from which these data are obtained.

The introduction of hot blast has been beneficial in a saving of about one-fourth of the coal, and, what is equally important, in rendering the working more regular and easy, causing almost a total cessation of the derangements to which the furnaces were before subject. The quality of the iron does not seem to be affected by its use.

What has been said in relation to the number and composition of the charges of the furnaces has already given some idea of their daily production in cast iron. This production varies with the quantity of blast, the condition of the interior of the furnace, the quality of the coal used, etc. The following tables, showing the running of the different furnaces at different periods, will fully set forth the highest yield that can be obtained, and the consumption of fuel it requires.

In these tables the same amount of charges is constantly allowed for roasting the ore. The estimate of this is only approximate. The exact calculation of the stock consumed is only made at certain periods of the year from the returns of the quantities of coal delivered to each furnace.

Of the two tables below, the former gives the daily working of the Old Furnace of Follonica during the month of April 1834. The product is large, the furnace being new. This diminishes after the month of April, when the temperature gets higher.

The second table contains the weekly workings of the same furnace during the blast of 1833-34.

NO. 1.

DATE.	Number of charges.	Charcoal.				Product in cast iron.			
		Ore.	For the furnace.	For roasting.	Total.	Cast-ings.	Pig.	Total.	
		lbs.	Charge.	Charge.	Ch.	lbs.	lbs.	lbs.	lbs.
April 1....	208	72,485-6	90	14	104	33,633-6	2,277	34,155	36,432
2....	210	72,795-8	91	14	105	33,957-0	2,277	34,155	36,432
3....	208	72,485-6	90	14	104	33,633-6	2,277	34,155	36,432
4....	211	71,346-0	92	14	106	34,280-4	3,036	32,637	35,673
5....	211	72,817-8	92	14	106	34,280-4	4,554	31,878	36,432
6....	185	62,929-0	79	14	93	30,076-2	1,136	30,360	31,498
7....	208	72,787-0	90	14	104	33,633-6	1,518	34,914	36,432
8....	200	71,271-2	86	14	100	32,340-0	1,518	34,155	35,673
9....	201	70,549-6	92	14	106	34,280-4	1,594	33,396	34,990
10....	203	71,306-4	88	14	102	32,986-8	2,277	33,396	35,673
11....	202	71,306-6	87	14	101	32,663-4	2,277	33,396	35,673
12....	204	69,788-4	88	14	102	32,986-8	4,554	30,360	34,914
13....	205	70,510-0	89	14	103	33,310-2	4,933	30,360	35,293
14....	206	73,546-0	89	14	103	33,310-2	1,897	34,914	36,811
15....	208	71,306-4	90	14	104	33,633-6	3,036	32,637	35,673
16....	211	71,306-6	92	14	106	34,280-4	3,036	32,637	35,673
17....	207	71,271-2	90	14	104	33,633-6	2,277	34,914	37,191
18....	210	71,306-4	91	14	105	33,957-0	3,036	32,637	35,673
19....	215	71,306-6	94	14	108	34,927-2	2,277	33,396	35,673
20....	207	71,306-4	90	14	104	33,633-6	3,036	32,637	35,673
21....	213	72,028-0	93	14	107	34,603-8	1,897	34,155	36,052
22....	209	71,306-6	91	14	105	33,957-0	1,897	33,396	35,293
23....	211	72,028-2	92	14	106	34,280-4	1,897	33,396	35,293
24....	207	70,510-0	90	14	104	33,633-6	3,415	31,878	35,293
25....	210	70,510-0	91	14	105	33,957-0	3,036	32,637	35,293
26....	211	70,527-6	92	14	106	34,280-4	3,795	31,878	35,673
27....	220	74,305-0	96	14	108	34,927-2	2,277	34,914	37,191
28....	200	67,628-0	86	14	100	32,340-0	1,518	36,432	37,950
29....	214	74,305-0	93	14	107	34,603-8	2,277	34,914	37,191
30....	207	72,855-2	90	14	104	33,633-6	3,036	33,396	36,432
May 1....	209	72,188-6	91	14	105	33,957-0	1,518	34,914	36,432
Total.....	6431	22,119,118	2,795	434	3,229	1,043,611-8	79,388	1,033,001	1,112,387
Average.....	207†	71,352	90 16	14	104-16	3,367	2,566	33,322	35,882
	16,340	22,119,438	2,775			1,044,258-6	79,391		

NO. 2.

DATE.	Number of charges.	Charcoal.				Product in cast iron.			
		Ore.	For the furnace.	For roasting.	Total.	Cast-ings.	Pig.	Total.	
		lbs.	Charge.	Charge.	Ch.	lbs.	lbs.	lbs.	lbs.
From 4th Dec.									
to 4th January.	5,384	1,457,918	2,404	448	2,852	922,337	10,967	721,809	732,898
" 11th "	1,363	421,623	584	98	682	220,559	1,935	210,243	212,179
" 18th "	1,343	443,179	575	98	673	217,648	759	221,628	222,387
" 25th "	1,330	436,121	569	98	667	215,708	1,897	216,315	218,211
" 1st February.	1,379	440,600	594	98	692	223,793	7,210	214,038	221,249
" 8th "	1,359	448,492	582	98	680	219,912	4,554	220,110	224,664
" 15th "	1,401	468,684	603	98	701	226,703	6,072	229,218	235,290
" 22d "	1,365	440,220	587	98	685	221,529	6,072	214,038	220,110
" 1st March...	1,437	471,378	621	98	719	232,525	7,590	229,977	237,567
" 8th "	1,485	488,492	646	98	744	240,565	7,590	236,808	244,398
" 15th "	1,484	506,874	645	98	744	240,286	8,349	245,157	253,506
" 22d "	1,479	506,631	654	98	752	243,197	8,349	245,157	253,506
" 29th "	1,431	472,553	620	98	718	232,201	9,108	226,941	236,049
" 5th April...	1,463	507,201	635	98	733	236,612	21,252	233,013	254,265
" 12th "	1,413	489,933	610	98	708	228,967	15,180	229,977	245,157
" 19th "	1,462	503,596	635	98	733	237,052	20,493	231,495	251,988
" 26th "	1,468	497,523	639	98	737	238,346	18,975	229,977	248,952
" 3d May...	1,476	510,058	642	98	740	239,316	13,662	242,880	256,542
" 10th "	1,404	462,990	607	98	705	227,997	21,252	210,243	231,495
" 17th "	1,373	462,990	589	98	687	222,176	34,914	197,340	232,254
" 24th "	1,395	441,748	601	98	699	226,056	25,806	195,822	221,628
" 31st "	1,338	446,824	574	98	672	217,325	27,324	177,606	204,930
" 7th June....	1,379	414,414	594	98	692	223,793	9,108	198,658	207,966
" 13th "	1,206	373,428	547	98	631	204,065	35,727	184,964	220,693
Total.....	37,617	12,073,556	16,357	2,702	19,045	6,159,153	324,148	5,763,614	6,087,763
Average per week	1,386	444,814	602	98	700	226,919	11,949	212,339	224,287
Average per day..	198	63,545	86	14	100	32,417	1,707	30,334	32,041

* Error in this line in the original. † In original 204. ‡ The figures in the last line are the calculations from the totals given in the original.

§ In original 2,688. The total in the columns of lbs. in the second table is calculated from the total in kilogrammes in the original without altering the figures, as they might require, to a small amount, by making the additions. Errors in the original I have no data for correcting.

In calculating these tables I have taken the weight "livre," as equal to kil. 0.345, this being given in the work as its value: and the kilogramme I have reckoned as 2.2 lbs. avoird. The weight of the ore in the charge, it is seen, is not uniform.

In the last blast, the old Follonica was run only on forge iron; it was blown in at the end of November 1837; the production every two weeks was as follows—

	lbs.
First period.	Up to the 2d December..... 34,914
	From the 2d to the 15th Dec.... 360,358
	From the 15th to the 31st Dec... 412,896
Cold blast.	From the 1st to the 15th January. 451,605
	From the 16th to the 31st Jan... 478,929
	From the 1st to the 5th Febrary. 151,800

Total..... 1,890,502
Average per day..... 23,644
Average consumption (of charcoal) per ton 2,772

After stopping seven days to put in the hot blast-pipes, the blast re-commenced on the 12th February. The production then was—

	lbs.
Second period.	From the 12th to 23th Feb..... 472,098
	From the 1st to 15th March..... 432,630
	From the 16th to 31st March.... 467,544
	From the 1st to 15th April..... 447,043
Hot blast.	From the 16th to 30th April..... 402,206
	From the 1st to 15th May..... 378,789
	From the 16th to 20th May..... 115,577

Total..... 2,715,887
Average per day..... 27,997
Average consumption (of charcoal) per ton 2,288

New Furnace of Follonica.—This furnace for the two first years was run almost wholly on foundry iron, and with hot blast. During the blast of 1837-38, commencing the last of November 1837, it made as follows—

	lbs.
Up to the 2d December, 1837.....	24,288
From the 3d to 15th December.....	252,619
From the 16th to 31st December.....	385,097
From the 1st to 15th January, 1838.....	362,096
From the 16th to 31st January.....	387,878
From the 1st to 15th February.....	362,065
From the 16th to 23th February.....	307,256
From the 1st to 15th March.....	341,785
From the 16th to 31st March.....	371,098
From the 1st to 15th April.....	337,033
From the 16th to 30th April.....	327,052
From the 1st to 15th May.....	307,699
From the 16th to 20th May.....	99,550

Total..... 3,865,516
Average per day..... 23,737
Average consumption (of charcoal) per ton 2,803

The greatest daily product is when the furnace is making foundry iron; it reaches then even to 23,842 lbs. In making forge pig, shortly after the period included in the above table, the production was from 26,565 to 27,324 lbs.

Tables equally minute are given of the workings of the other furnaces; but their production is not so remarkable as of the two Follonica furnaces. I shall give of these only the summary of the operations of the Cecina during 31 weeks.

Blast Furnace of Cecina; blown cold; but the blast moist; 31 weeks—from 23d November 1835, to 26th June 1836.

No. of charges.	Lbs. of ore.	fur-nace. Ch.	Charcoal for			Pig iron, lbs.
			roast-ing. Ch.	Total, Ch.	lbs.	
27,859	7,529,810	13,824	1,085	14,909	4,821,571	4,270,893
Pr week aver. 896	242,888	445.9	35	480.9	155,524	137,768
Per day aver. 128	34,698	63.7	5	68.7	22,218	19,681

Fig. 1.
NEW FURNACE OF FOLLONICA.
Vertical Section Across the Twertes.

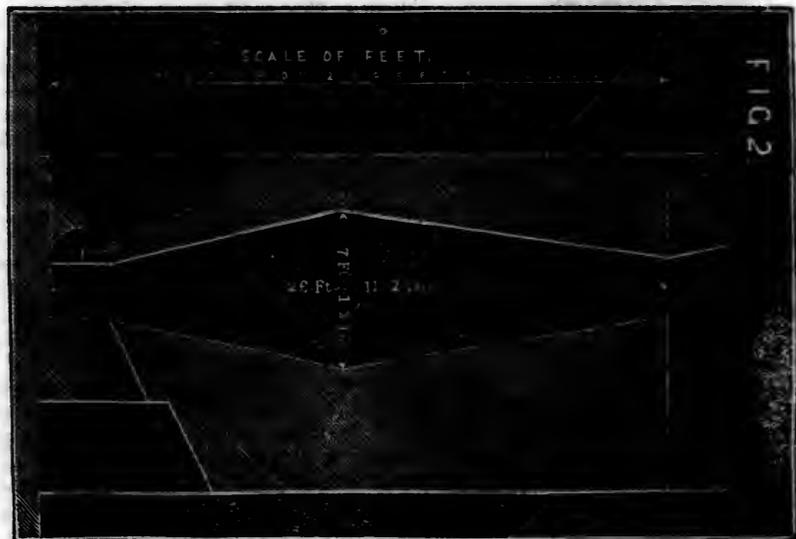
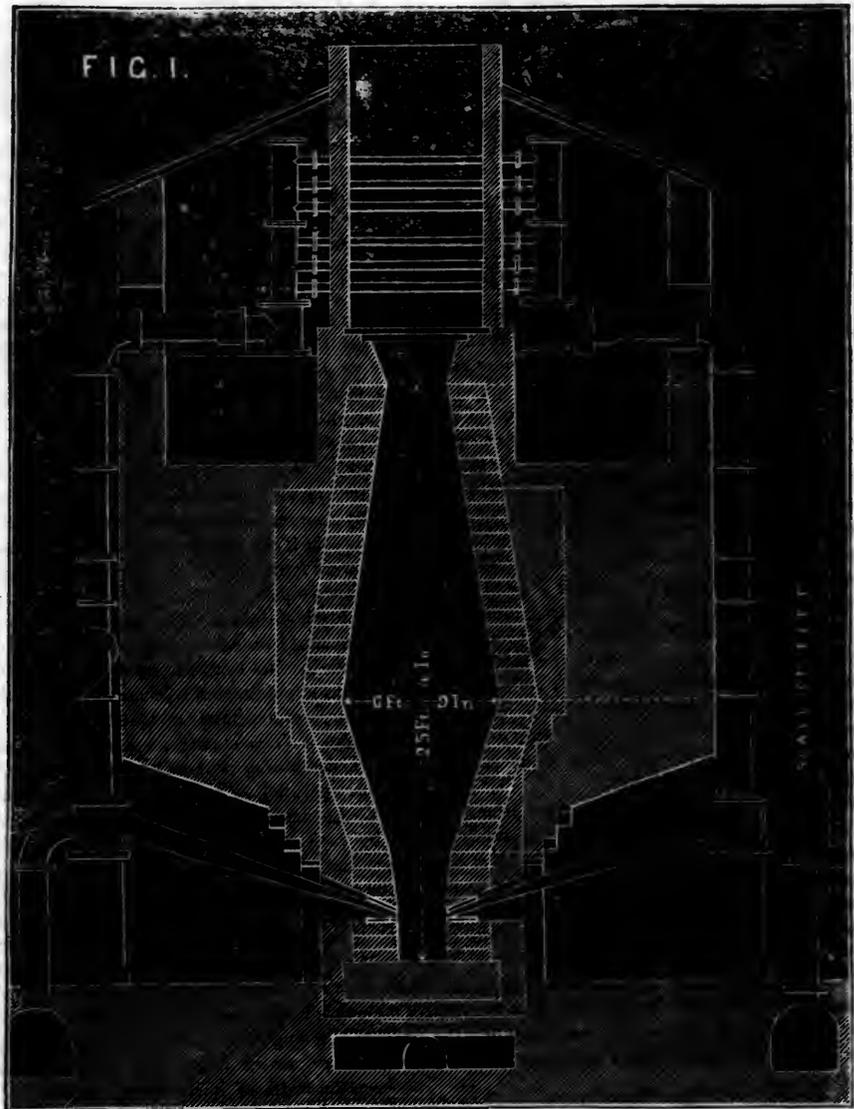


Fig. 2.
OLD FURNACE OF FOLLONICA
Vertical Section from the Hearth to the Back-wall.

From the remainder of this article I shall limit myself to a few extracts.

The most remarkable feature presented in the working of the Elba ores in the Tuscan furnaces, is the extraordinary daily yield. Of all the causes, which can produce such a result, the most prominent certainly is the character of the ore itself; which by its richness, fusibility and facility of reduction, allows the use of a small proportion of flux and fuel. Consequently the furnace contains more ore at a time, than it could of any other quality.

The proper limits of height appear to be very nearly attained in the old Follonica furnace. By increasing the size there is reason to fear, that in consequence of the fusibility of the ore, its remaining too long in the furnace might cause a considerable loss, some oxide of iron passing into the cinders, or the furnace becoming deranged by the refining of a portion of the iron. This is sometimes caused, and slags rich in iron are produced by the ore being too much roasted.

The quantity of air blown in, though considerable, is not regarded as one of the principal causes of the great production of these furnaces; it is only one of the accessory elements of this. More blast is now used for other furnaces of less production.

In conclusion—it will be well not to contract the furnace too much in its lower part, and consequently to have no *hearth*, according to the general use of this word. The boshes should have a sufficiently steep slope, which may vary between four and five of height for one of base, giving to the interior the form of two frustums of cones nearly equal, united at their base. The great inclination given to the twerres— 15° to 17° —without being indispensable, appears nevertheless to have some influence upon the amount of the daily product.

With a furnace conducted after these principles, and a blowing apparatus capable of supplying the quantity of air necessary for the combustion of coal corresponding to the quantity of ore to be passed through the furnace (at out equal parts); and if at the same time the furnace is run, so as to favor the descent of the charges, clearing out especially the receptacle for the iron at the bottom frequently, and not interrupting the blast any oftener than is absolutely necessary—it cannot be questioned but the same results may be obtained as in the Tuscan furnaces.

H.

Iron Ores and the Iron Manufacture of the United States.

MASSACHUSETTS.

Continued from page 324.

The whole quantity of iron ware manufactured in the county of Plymouth by the several furnaces, may be estimated at fifteen hundred tons annually.

In Bridgewater, during the Revolutionary War, cannon were cast solid and bored, through the enterprise and skill of Hon. Hugh Orr, Esq., who also furnished to the army pieces of brass ordnance from 3 to 42 pounders, besides a vast quantity of cannon shot."

One of the first experiments made in this country with anthracite for smelting iron ores in a furnace, was at one of the small furnaces in Plymouth county, in the town of Kingston. In an article in Silliman's Journal, vol XII., for the year 1827, by Wm. Meade, on the Anthracites of Europe and America, may be found an account of the trial.

A furnace was built in the year 1820 for this purpose at Mauch Chunk, in Pennsylvania, but the attempt does not appear to have been successful.†

† Notes on the Use of Anthracite in the Manufacture of Iron, by Walter R. Johnson, A. M., p. 14.

Primary Ores.—At *Bernardston*, in the valley of the Connecticut river, eight miles north from Greenfield, is a bed of magnetic iron ore, which has attracted some attention, and which in the summer of 1847 was opened sufficiently to determine its character. The rocks in its vicinity are mica slate and quartz rock near their junction with the new red sandstone of this valley. But immediately associated with the iron ore is limestone of uncertain age, and over the ore and limestone are strata of an argillaceous flagging stone, both of which and the limestone are not found elsewhere in this region, to my knowledge, near the contact of the red sandstone and the primary rocks. The iron ore is traced up the back of a rolling ridge, cropping out with the limestone beneath it, in a NE. and SW. direction. Where it is exposed to the surface, it has crumbled away to a loose kind of bog ore or ochreous oxide of iron, which makes a great show, as though the bed were very large. Followed to a depth of ten or fifteen feet, a regular stratum of close, compact iron ore of about two feet in thickness is found resting conformably upon the limestone, and dipping with it at an angle of 30° to 40° to the southeast. The ore appears very rich, but unfortunately is so universally charged with sulphur, that it seems hardly possible that it can be worked with profit. The best pieces were found closely mixed with fine grains of the yellow sulphuret of iron. In all other respects the locality holds out great inducements for the establishment of iron works on a small scale.

Another locality I have minutely surveyed, is at *Hawley*, in Franklin county, near the Deerfield river. At a point four miles up Chickley's river, near the village of West Hawley, is a high ridge of mica-slate, containing within its strata two beds of iron ore, parallel to each other, and only ten feet apart. As these beds have not been fairly proved to lap by each other, but the opening in one begins where that of the other ends, it is possible they may be the same bed broken off and thrown out of place. They consist, however, of ores of different characters. The western bed is made up of vertical layers of heavy magnetic ore, mixed with perhaps one-third as much quartz in parallel layers, the thickness of the whole being about two feet. The eastern bed consists of a singularly pure and brilliant micaceous specular ore, which lies closely packed in sheets between the walls of mica slate. Its thickness at the surface, as traced along the old excavation of several hundred feet in length, is from two to two and a half feet. The old workings extend to the depth of forty to fifty feet, and the bed was said to increase in thickness with the depth. The ores, particularly the micaceous ore, were worked to considerable extent many years since in forges, and the iron was considered remarkably soft and tough.—They seem to be well adapted for a blast furnace, two such different varieties offering great facilities to the founder to change the running of the furnace at will, as well as the character of the iron.

The amount of ore may depend somewhat upon the fact whether these prove finally to be beds or veins. So far as they have been opened, they are seen to be regularly included between the strata of mica slate, winding in and out with it, pursuing the same course, NE. and SW., and dipping with it at a steep angle to the east. I am inclined to the opinion, that they will run together at some depth below the surface, and thus crossing the strata prove themselves to be true permanent veins. They are well situated for working, and can be opened by an adit on the vein full one hundred feet below the old workings. A good road of easy down-grade will

take the ore to the mouth of Chickley's river, where there is good water power, and a most convenient site for the supply of fuel from the heavily timbered lands on Cold river and up Deerfield river.

The following estimate will give the approximate cost of making a ton of iron at this place:

Ore—	{ Mining 1½ tons...\$2 50 }	} \$3 50
	{ Trans. 4 miles... 1 00 }	
Charcoal—	150 bush. a. 4½ cts....	6 75
Limestone—	62½; labor \$2 50.....	3 12
Interest, Repairs, Superintendence	...	3 00
		\$16 37

The cost of charcoal can hardly be underrated, provided wood lands are purchased to the extent of several thousand acres at the price they can now be had at.

The transportation to Greenfield, about sixteen miles, would cost about two dollars, and thence to Boston as much more. Surveys have been made for a proposed railroad to pass up the valley of the Deerfield river, and across to the valley of the Hoosac at North Adams. The high mountain between the two rivers seems to present an insuperable obstacle to such a road. Having crossed it on the stage road on foot at different times with one of Buntzen's mountain barometers, I found the lowest point at which it could be crossed, was but little short of 1,600 feet above Deerfield river. It has been proposed to tunnel through—a distance of between three and four miles, and inducements have been offered for this, that valuable mineral beds might be found by the excavations. The probability is small, in this ridge of mica slate and quartz rock, of opening any other beds of value, than of soapstone and serpentine, such as are now found on the east side, and some hematite ore beds near the limestone at the base on the western side.

There are other localities in Massachusetts, which present magnetic ores in small veins. I have examined one near the railroad station at *Chester Ferreries*, situated on the extreme summit of the high mountain overlooking the road at the south. It is a well defined vein of extremely close texture and hardness, in a quartz rock equally hard and expensive to mine. The vein is only from one to two feet thick, and followed along the edge of the precipice, it is seen to change continually, sometimes running out to mere scattering grains of ore. By a few blasts put in, masses of ore and rock many tons in weight have been thrown down the side of the mountain. An adit level a hundred feet in length driven in at right angles to the vein, would cut it at a depth equally great below the summit; but the expense in driving through a rock of such extreme hardness would hardly be warranted by the promise of the vein.

It is said that this vein may be traced several miles parallel with the course of the Westfield river and the railroad. The location would be a good one for water power, fuel and convenience of transportation.

In the town of *Oris*, too, in Hampden county, are some magnetic ore veins in the granite hills, which I have also examined. They do not seem to be of sufficient size to warrant exploration, otherwise the locality would be an excellent one for a furnace, wood being abundant, and the hematite ores of Tyringham and New Marlborough being but a few miles distant, which would work advantageously mixed with magnetic ores. There are several forges also near by, which require a large amount of pig iron for converting into bars; this they now obtain from Berkshire county.

At Warwick, east of the Connecticut river, near the New Hampshire line, are some magnetic ores of good quality, in the granite hills. They have never been worked owing to uncertainty as to their extent.

The Hematite Region.—The Berkshire valley, or rather the group of parallel valleys and ridges, which extends across the western end of the state of Massachusetts into Connecticut and New York on the south, and into Vermont on the north, are composed of an obscure series of rocks, which towards the east gradually pass into the undisputed granitic rocks of the elevated range between the Housatonic and Connecticut river valleys, and towards the west give place to the more recently formed fossiliferous strata of the New York groups. They consist of talcose and mica slates, quartz rock and limestone—all of which are disposed in belts, which run longitudinally with the valleys and ridges, and dip for the most part at a steep angle either to the east or west. The former dip prevails to great extent over a large part of the district, but in the heart of it, as in Stockbridge and Lenox, the dip is subject to continual alterations, and a cross section of a mile in length would represent many different belts of these rocks with frequent changes of dip.

The materials of this formation, that will demand attention for their practical importance, are the *Iron Ores*, found generally accompanying the limestone; the *Limestone* itself; the *Manganese*; and the *Quartz Rock*; and though the second named has proved a source of wealth to the country in the form of marble, as the massive pillars of Gerard College in Philadelphia, the City Hall of New York and many other edifices, public and private, may testify, it is only in relation to its uses as a flux for the iron ores, and to its connection in position with them, that I shall consider it; and the same remark will apply also to the manganese ore and quartz rock.

These different rocks succeed each other in belts like the less disturbed secondary strata met with in the country lying next west. But in consequence of the more active causes of change to which they have been subjected, a greater metamorphic character is impressed upon their structure, and the order of their arrangement too is more disturbed and frequently made quite obscure. Though their position shows them to be but continuations of the lower Silurian rocks of New York state—as the limestone of that of Trenton Falls, and the quartz rock of the Potsdam sandstone—the former has frequently the granular structure of the oldest marbles, and its fossils have disappeared, while the latter in its structure is often as perfect a quartz rock, as that of the granite formations, and in its position bears more resemblance to a rock of igneous intrusion, than one of sedimentary origin merely metamorphosed by exposure to the common agents of change. It is not unusual for the magnesian limestone to be found at point of contact with the quartz rock, firmly attached to it, converted into dolomite of crystalline structure, and containing crystals of sulphuret of iron, while a few feet away from the quartz its color and structure manifest no igneous action. I have also seen at North Lee the limestone exposed around a semi-circle of perhaps a hundred yards in diameter, dipping away from the centre, which centre was occupied by a mound of quartz rock, appearing as though it had been the elevating agent, that had lifted up and thrown back the limestone.—All the great contortions of the strata, so numerous in this section of the country, appear to be connected with the quartz rock, and no rock of undisputed igneous origin any where makes its appearance upon the surface.

The mica slate and the quartz rock form high ridges, and pass into each other by imperceptible gradations. The quartz rock also occurs in a form more resembling dikes. These are seen in passing along the roads, sometimes projecting in almost a vertical wall high above the surface, appearing rather like a work of art than of nature. These walls run with the strata, and are divided by cross seams nearly at right angles into blocks of very regular shape. They afford the most firm and solid stones for building, and sometimes the best for hearth stones; but for the latter purpose those are generally preferred, which are more intermingled with mica.

Sometimes the limestone occurs in the ridges, but the belts in this position are for the most part narrow. The great limestone bands lie in the valleys, or form those gentler and irregular swells, that are found between the high ridges. From the manner in which this rock weathers and its feeble resistance to diluvial action, the surface above it is frequently rolled into hillocks like those known as the diluvial hillocks of the Atlantic coast. The soil upon the little irregular hills of these valleys may lie deep, but it will almost always be found to cover limestone. The outline of the surface is thus a guide to the rock beneath. The limestone is also frequently exposed to view in a long line of low ridge, which is often repeated several times between two of the great mica slate ridges.

Most of the beds of brown hematite now wrought in Massachusetts rest against the limestone ridges or repose upon a stratum of limestone. In Connecticut, however, this does not appear to be the case so generally. The Sharon ore bed is in mica slate, and the Kent ore bed is found in quartz rock and gneiss. The great Salisbury ore bed, too, is described as lying in mica slate; but in the mica slate hills to the north and west of the bed I have traced out a belt of limestone that must pass under the ore and very near to it.

Prof. W. W. Mather, in the annual Geological Report to the State Legislature of New York, for the year 1828, notices the same fact in relation to the association of ore and limestone at the beds near the New York and Connecticut state line. He remarks:

“The geological situation of the ore beds is very constant. Most of the beds, that I have examined, are at the junction of mica or talcose slate with the grey and white limestones. The limestone generally crops out on the west side of the ore beds, and the mica or talcose slate on the east, and both dip at an angle from 20° to 60° to the ESE.”

In general in Massachusetts no stratum of rock is found immediately overlying the ore; the drift of the diluvial formation covers it, and it is rarely found included between other strata. When, as is sometimes the case, it rests against the talcose slate rocks, the clays and ochres associated with the ore partake largely of the talcose character, as though they all, ores and clay, might have been derived from the destruction of talcose rocks. Clear quartz, like that found with the slates, is more or less mixed with the ore, sometimes in so great proportion, that the ore is too siliceous for use. The beds of ore, clay and ochre are usually in alternating strata, all dipping conformably with the limestone or other rock which underlies them; from which it appears, that they must have been produced before the strata received their present position, and that, whatever changes may now be going on in the texture and composition of their materials, the causes that brought them together can no longer be here in operation. If the causes are the same with those which collect

together the bog ores in ponds, the quantity contained in the beds must be limited, and though there is no instance yet of any one bed having been exhausted, full confidence cannot be entertained that they never will be. The thickness of the strata sometimes reaches eighty or a hundred feet of nearly solid ore, but this great thickness ought perhaps rather to be regarded as a swelling out of the stratum than its regular size, for there is little uniformity in their dimensions, clay passing to ochre and to ore, and ore to the other materials with no great regularity; the lines of the stratification, however, remain distinct, conforming in general to those of the underlying rocks, as mentioned above. The ores of the different beds, though all classed under the general name of brown hematite, or hydrous peroxide of iron, present shades of difference and of excellence, by which one conversant with them can distinguish the locality from hand-specimens. Some are remarkable for their quartzose character, which renders them rather refractory in the furnace; some for their earthy or ochreous or clayey structure, some for their close, compact structure, often occurring in hard smooth nodules; some varieties, which are among the best, are of a honey-combed structure, light and porous, of a reddish color, easily broken to pieces; with this variety are often associated masses of chocolate brown hematite, its structure fibrous in ribboned layers, or in diverging radii. The pieces look like petrified wood, and break with hackly fracture, not unlike wood partially rotten. These are sometimes seen on the outside of a jet glossy black with smooth surface and in mammillary, botryoidal, and stalactical shapes. Long pendant stalactites of the ore are not uncommon at the mines furnishing the best ores;—they occur in groups often acicular, the needles, long and slender, being almost in close contact in the bunches of ore. The clays and ochres, that contain fine ore mined with them, are subjected to a process of washing, which carries off most of the foreign matter and leaves the ore in very small fragments. This is called *wash ore*, and is mixed in the furnace with the coarse lump ore. Varieties from different mines are found to work better in the blast furnace, than the ores from one mine alone. Sulphur rarely occurs to be injurious; phosphoric acid is of frequent occurrence even in the best ores. The following analysis by Mr. Hayes in 1843 is of a specimen from the mine at West Stockbridge:

“Water.....	10.80
Red oxide of iron.....	76.18
Oxide of manganese.....	6.04
Phosphoric acid.....	2.36
Quartz gangue.....	3.40

96.78”

Metallic iron is then 53.16 per cent., being seven-tenths of the per oxide.

Zinc is of general occurrence in the ores, but in too small quantities to be detected by analysis. In a long blast the in-walls of the furnace near the tunnel head are coated with a layer of the oxide of zinc called a *cadmia*. A specimen of this analysed by Dr. Lewis C. Beck, from a furnace using ore from the Salisbury bed, gave carbon 1.7; oxide iron 2.90; oxide zinc 96.10 per cent. Tons of it accumulate about the furnaces, as they are cleaned out after every blast. H.

THOMAS C. ATKINSON, Esq., late of the Baltimore and Ohio railroad, has been appointed Chief Engineer of the Orange and Alexandria railroad company. Salary, \$2,500 per annum.

AMERICAN RAILROAD JOURNAL.

Saturday, June 2, 1849.

Cheshire Railroad.

The *Bunker Hill Aurora* of last week gave some account of the annual meeting of the shareholders of the *Cheshire railroad Company*, held at Keene on the 15th ult. We have not been favored with a copy of the Report of the Directors laid before the meeting, and ordered to be printed, and must, therefore, rely upon the accounts furnished us through the papers for such information as we may desire to obtain, as to the condition of this company.

Our curiosity has been excited from the apparent discrepancy in the statement of its condition in the annual return of the company, submitted to the Massachusetts Legislature. That return gave the amount of capital stock paid in as \$1,401,830; its debts at \$698,127; making an aggregate of \$2,099,866 expended to the end of the year. The return of the directors is sworn to February 7, 1849. As there is no return of any surplus on hand, it is fair to suppose this sum had gone towards the construction of the road. But the report states the cost of the road at the end of the year 1848 at \$1,905,456, which is at the rate of about \$35,300 per mile. We should naturally infer, therefore, that the difference between these sums, amounting to the sum of \$194,410, has been paid for interest or some extra service, and is not charged against the cost of the road; if so, the proceeding is neither usual or legitimate in our estimation. Interest paid out during the progress of the construction of a road, whether legal or usurious is a proper charge towards the cost of the road. Beside, there were net earnings above expenses amounting to \$32,965 which should be added to the cost of the road, because no dividends were made by the company in 1848. If we are right in our conclusions, then the cost of the Cheshire road at the end of the year 1848 was \$2,132,831, (or at the rate of \$39,496 per mile) instead of \$1,905,456 as returned by the Directors.

The Cheshire road was opened to Keene in May, 1848, and finished in January, 1849, and opened for public travel on the 31st of that month. We supposed that the principal expense of constructing the road, therefore, had been charged off at the time of the annual report submitted to the Legislature in February.

It seems by the account in the *Bunker Hill Aurora* that the cost of the road is stated by the report of the Directors, submitted at the annual meeting, at about \$2,500,000, or more than \$48,000 per mile, making it one of the most expensive roads ever built in New England, having only a single track, and 60 lb rail.

Again, the *Aurora* says the net earnings of the road were \$80,033 80, and states its expenses at about \$37,000, a sum more than \$10,000 than the amount of expenses actually returned to the Legislature.

We have thus noticed this road from no desire to do injustice to its directors, but for the purpose of showing how liable all parties are to jump at conclusions satisfactory to their own peculiar interests. We desire further to point out the danger of putting forth unguarded statements without proper authority, calculated to give an undue value to rail road stocks in the market.

The construction of this road is an achievement worthy of New England enterprise. Whoever has passed over its line cannot fail to have been impressed with the Herculean energy which cut through the granite hills of New Hampshire, this pathway for the iron locomotive.

We well remember the flattering assurances held out by its friends, while raising subscriptions to the stock in 1845, and, that many of our friends put their funds into this enterprise in preference to others nearer home which have since proved more prosperous. The stock of the Cheshire went above par when only partly paid up from the low estimates that had been put forth as to its cost.

The following paragraph is from the Keene Sentinel:

"It was understood that no new stock would be created; but upon a full discussion of the question of the corporate liabilities, it was unanimously voted that the Directors should fund the debt, including interest due stockholders, by issuing bonds, not exceeding \$400,000, payable in five years, with interest semi-annually, and convertible into stock within three years, in sums of not less than \$100 to those to whom interest is due, and in sums of \$500 and \$1000 for the balance. Those to whom interest is due may receive bonds at 95 per cent, if they apply previous to July 1st, or can transfer their right of interest. This will enable stockholders who choose to realize the interest due immediately, unless the money market should continue stringent, and the investment of 5 per cent premium would be a desirable one."

This road has a gradient of 60 feet to the mile for more than 12 miles, in attaining the summit between the waters of the Connecticut and Merrimac rivers, far exceeding the grades between Bellows Falls and New York, in the Connecticut valley. The summit grade on the Connecticut river railroad is only 32 feet per mile. This gives an advantage to the trade of the upper valley of the Connecticut, seeking a southern market, over that bound for Boston over the Cheshire and Fitchburg roads.

We hope we may be furnished with a copy of the Report of the Directors.

Iron Wire.

Those who have occasion to use this article in its various applications, are referred to the advertisement of Mr. Washburn, of Worcester, Mass., which is to be found under our advertising head.

Report of the Greenville and Roanoke Railroad Company.

[Proceedings of the Stockholders.]

At the annual meeting of the stockholders of the Greenville and Roanoke railroad company, held at their office on Friday, the 18th day of May, 1849, there was represented in person and by proxy 1103 shares, a majority of the Stock, upon which the meeting was organized by the appointment of Samuel Mordecai as Chairman, and James Ligon, Secretary. The President of the company read to the meeting the report of the Board of Directors, which, on motion, was received and ordered to be printed for the use of the stockholders.

On motion of F. E. Rives, the following resolutions were passed:

Resolved, That the President of the meeting be instructed to call the attention of the Postmaster General to the fact, that the mail is transported on this road both ways in the night, and claim the allowance made for night service under the act of Congress of March 3d, 1845.

Resolved, That out of the existing cash funds, the debt of the company be reduced to \$4,000, and a dividend of 2½ per cent be forthwith declared and paid to the stockholders.

The meeting then proceeded to the election of officers, when H. D. Bird was unanimously re-elected President and Dr. B. H. May, Dr. John Bragg, A. G. Mellwaine, Edmund Wilkins and Robert Leslie, Directors.

T. N. Lee, as one of the committee appointed at the last annual meeting to examine the road, reported it to be in excellent condition.

On motion the same Committee of examination was re-appointed, and P. C. Spencer was added to it.

The meeting then adjourned *sine die*.
Signed, SAM. MORDECAI, Chairman.
JAMES LIGON, Sec'y.

REPORT OF THE BOARD OF DIRECTORS.

The Board of Directors submit the following statements of the affairs of the company, and the receipts and disbursements for the 12 months ending April 30th, 1849.

STATEMENT OF THE AFFAIRS.

Capital paid in.....	\$200,000 00
Bonded debt.....	6,741 40
Profit and loss.....	85,034 19
	<hr/>
	\$291,775 59
Cost of railroad.....	\$283,917 94
Debts due the company.....	350 00
Cash.....	7,507 65
	<hr/>
	\$291,775 59

RECEIPTS AND DISBURSEMENTS.

Receipts.

Cash on hand May 1, 1848.....	\$4,634 98
Gross receipts of transportation.....	30,983 38
	<hr/>
	\$35,618 36

Disbursements.

Paid expenses of transportation and interest of debt.....	\$20,034 18
Paid of the bonded debt.....	8,076 53
Balance, cash on hand May 1, 1849....	7,501 65
	<hr/>
	\$35,618 36

Deducting from the receipts of transportation the expenses as given above it left the net income for the 12 months, \$10,949 20.

In comparing the business of these 12 months with that of the previous year, it shows a falling off of \$6,478 77 in the receipts of transportation. But there is a saving in the expenses of \$4,206 46, which reduced the comparative loss to \$2,232 31.

Notwithstanding this loss in our business, we paid off last year a large part of our outstanding debt, and have now cash on hand sufficient to pay off the balance, and leave a small surplus. As the party to whom this money is due, is willing to let the principal part of it remain in the funds of the company, we leave it to the stockholders to decide whether they will do so, and commence the payment of dividends at once, or extinguish the debt, and postpone making a dividend for six months.

In announcing this gratifying state of the affairs of the company, and surrendering their trust into the hands of the stockholders, the Board of Directors do not think it amiss to call attention to the fact, that the road, with a comparatively limited business, has paid off a large amount of debt, and been relaid with new iron since it was finished, the whole of which was done out of the profits of transportation alone. The amount of debt paid off has averaged 4 per cent. per annum on the capital paid in; so we think we can safely calculate that the dividend we are about to receive will not be less than that amount. We have every reasonable prospect to encourage us in the belief that it will be greater. The falling off in the receipts of last year was principally owing to a short crop of tobacco, which is the principal article carried on the road, and we may be able to make it up this year. The net income of 1847 was over 6 per cent of the capital.

But we have the further prospect of a great and permanent increase in the business of our road from the construction of the Central Railroad of North Carolina, a work which there is every reason to believe will soon be commenced.

By order of the Board of Directors.

H. D. BIRD, Pres.

The bill guaranteeing the bonds of certain railway companies in Canada, passed to be engrossed in the Legislative Assembly, last week.

Literature.

"The Miner's Guide and Metallurgist's Directory," by J. W. Orton. New York: published by A. S. Barnes & Co., 1849.

This is a little book of eighty pages, containing in very condensed form, accounts of the different ores, including their geological positions, their external, chemical and distinctive characters, their composition, and the modes by which they may be detected. A convenient table of a variety of alloys

is added, which is not often found in works of this kind.

For so small a book it contains a great deal of useful matter well arranged for reference; and being easily carried in the pocket, it will no doubt be a favorite with many, who care not to encounter the heavier scientific works in this department.—The author might, while giving greater accuracy to the description of the external characters of the ores, have condensed this still more by adopting the scale of hardness, such as was introduced by Mohs & Breithaupt. A single figure then represents exactly, what is imperfectly described in several words.

Iron Steamers of War.

To the Editor of the London Times:

Sir,—Having had the honor to construct the first iron steam-frigate for Her Majesty's service, and her name having been prominently brought before the public in the discussions that have lately taken place as to the state and efficiency of Her Majesty's steam marine, I beg that you will permit me, in consideration of the importance of the subject, and in justice to myself, as the contractor for the Birkenhead, and to the late Board of Admiralty, who ordered her, to state a few facts relative to the introduction of iron as a material for constructing steam vessels for Her Majesty's service, and proofs of its adaption to that purpose. I have been engaged in the construction of iron vessels since 1829, and from that time until 1839, had constructed about 20 vessels of that material; among them were those forming the Euphrates expedition, and several vessels for North and South America, the East Indies Africa, and the Irish inland and coasting trades.

From the favorable reports received of the durability, strength and performance of these vessels, employed as they were in the four quarters of the globe, the Admiralty were induced to favor me with an order to construct a packet for the Dover station, to be brought into competition with a wooden vessel of the same class and power. The annexed abstract, compiled from a return in the naval estimate report of last year, shows that the result of that comparison was not unfavorable to iron as a material for packet steamers:

Statement of first cost and working expenses of Her Majesty's packets Widgeon and Dover.

	Widgeon Wood	Dover Iron
Tonnage, O.M.....	164	224
Power of engines (horse power) ..	90	90
Number of years at work.....	10½	7½
First cost.....	£10,121	£10,153
Total cost of repairs of hull....	1,844	630
Average repairs of hull per annum.....	175	84
Total cost of repairs of machinery.....	5,176	1,565
Average cost of repairs of ditto per annum.....	493	209
Total cost of repairs of hull and machinery.....	7,020	2,195
Average cost of repairs of hull and machinery per annum....	668	293

In 1839 the Secret Committee of the Hon. Court of Directors of the East India Company intrusted to me the construction of several iron steam-vessels, suitable for river and sea service, and capable of carrying guns; amongst these were the *N. mesis* and *Phlegon*, armed with 32-pounders, the one of 700 and the other of 550 tons burden. The history of the operations on the coast of China, from the forcing of the inner passage to Canton to the conclusion of the war in the Yang Tse Kang, shows that these vessels under their gallant commanders were distinguished for performing services which no wooden vessel could have accomplished, and; as far as warfare in Chinese waters can demonstrate, proved themselves equal, at the least, to any other steamers then employed in those seas; while the accounts received by every mail from China of their continued employment against pirates and in other services, show that nearly 10 years' wear and tear in a tropical climate has not affected the efficiency of the hulls, armament, or machinery.

The services of these steamers (the first iron vessels that had been armed with heavy guns) induced the agents of the Mexican Government to order the steam-frigate *Guadaloupe*, of 800 tons and 180-horse power, armed with two 68-pounder pivot, and four 24-pounder broadside guns.

The same reasons induced the Admiralty to depute a gentleman of well-known scientific attainments, one of the late School of Naval Architecture at that time holding a situation in Woolwich dockyard, to investigate and report upon the construction of the *Guadaloupe*, and the applicability of iron as a material for steam-vessels of war. Mr. Large spent several weeks at Birkenhead making detailed drawings of the different parts of the vessel, and experiments on the material.

On the successful trial of the *Guadaloupe*, I was called upon by the Admiralty to supply plans and a tender for the construction of a steam-frigate of the first class; and to guide me in designing her, I applied for, and was furnished with, the following statement of the weights she would have to carry, viz:—

	Tons.	Cwt.
Masts, yards, rigging, sails, cables, anchors and stores.....	99	12
Water, provisions, crew and effects.....	86	18
Guns, powder and shot.....	59	4
Coals for 12 days.....	420	0
Engines (378 horse-power).....	342	0
	1,007	14
Estimated hull for an oak ship.....	750	0

Displacement required for the oak ship, at 15.6 mean draught.....1,757 14

The designs I submitted, and which were finally approved, were for a vessel 210 feet long (being about twenty feet longer than any vessel of her class had been built) and 37.6 beam, with a displacement of 1,918 tons on the load water-line of 15.9. The only change made by the authorities at the Admiralty in these designs was in the position of the paddle-shaft, which they ordered to be moved several feet more forward; the change was unfortunate, as it makes the vessel (unless due care is taken in stowing the hold) trim by the head. With this exception, I am answerable for the model, specification, displacement and general arrangement of the hull of the vessel. The *Birkenhead* was launched in 1845; her hull was at that time complete, with the exception of some cabin fittings, estimated at 15 tons. Her launching draught was 9 feet 9 inches, showing the weight of the hull to be 903 tons; leaving for the machinery, stores, &c., given to me at 1,007 tons 14 cwt., 1,000 tons. If these weights had not been exceeded, the vessel would have gone to sea within one inch of her calculated draught—say, 15 feet 9 inches.

The *Birkenhead* was never tried as a frigate.—Before she was commissioned it was taken for granted that iron frigates would not answer, and her destiny was altered to a troop-ship, a poop added to her, and she is loaded with coals and stores generally to two feet beyond her intended load-water line. With all these disadvantages, I am informed by those who have sailed in her that she is a fast and remarkably easy vessel, and I have no hesitation in saying that, if loaded only with the weights for which I was directed to construct her, she will not be excelled in speed and sea-going qualities by any steamer, private or public, of her size and power.

From the foregoing statement it is evident,—That the Admiralty did not adopt iron in the construction of steam-vessels, even as packets, without due inquiry and investigation. That they waited until the East India Company and foreign government had made the experiment of what iron vessels-of-war would do before ordering any for their service.

That the vessel built was capable of carrying on her estimated load water-line of 15.9 the weights she was designed for.

That the efficiency of the *Birkenhead* as a steam-frigate has never been tested by an actual trial; and that in all cases where iron vessels have been tried in warfare they have answered admirably.

Apologizing for the length of this letter,
I am your obedient servant,
Birkenhead, April 12. JOHN LAIRD.

Ohio and Pennsylvania Railroad.

We call the attention of our readers to the advertisement of a letting on the Ohio and Pennsylvania railroad, in to-day's paper.

Terrestrial Magnetism.

The following very interesting article we copy from the London Min'g Jour., one of the most interesting of all our exchanges. As the part that magnetism plays in the economy of nature is a subject attracting very general attention, and as a knowledge of its laws may afford an entirely different solution for some of the most important phenomena from what we have been taught to receive, we shall always endeavor to lay before our readers all facts as they are developed in relation to this principle and the laws of its action.

TERRESTRIAL MAGNETISM; AND ITS EFFECTS ON THE SEMI-FLUID SURFACE OF THE EARTH.

Not many years ago, "magnetism" was simply considered as that peculiar species of attraction exhibited by the magnetic needle; but now we find that it is a property inherent in all matter—the active principle of the mineral kingdom—and it has a most important influence in the general economy of Nature. Indeed, when we duly reflect that our globe is constantly enveloped by this universal subtle power, its presence being long known in every part of the civilised world, it is somewhat surprising that philosophers should have so long neglected this grand primary force, and that they should have assumed other forces, which are not only unknown, but are incapable of giving a satisfactory solution of the multifarious operations daily observed, which are now accounted for by the simple universal law of magnetism. The relations between chemistry and electro-magnetism, between animal and vegetable physiology, are becoming every day more apparent; geology, while explaining the structure and the entombed organic remains of our planet, finds itself dependent on this great natural agent, working in obedience to a fixed law. Hitherto geological science has been designated as a vague and useless doctrine by many of our practical miners; and it is true that primary rocks, with their mineral veins, has been left by speculative geologists, as *terra incognita*, in complete obscurity; but we are happy to observe a change for the better; the science is beginning now to have a more useful and practical bearing, and men are getting more anxious to learn it; and it is to be hoped that with this combined influence, and the diligent accumulation of new facts, such a degree of certainty will be attained, as may enable them to predicate with some confidence, not only questions connected with mineral deposits, but likewise all phenomena which it comprehends.

We have been led to make these observations on this interesting subject, in consequence of repeated applications from our correspondents, requesting us to give a short sketch of Mr. E. Hopkin's new system of geology, which, in consequence of its practical application to mining, and the satisfactory manner in which it accounts for all phenomena connected with terrestrial physics, is becoming all but an established system with practical men. The interest has been considerably enhanced of late, owing to the recent discoveries made by the indefatigable Dr. Faraday, corroborating, in a remarkable degree, Mr. Hopkin's general views, as explained in his work.*

Polarity of Rocks.—It is known, from time immemorial, that the rock called *loadstone*, when freely suspended, points north and south, but according to Mr. Hopkins, this is also its natural position *in situ*. It matters not whether the rock be a foot or a mile in length, the effect would be the same; and as all our primary rocks are more or less magnetic, it follows that, were it possible to lift the crystalline film of any given area, and make it to float, and left undisturbed, it would eventually occupy (like the loadstone) precisely the same position, end for end, as it

* "On the Connection of Geology with Terrestrial Magnetism: showing the General Polarity of Matter, the Meridional Structure of the Crystalline Rocks, their Transitions, Movements, and Dislocations," &c.

did before it was removed; its polar grain would return to its natural meridional bearing, the same as the loadstone or magnetic needle. The primary rocks forming the mountains of Regelberg, in Germany, as well as the Andes, and other great ridges, have been known to attract the north end of the needle in the south, and the south end of the needle in the north, with a tremendous power vitalising, so to speak, every inch of the stony substance of the globe, we are able to account for eruptions, upheavals, and other disturbances by which it is visited. Granting this reasonable conclusion, that the globe is a large magnet, exerting the same influence on matter as we find on experimenting with artificial magnets, there must be decomposition and recombination constantly taking place whilst the currents are in circulation, entering in at the north, and emerging again from the south end of the axis.

Whatever substances may be decomposed and converted into gases, are again returned into the earth—nothing can be destroyed; whatever we may consume or reduce become again, by means of this circulating polar force, what they were before they existed in the form of vegetable, stone, or water—active agents in the business of the world, and main supports of vegetable and animal life, and are still susceptible of running again and again the same round, as circumstances may determine. The intensity of the action of the currents must necessarily be as their density. The poles are compressed or flattened by the concentrated power of the diverging and converging currents, and the attractive force varies inversely, as the square or cube increases.—Mr. Hopkins considers that the narrowest limits that we can assign to the polar axis are areas bounded by the Arctic and Antarctic circles.

After some excellent and lucid observations on the identity of magnetic and galvanic currents, and the filling of mineral veins by its influence, by reducing the metallic solution in a similar manner as effected by chemical art, the effects of the poles of the globe on all substances within the limits of their actions, metallic deposits, polarity of earthquakes, &c., he proceeds to prove the northward and undulating movement of the earth's surface, *en masse*, by the constant circulating action of magnetic currents. Mr. Hopkins not only establishes that the dry land does not possess that fixity of position, nor is it that solid and immoveable mass as formerly supposed, but that the surface is a flexible crystalline compound, floating on some more dense fluid, and subject to perpetual movements; that the land, as well as the ocean currents, is continually advancing with an undulatory movement towards the north, and that the magnetic tension causes those splits and fissures in the crystalline rocks, which, becoming filled with the deposits of metallic solutions, are called mineral lodes or veins. Among the facts referred to in proof of this northern movement of the earth's surface, he notices the fact that all the recent surveys and astronomical observations made in South America, show a northerly increase in latitude. That what has long been called the precession of the equinoxes arises from the same northern advance of the land which at present is also just 19 seconds per annum; and this change in the lapse of a moderate number of years, destroys the arrangement of the catalogue of the stars, and makes it necessary to reconstruct them.

Since the formation of the earliest record, the place of the equinox has retrograded 30°. Even Plato noticed this peculiar and gradual change, and said that the heavens and the stars appeared to change by time; the Egyptian priests also acquainted Herodotus that, from the commencement of the dynasty of their kings (11,000 years,) the sun had apparently changed his course in the heavens four times. He also instances the changes of temperature in northern climes as evidence of this movement. Within the limits of historic records, there is abundant proof of the climate of Europe getting colder; and that the inhabitants of the north are continually setting southward. The first settlers in Iceland found extensive districts of that now dreary country covered with extensive forests of birch and fir; barley and other grain was also cultivated, while the whole island is now a dreary desert. On the discovery, and what is called the settlement of Iceland, relics were found which showed it had been previously inhabited.—There was a country called Vinland, within a few days' sail of Greenland, watered by rivers yielding

fine salmon; on the banks of which were trees loaded with delicious fruits: the temperature was mild and the soil fertile. Among the fruits were grapes, from which arose the title "the land of wine." This Vinland was, doubtless, Newfoundland. Wine was formerly made from grapes which grew in the open fields of England and the north of France; and there are ample proofs of a similar reduction of mean temperature in other parts of the continents of Europe and America.

It is in the northern regions we find the relics of man and his works, and probably the greater part have disappeared, from the rapid destruction and oxidation of the land at the North Pole. All geological researches prove that in the northern latitudes we find the animal spoils of the southern countries, and the marine exuviae of the southern seas; but in the southern seas we find no remains of animals, vegetables or shells, belonging to the northern, but those only of the neighboring seas; nor are there the consolidated series of sedimentary rocks in the southern hemisphere. Among the animal remains strewed over Europe, are those of the elephant, rhinoceros, hippopotamus, hyæna, bear, lion, tiger, crocodile, and others, now only found in tropical climes. The remains of vegetation are also abundant and similar; the cypresses and pines are of the nature of species now found only in the southern hemisphere. Of the four recent species of araucaria at present known, one is indigenous to the coast of Holland, another in Norfolk Island, a third in Brazil, and the fourth in Chili; extensive remains of similar vegetation are found in all the coal measures of the north. Indeed, in the last volume published by the Government Geologists, under the superintendence of Sir H. De la Bache, we find the description of the flora of the coal fields exactly corresponding to that of the existing flora of the southern hemisphere, that the analogy is complete. The coal formation is, consequently, denominated by Mr Hopkins the *deposit of the south temperate region*—i. e., that our coal beds were formed in that zone, and gradually brought, with other deposits, towards the north.

In the coal beds of Melville Island, fossil plants are found, which required south tropical heat and moisture for their growth, and could not possibly have flourished through the cold and six months' night of the arctic regions. An island, or continent moving from the south, would naturally carry its sponges, ferns, corals, and animals, to the north, modified by the changes of temperature through which it passed; and the immense deltas of floating wood in process of formation at the embouchure of the La Plata, Amazon, and other rivers, in the southern zone, to be alternately elevated and submerged during their ages of transit, would seem to be the means of providing an endless succession of coal-beds for the inhabitants of the chilly north.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Ford, James K.,

New York.

Floyd-Jones, Charles,

New Yprk and Harlem Railroad Extension, Lithgow, Dutchess Co., N. Y.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention. May 28, 1849.

To Contractors.

OHIO AND PENNSYLVANIA RAILROAD. Proposals will be received at the office of the Ohio and Pennsylvania railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburgh, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and is easy of access at all points.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.
Pittsburgh, May 21, 1849.

BUSINESS CARDS.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practical ly at a moderate premium.
May 26, 1849.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address
E. S. NORRIS.
May 16, 1849.

India-rubber for Railroad Cos.
RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.
HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

To Railroad Companies and Contractors.
FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains. They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address
JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

IRON.

Railroad Iron.
OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, June 1, 1849.
The above will favorably compare with any other rails.

Railroad Iron.
100 Tons 2½ x ½, | 30 Tons Railroad.
All fit to re-lay. For sale cheap by
PETTEE & MANN,
228 South St., New York.
May 16, 1849. *

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address
J. F. WINSLOW, Agent,
Albany Iron and Nail Works.

Pig and Bloom Iron.
THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.
RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by 4 Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13

Railroad Iron.
THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

Iron Wire.
REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
Worcester, Mass., May 25, 1849.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.
THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron. Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch. Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron. Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.
April 11, 1849.

P. S. DEVLAN & CO'S
Patent Lubricating Oil.
THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON,
5½ Pine street, New York,
Sole Agents for the New England States and State of New York.
1y14

UPPER CANADA MINING COMPANY.



INCORPORATED BY ACT OF PARLIAMENT
NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDGEEST,
Secretary U. C. M. C.
Hamilton, 24th February, 1849. 12tf

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.
The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps. Genuine "Sykes" L Blister Steel. Best English Blister Steel, etc., etc. All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia. Alex'r Fullerton & Co., 119 Milk street, Boston. Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

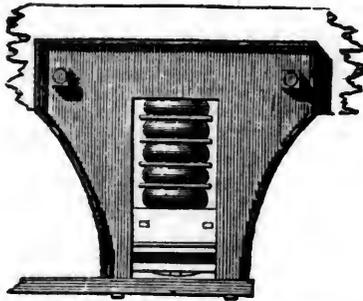
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesborough, West Newton. May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by expert statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India-rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyr & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.

2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.

3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.

4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relaying the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3½ by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,

Eng. New Orleans and Carrollton Railroad." New Orleans, March 14, 1849.

Orders received and full information by J. ELNATHAN SMITH, Patentee, 22 John street,

New York, May 26, 1849.

LAP-WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steam-boats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,

Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Patterson, N. J., or 60 Wall St., New York.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring, nor is any spiral spring required. The Patentee is presently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 38 Broadway, New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

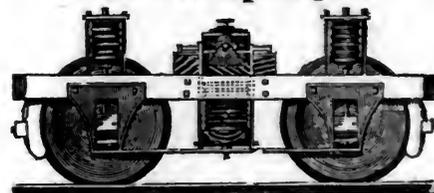
Spring. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

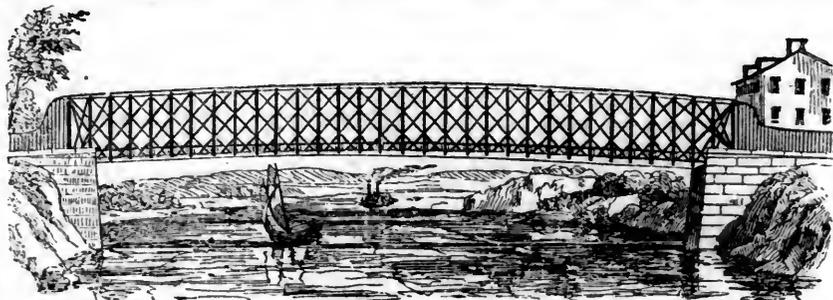
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

M. M. WHITE, Agent for the Company.

November 25, 1848.

RAILROAD India-rubber Springs.

If any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 93 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by IRVING VAN WART, 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most to the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.

F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

141f

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by H. B. TEBBETTS,
No. 5 1/2 Pine St., New York.

May 12, 1849.

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RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains
daily (Sundays excepted.)

Leave Norwich at 5 a.m., and 5 pm.
Leave Worcester at 10 1/2 a.m., and 4 1/2 pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 1, North River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 a.m., from Norwich at 9 a.m.

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S. H. P. LEE, Jr., Sup't.

May 20, 1849.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, '49.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10 a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Salem, 7, 10 a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Manchester, 10 a.m., 3, 5 1/2 p.m.
Gloucester, 10 a.m., 3, 5 1/2 p.m.
Newburyport, 7 a.m., 2 1/2, 4 1/2, 7, p.m.
Portsmouth, 7 a.m., 2 1/2, 4 1/2, 7, p.m.
Portland, Me., 7 a.m., 2 1/2, 4 1/2, 7, p.m.

And for Boston,

From Portland, 7 1/2 a.m., 3, pm.
Portsmouth, 7, 9 1/2*, am., 5 1/2*, pm.
Newburyport, 6, 7 1/2, 10 1/2*, am., 6*, pm.
Gloucester, 7 a.m., 2, 5 1/2 pm.
Manchester, 7 1/2 a.m., 2 1/2, 5 1/2 pm.,
Salem, 7, 8*, 9*, 10 1/2, 11-40*, am., 2 1/2, 6*, 7* pm.
Lynn, 7 1/2, 8 1/2*, 9 1/2*, 10 1/2, 11-55*, am., 3, 6 1/2*, 7 1/2*, pm.

*Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave
Marblehead for Salem, 6 1/2, 8 1/2, 10 1/2, 11-25, am.
2 1/2, 4 1/2, 5 1/2, pm.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, am., 12 1/2, 3 1/2, 5 1/2, 6 1/2, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 10 1/2 a.m., 3 1/2, 6 1/2 pm.
Salem for Gloucester at 10 1/2 a.m., 3 1/2, 6 1/2 pm.
Trains leave
Gloucester for Salem at 7 a.m., 2, 5 1/2 pm.
Manchester for Salem at 7 1/2 a.m., 2 1/2, 5 1/2 pm.
Freight trains each way daily. Office 17 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
Outward Trains from Boston

For Portland at 6 1/2 a.m. and 2 1/2 pm.
For Rochester at 6 a.m., 2 1/2 pm.
For Great Falls at 6 1/2 a.m., 2 1/2, 4 1/2 pm.
For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2, 6 pm.
For Lawrence at 6 1/2, 9 a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 pm.
For Reading 6 1/2, 9 a.m., 12 m., 2 1/2, 4, 6, 7 1/2, 9 1/2* pm.

Inward trains for Boston
From Portland at 7 1/2 a.m., 3 pm.
From Rochester at 9 a.m., 4 1/2 pm.
From Great Falls at 6 1/2, 9 1/2 a.m., 4 1/2 pm.
From Haverhill at 7, 8 1/2, 11 1/2, am., 1 1/2, 3 1/2, 7 pm.
From Reading at 6 1/2, 7 1/2, 9 a.m., 12 m., 2, 3 1/2, 6, 7 1/2 pm.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2* pm.
Leave Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 5 1/2, 6 1/2, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.
Leave Boston at 7 1/2 a.m., 12 m. and 5 pm.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.
Leave Boston at 7 5 and 9 1/2 a.m., 2 1/2, 4 1/2 & 6 1/2 p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.
Leave Woburn Centre at 6, 7, 9, 10 a.m., 1 1/2 and 4 1/2 p.m.
Leave Boston at 8, 11 1/2 a.m., 3, 5 1/2 and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7 1/2 a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,
Agent Boston and Lowell Railroad Cor.
Boston March 5, 1849. 22tf.

SSEX RAILROAD—SALEM to LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover. On and after Thursday, March 15, 1849, trains leave daily (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 8 a.m., 12.45, 3.45, 6.30, pm.
Salem for North Danvers at 8 a.m., 12.45, 3.45, pm.
Salem for Lawrence, 8 a.m., 3.45, pm.
" North Andover 8 a.m., 3.45, pm.
" Middleton 8 a.m., 3.45, pm.
South Danvers for Salem at 6.45, 10.15, am., 2.15, 5.45, pm.
North Danvers " 10 am., 2, 5.40, pm.
Middleton " 9.45 am., 5.15, pm.
North Andover " 9.20 am., 5.05, pm.
Lawrence " 9.15 am., 5, pm.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, APRIL 2d, the

Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm. Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8 1/2 a.m., and 4, pm.

Dedham Trains—Leave Boston at 8 1/2 am., 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7.9 1/2, am., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5 1/2 pm. Leave Stoughton at 11 1/2 am., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.

On and after Monday, April 23d, 1849, Trains will run as follows:

Express Train.
Leaves Boston at 7 1/2 a.m.; Fitchburg at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains.
For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.

Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.

Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.

West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains.

From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.
Groton, 8 20 a.m., 12 30 and 5 15 p.m.

Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.
Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 p.m. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

PHILADELPHIA & READING RAILROAD.
 Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock a.m.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " " Reading	58	2.25	and 1.90
" " " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. Stf.

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This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50 cts.	per hundred
On measurement goods	13 cts.	per cubic ft.
On brls. wet (except molasses and oil)	1 50	per barrel.
On brls. dry (except lime)	80 cts.	per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts.	per hundred
On hhds. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
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SOUTH CAROLINA RAILROAD.—A PAS-

senger Train runs daily from Charleston, on the arrival of the boats from Wilmington,

N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothecolaga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothecolaga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

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 Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
 Troy Iron and Nail Factory, Troy, N. Y.

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Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

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 Warehouse S. E. corner 3d and Walnut streets,
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NORWICH, CONNECTICUT,

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Orders executed with promptness and despatch.

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Will meet with immediate attention. 1y8

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JAMES T. HODGE WILL EXAMINE AND report upon Mines and Ores; construct and conduct Blast-furnaces; and give important information as to the best localities for their establishment. To parties desirous of building the nearest furnaces to New York city he can furnish the control of ores, which will warrant the enterprise.

Office at No. 1 New St., corner of Wall. When absent from the city, inquiry may be made at the office of this Journal, 54 Wall St.

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THE MASSACHUSETTS IRON COMPANY offer for sale their two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 ft. by 174, including sheds. The two contain 15 double Puddling furnaces, and 9 Heating Furnaces.—

There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment.

There is connected with, and will be sold at the same time, about 400,000 feet of upland, on which are erected, besides the mills, 4 blocks, containing each 4 brick dwelling houses for workmen: a wooden counting room with dwelling adjoining, a horse stable, and a coal shed 210 feet long by 70 feet wide now containing 2967 chaldrons Pictou coal and 933 tons of pig iron.

The terms of sale will be made liberal. For further information, apply to B. T. REED, Treasurer, Suffolk Buildings.
 May 17, 1849.

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OF VARIOUS KINDS.

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HECK & DAVENPORT WOULD RESPECT- fully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44f

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JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Menitt & Co., New York; E. Pratt & Br. 1st. Fairmore Md.

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INSTRUMENTS MADE BY

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AMERICAN RAILROAD JOURNAL.

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HENRY V. POOR, Editor.

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GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, June 9, 1849.

To Railway Presidents, Directors, Engineers and Superintendents.

We design to make the Railroad Journal a complete record of railway progress and railway traffic in the United States. The importance of the subject is acknowledged by every person interested in railway matters, and all express a desire to possess this information. We know of no mode of securing this end but through the agency of parties now in the management of the various railroad companies.

We are under great obligations to many gentlemen who have placed every desirable item of information of this sort at our disposal. We beg the same from parties connected with all the other companies whose returns are deficient.

Will not the President of each railroad company take the trouble to cause something to be done at once? After correcting our share list, when the same shall be discovered to be erroneous or defective, we ask them to send us by mail in addition, the following viz:

1. The name and residence of each Director; of the several officers of each company, including the President, Vice President, Secretary, and Treasurer; also, the name of each Engineer, Superintendent and Conductor.

2. The stations, fares and running time on each road.

Iron Ores and the Iron Manufacture of the United States. MASSACHUSETTS.

Continued from page 341.

Black oxide of manganese, in the form of the mineral *psilomelane*, often accompanies the hematites. It is found sometimes pure, quite free from the iron ore, which, when mixed with it destroys its value. It is worth to the manufacturers of bleaching salts, (chloride of lime,) according to its purity, from thirty to sixty dollars per ton. Much that is sent to market is condemned, as of inferior quality, greatly to the discouragement of the mining enterprises. Like the iron ore, it lies next the limestone, under no stratum of rock, but in loose irregular layers of most uncertain dimensions, following the verge of the limestone. It seems as if it had infiltrated into the loose materials, filled such crevices as there were among them, and incrustated the fragments of limestone. It has been wrought to considerable extent at Chittenden Vermont, West Stockbridge and Sheffield, Massachusetts.

As the commercial value of the manganese ore is destroyed by mixture of the oxide of iron, which, even in small quantity is a serious detriment to it, so the hematite iron ore is sometimes rendered useless from its large percentage of black oxide of manganese. We have already had an example of this in the "black ore" of Wallingford, Vermont, which, according to the analysis of Mr. Olmstead, contained thirteen per cent. of oxide of manganese. This made in the furnace a high white iron of poor quality, which was an alloy of metallic iron and metallic manganese. In the proportion of thirteen per cent., therefore, black oxide of manganese seems to render the ore worthless to work alone. Such ores ought to be used only when mixed with a large proportion of purer oxides of iron.

In a communication to the British Association for Advancement of Science, at their meeting in September, 1837, Dr. T. Thompson gives the analysis of six varieties of cold blast pig iron, and four of hot blast, all smelted from the carbonaceous ores of the Glasgow coal field. The greatest percentage of the cold blast iron in manganese was 7.14; and the mean of the six 9.037. The greatest percentage of the hot blast in manganese was 3.12; the mean of the five 0.67.—No remark was made as to the particular effect of the manganese.

The principal result of this report was that hot blast iron, though not so strong as the cold blast, contains only about half the foreign matter that this does. Manganese in small quantity is generally considered advantageous in improving the quality of the iron. Karsten remarks in his treatise on the Manufacture of Iron, that it renders the iron (i. e., malleable iron) harder without lessening its tenacity. In some malleable iron, ductile and of excellent quality, he found 1.85 per cent. of manganese.

May it not be that the oxide is beneficial also in the roasting of the ores, a portion of its oxygen being given out directly in contact with the sulphur and arsenic, which the roasting is in part intended to expel?

As to this tendency, which the highly magnesian ores have to make white pig iron, the same author above quoted considers it is owing, not to any direct agency of the manganese, but to the indirect influence this has in forming a too fusible cinder, thus causing the furnace to work cold. As proof that this is the case, it is found that the grey iron made with magnesian ores contains more manganese than the white iron. To correct the injurious influence of the manganese it is necessary to make use of fluxes or a mixture of other ores, which contain bases, that will produce refractory silicates; (a highly magnesian limestone might answer, or an aluminous clay,) then, by working hot, the furnace should run grey iron. These suggestions are the substance of, and inferences from, the remarks of Karsten, as given in the first vol. of the French edition of his works, pages 228, 229 and 230. They might perhaps be applied with advantage to the furnace at Plymouth, Vermont, already described.

In some of the ore beds, as at West Stockbridge, Massachusetts, and the Amenia ore bed, New York, there is found, besides the hematite, a valuable spathose proto-carbonate of iron. This ore, of a white color and unmetallic lustre, appears little like the rich material it is. Its character has but lately been discovered, though many hundred tons of it have been thrown away at the mines where it occurs. It was first proved by C. C. Alger, Esq., at the Stockbridge iron works, and is now highly prized as an important ore to mix with the hematite to facilitate reduction and improve the quality of the iron. I have analysed specimens of this ore, of a light grey color, of mamillary and compact structure, giving a yellowish grey powder. Its composition is as follows—

<i>Insoluble matter</i>	5.77
<i>Carb. lime</i>	2.07
<i>Peroxide of iron</i>	54.58
<i>Carbonic acid</i>	34.19
<i>Carb. manganese</i>	4.24

100.85

Its percentage in iron is then 42.55 before roasting. After this process, a considerable portion of the carbonic acid being driven off, its percentage is proportionally increased. After long exposure to the atmosphere, this species of ore becomes of a dark brown or black color from the per oxidation of the ferruginous portion of its crust, and then it may not so readily be distinguished as the same light colored ore, like sandstone.

The limestone that accompanies these ores is often highly magnesian, being a true dolomite, which contains 45 per cent. of carbonate of magnesia.— This is the character of the flux used at most of the furnaces. Some experiments have been made at the Stockbridge furnaces under the direction of C. C. Alger, Esq., to test the relative properties of this dolomite, and the pure marble as fluxes for the ores. The flux formerly used with great success was a bluish colored dolomite, the composition of which I found on analysis was as follows.—

<i>Silica</i>	2.50
<i>Alumina and oxide of iron</i>	2.25
<i>Carbonate of Lime</i>	52.50
<i>Carbonate of magnesia</i>	40.80
<i>Water and loss</i>	1.95

100.00

For this was substituted a beautiful white granular marble, the analysis of which gave me the composition—

<i>Silica</i>	1.1
<i>Alumina and oxide of iron</i>	1.2
<i>Carbonate of Lime</i>	95.5
<i>Carbonate of magnesia</i>	1.2
<i>Water and loss</i>	1.0

100.0

With this the furnace was run for more than a week, but with no improvement. On the contrary, it was thought not to work so freely as with the dolomite flux. This is in accordance with Karster's remarks upon the fusibility of the silicates—"that the silicates with multiplied bases are generally more fusible than the silicates with simple bases."*

But it happened subsequently to be convenient to use another flux; and this was attended with such decided improvement in the running of the furnaces, that it has continued in use ever since. Its composition I find to be—

<i>Silicemus residue</i>	2.07
<i>Oxide of iron and alumina</i>	0.85
<i>Carb. magnesia</i>	6.80
<i>Carb. of Lime</i>	89.24
<i>Water and loss</i>	1.04

100.00

The texture of the three limestones is not materially different; the second was the most crystalline; the first the least so. So far as these experiments go, they seem to show that for the Stockbridge hematites, a limestone somewhat magnesian is preferable to a pure calcareous flux; but they are not sufficiently extended to determine the best proportion of the carbonate of magnesia to the carbonate of lime. It is questionable, indeed if this be possible, for any ore, as it is found a difference in the temperature of the blast, causes derangement in the running of the furnace, which is corrected by having recourse to a different variety of limestone for flux; and actual experiment alone determines the

kind required. The limestone being a good durable stone and easily wrought, is much used for building the outer stack of the furnaces; and so abundant is it that large quarries seldom fail of being found within less than a mile of any suitable site for furnaces.

The refractory quartz rock, which forms many of the mountain ridges, furnishes in some of its layers a good stone for hearths, which is got out in large blocks well shaped on their sides. Some of the thinner layers of this rock are occasionally used for lining the inner walls of the furnace, but fire brick is more suitable for this purpose. The disintegrated and crumbled quartz rock, with the thin seams of talcose clay between its layers, furnishes excellent materials for these brick, which have long been manufactured at Bennington, Vermont, and will probably soon be at Lanesboro, in Berkshire county.

There has lately been opened an extraordinary bed of this disintegrated quartz or quartz sand, which is to prove of no little consequence to the iron furnaces in the neighborhood, though its more obvious use is for the manufacture of glass, to which it has already been extensively applied. On account of its importance in furnishing excellent materials for brick and for fire mortar for the furnaces, a short description of the sand bed may not be inappropriate in this place.

The high ridge extending from Dalton to Cheshire, and still farther down the east side of the Housatonic river, is principally composed of quartz rock. The strata dip at a very steep angle, either to the east or west, and follow the direction of the ridge in its north and south course. The rock is occasionally seen in bold ledges projecting from the sides of the hills, or piled in large heaps of loose blocks from their base to their summit. This is particularly the case in the gaps or gorge through the ridge, as in that through which the road passes from Dalton to Lanesboro'. At such places, the rock is of the hardest texture and most durable qualities. Too hard for hearth stones, these are sought where the rock assumes more mica in its composition, and so cleaves into more even blocks. In some places the rock has disintegrated and crumbled at the surface into the grains of sand of which it is composed. If it contains much iron in its composition, the sand is stained yellow; but the clear white quartz separates into the purest transparent glassy grains, whose only contaminations are the thin layers of talcose clay, which fill the seams of stratification of the quartz. On digging below the surface where this sand is found, the quartz, to all appearance, is in the state of stone regularly stratified and solid; but on breaking it down with a pick, the lumps are found to crumble in the hand, or fall after exposure to the air into the beautiful white sand. Washing in a stream of water carries off all the clay, which may be collected below, and which proves to be of precisely the composition to make the most refractory bricks when mixed in proper proportions with the sand. A bed of these materials, inexhaustible in quantity and unsurpassed in purity, was discovered in the summer of 1847 by Samuel Smith, Esq., of Boston, who was engaged at the time in establishing the furnace at Lanesboro'. He had the clay tempered with the sand used for laying the hearth stones of this furnace, and it proved to answer the purpose desired extremely well. Between one and two thousand tons a year of the sand are now sold to the different glass works in the United States, and large samples have been sent to Havre and Liverpool, where it is expected

it may be profitably disposed of. An English house in Stourbridge has taken fifty tons. The Brooklyn Flint Glass Company, of New York, have produced from this sand the clearest and most brilliant flint glass ever made in this country.

Such is the general character of the mineral resources of this western part of Massachusetts. The value of the iron ores depend, however, on the convenience and abundance of fuel for their reduction, and cost of transportation both of materials and of the metal produced, to the great markets on the sea board.

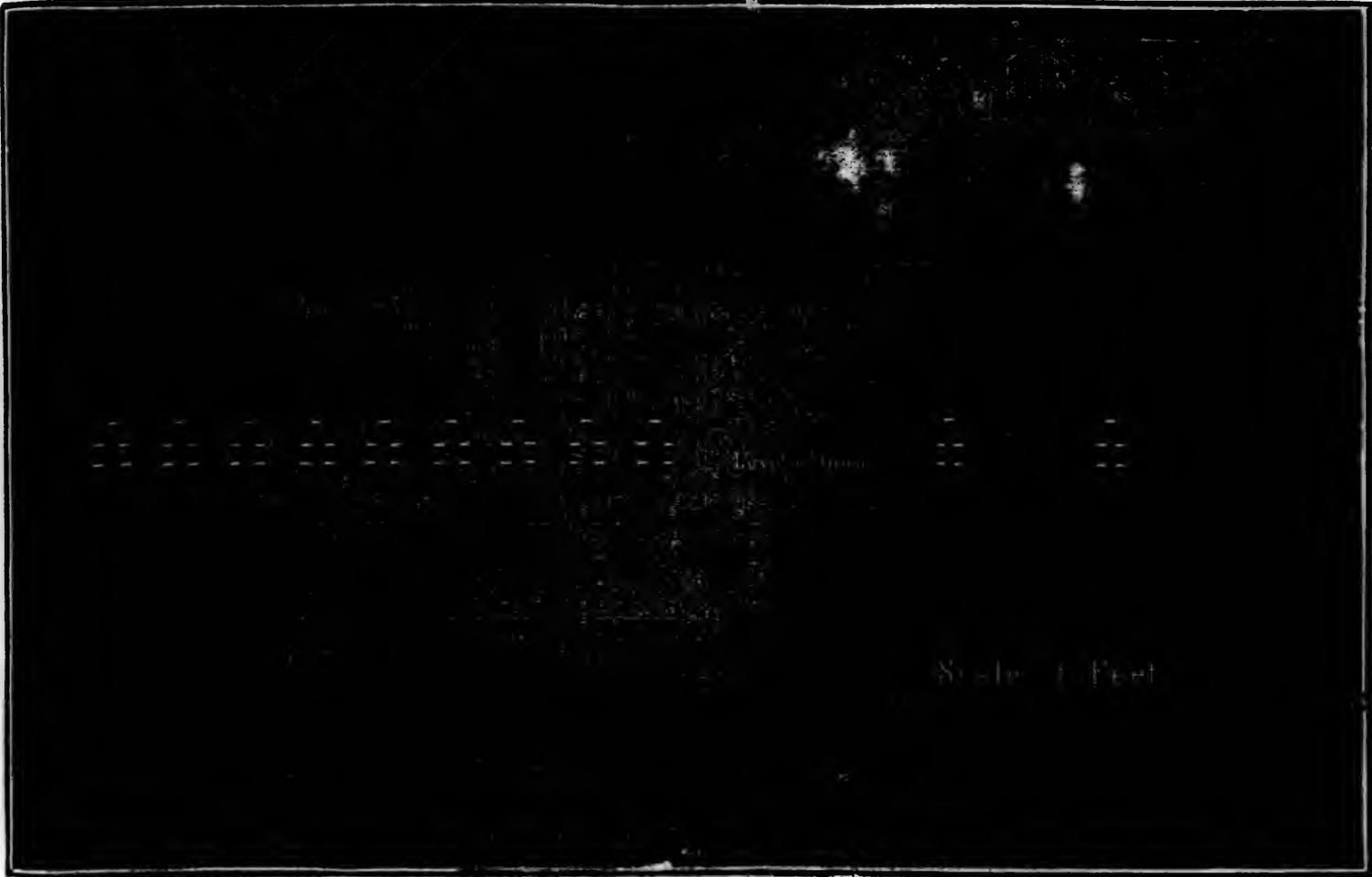
The extensive ridges and mountain track, which alternate with the fertile valleys of Berkshire county, offer no inducement for cultivation. Once stripped of their timber, the trees are suffered to spring up again, and in about twenty years the growth has been sufficient for another clearing. In this way the furnaces are kept provided with sufficient stock of charcoal, made from the chestnut, hemlock, maple, oak, beach, ash and birch of the hills in their neighborhood. Furnaces that have been running twenty years or more, and which are situated in the neighborhood of the larger towns, are compelled every year to look a little farther off for a portion of their supplies, and some are now obliged to draw them from ten to fourteen miles. A hot blast furnace, making six tons of iron per day, and running three hundred days in the year will consume for all purposes about 270,000 bushels, or 150 bushels to the ton. This corresponds to about 6,750 cords of wood, or at the average rate of 30 cords to the acre or 225 acres per annum. For a constant supply, therefore, such a furnace would require, twenty times this amount; or 4,500 acres, that the growth might equal the consumption. Few own such bodies of wood land, but buy their fuel, either standing or prepared for the furnace as they require it; and the cost per bushel of charcoal delivered at the works varies from five to seven and a half cents. Most of the works are situated near one of the railroads which pass through the county, and the cost of transportation to New York or Boston does not differ much from \$3 50 per ton.

The quality of the iron made varies somewhat with the works, but most of it is such as is rarely made with other ores and fuel than hematite and charcoal—suitable either for foundry or forge iron; the best of the former making the strongest castings, so that it is purchased for the manufacture of heavy cannon at the Cold Spring works on the Hudson, and the latter being in high repute for soft tough iron, is bought by the numerous forges for their best work.

Below is an engraving of the kilns used at one of the Massachusetts furnaces for charring the wood. The construction is very perfect, and is sufficiently apparent in the different sections, that similar kilns may be constructed from them. They hold about 60 cords each, and require from three to six days for charring, and about the same time for the fire to be extinguished, unless this is hastened by introducing water or steam. When well conducted, they produce at the rate of about 50 bushels to the cord, or 3000 bushels to one charge. They ought to stand in an exposed situation, where the air can blow upon them freely. The vent holes around the sides are just the size of a brick—4 inches by 2½, and are opened and closed by the use of loose bricks as the operation goes on, being made tight by plastering with mortar. The whole walls and the brick arch over head ought to be covered with a coating of mortar, to prevent leakage. About 60,000 bricks are required to build each kiln.

* Karsten, Manuel de la Metallurgie du Fer, Tom. 1, p. 309.

Engraving, Representing the Form of Kiln used in Making Charcoal.



Returns of Railway Companies in Great Britain.

We have spoken upon the subject of the returns of railway companies in two previous numbers of the Journal. The importance of this matter to the railway interest, cannot be easily exaggerated or over stated. *Herapath's Railway Journal*, received the present week, is largely occupied with the same subject.

On the 27th of April, the British House of Lords, on motion of Lord Brougham, ordered the following returns to be made by each railway company in the United Kingdom:

Return of the Share Capital of every railway in the United Kingdom. The capital authorised to be raised by their Acts of Parliament. The number of Shares issued, and number allotted to each Director, Committeeman, or other person connected with the Company. Amount of each Share. Number of Shares reserved, and for what purpose, and how disposed of and to whom. When the calls on such shares became due. When received. The capital or moneys raised by each railway in the United Kingdom on loan or on the security of their debentures or otherwise. When debentures were issued. Date of act of Parliament sanctioning such issue of debentures. Amount of each debenture. Rate of interest paid to the lender, and any other terms agreed on for the purpose of raising money. Term for which such loan was made. Commission or other sum paid by the Railway Companies to the broker or agent for obtaining loans on the security of debentures or otherwise.

Cost of construction of each railway and each branch railway, exclusive of land purchases, parliamentary expenses, and law charges. Law charges, and stating whether taxed or not. Money ex-

pendent in purchase of land and property, distinguishing the expenses and charges from the price of the land. Parliamentary expenses—engineering charges—cost of railway plant. Amount entered in each year's printed account for depreciation of plant. Total annual receipts from passengers or goods from the first opening of any portion of the railway. Total annual expenditure contingent on the working of the railway, exclusive of the interest paid to the debenture holders and others. Mode by which the fixed dividends that have been paid to the various Shareholders was ascertained. The loans made by each Railway Company to any other Railway Company or person, to whom and when, at what rate of interest, and when repaid. Amount of subscription paid and agreed to be paid, and guarantees given or agreed to be given, of capital or interest, by any Railway Company or person to any other Railway Company or person, when paid or given or agreed upon, and for what purposes, of whom the shares were taken. The date of any act of Parliament, or the powers and authorities of every Railway Company to subscribe to or hold shares or interest in any other Railway Company, and to what extent.

"Times Change and we Change with them."

The truth of the old adage is forcibly illustrated in the following statement given by an eye-witness, who attended the examination of the "Railway King," before the Committee of the Eastern Counties railway, to which matter we have more than once referred:

Hudson under Examination.

"George Hudson," said Mr. Cash, "wilt thou take a seat? As thou hadst the financial department of this company under thine especial control, thou art required to answer a few questions which the

committee will put to thee. Didst thou ever, after the accountant had made up the half-yearly accounts alter any of the figures?" Mr. Hudson, in a subdued tone, answered, after a moment's hesitation, "Well, I may perhaps have added a thousand or two to the next account." "Didst thou ever add 10,000?" continued Mr. Cash. "Ten thousand! that is a large sum." "It is a large sum, and that is the reason why I put the question to thee. Wilt thou give the committee an answer—yea or nay?" Mr. Hudson, in a subdued voice, and evidently much embarrassed, replied, "I cannot exactly say what may have been the largest sum I carried to the following account." "Perhaps, George Hudson, thou couldst inform the committee whether thou ever carried to the next account so large a sum as 40,000?" "Oh, I should think not so large a sum as that." "But art thou quite sure thou never didst?" Here again the quondam monarch of the railway kingdom showed considerable hesitation and embarrassment, on which his Quaker inquisitor did not further press the question; and putting the questions, drawn upon a sheet of paper, into his hand, observed with a dry *nonchalance* which must have been very annoying to the quondam Chairman of the company, "George Hudson, take the questions home with thee, and send written answers to the committee at the earliest convenience!" Never, it is said, was there so marked a change, in so short a time, in the manners and appearance of a man: Formerly even his colleagues in the directorship were afraid to speak to him; but now he is all humility, mildness and docility—willing to answer any question, and to do anything he is asked.

Georgia.

South Western Railroad.

The Macon Telegraph, of last week, says: "The Directors of this road held a regular meeting in this city on Wednesday and Thursday of last week, we

have not been able to get such an account of their proceedings as would authorise us to say more than that the progress of the work is at once flattering to the Directors and encouraging to the company, and to the interest of those who are in any way connected with it. A great deal depends, in the infancy of such a work as the South Western railroad, upon the energy and capacity of the Directors who are entrusted with the interests of the corporation. The present Board by their enlightened enterprise have already given the stockholders of this company and the public at large, much cause to believe that they are just such men as will resolutely call into exercise every means at their command for the early completion of the great work with which they are connected. Fifty-two miles of the road, we are assured, will be completed and fully equipped, in less than eighteen months. This will carry it to the west bank of Flint river, in time to receive the crop of the adjoining counties of South Western Georgia for 1850. Such are the present auspicious indications of the affairs of this company."

Virginia.

Orange and Alexandria Railroad.

The organization of the Orange and Alexandria railroad company has been duly effected by the election of a President and Board of Directors, as follows:

- George H. Smoot, President.
- Dr. Wm. L. Powell, Vice President.
- Directors elected by the company—Dr. William L. Powell and Henry Dangerfield.
- Major Charles Hutton and Wm. J. Stover of Fauquier, and John S. Barbeur, Jr., of Culpepper, had previously been appointed Directors on the part of the state.

Louisa Railroad.

The Richmond Republican says that the energetic President and Board of Directors of the Louisa railroad are using every exertion to push the work to the Mountain during the year, at which point the Board of Public Works will lay hold, and penetrate the Blue Ridge by a tunnel of more than 5000 yards.

**Massachusetts.
Eastern Railroad.**

A special meeting of the Eastern Railroad company was held at the Exchange Hotel in Boston, on Thursday afternoon of last week.

On motion of Mr. Sturgis, the vote passed the 24th of May, 1848, accepting the act of the Legislature of the same year was reconsidered.

The next question was upon the acceptance of the act authorising the Eastern railroad company to extend their road through Chelsea and Charleston, into Boston, passed by Legislature on the 2d of May, 1849. This act was accepted, by a large majority. It was then, on motion of Mr. Sturgis, voted, that the Directors be instructed to cause surveys and examinations to be made, of the expenses which would be occasioned by carrying the said act into effect, and to report the same to a meeting of stockholders; and that no other step be taken by the Directors, in the premises, without further action of the stockholders.

The President, on introducing the business of the meeting, gave the following satisfactory explanation of a subject which has attracted some attention among the stockholders:

"During the last session of the Legislature, the Committee on Railways and Canals proposed certain questions to the treasurers of the several rail roads in this state, and they were answered by the Treasurer of this company precisely according to the facts. One question was, what was the amount of money borrowed during the year 1843; and the answer gave in detail the several sums and the time for which each loan was made. The gross amount was \$1,054,186 05.

But the payment during the same time, about which the Committee forgot to make any inquiry was.....\$1,251,187 12

Showing a diminution of debt, during the year, of..... 197,001 07

The total amount of interest paid was stated at..... 33,902 61

(or ten and five hundredths per ct.)

The amount at 6 per cent would have been..... 20,239 62

Leaving the amount of extra..... 13,663 29

But it has been represented that the company had created a debt during the year of over a million of dollars, and had paid about \$34,000 extra interest.

The sole cause of the large temporary loans in 1848, arose from the delay of the Legislature in granting an increase of capital. Had it been given when asked for, it would have been taken at par, and no loan would have been necessary. It was detained till near the end of the session, and then the money market had become so stringent that stockholders could not take it. Money was borrowed at the current rate, rather than sacrifice the stock or the property. It was altogether a matter of calculation, and that course was taken which was deemed most for the interest of the stockholders and the corporation. The business of the road is in a prosperous state. The receipts for the first four months of 1849 exceed by \$3,000 those of the corresponding months of 1848."

Ohio.

Scioto and Hocking Valley Railroad.

CHILLICOTHE, May 9th, 1849.

At a meeting of the stockholders, under the supervision of the Commissioners of the Scioto and Hocking Valley railroad company, held pursuant to a public and legal notice, at the court house in Chillicothe, Johu Medaria, Esq, acting as President, and Seneca W. Ely, Esq., as Secretary, the following gentlemen were elected directors of said company, to wit:

- J. V. Robinson, C. A. M. Damarin and B. F. Conway, of Portsmouth, Committee on Engineers.
- Francis Campbell and Wm. H. Douglass, of Chillicothe.
- Tho. W. White, Esq., of Lancaster.
- Geo. W. Penney, Esq., of Newark.

After which, the following resolutions were unanimously adopted:

Resolved, That the annual elections of the Board of Directors to be held by the stockholders on the 2d Wednesday in May.

Resolved, That the Directors be hereby authorised, in their opinion it be right and proper, to allow interest on instalments actually paid in.

The Directors, except G. W. Penney, met at 8 o'clock P. M., on the same day, at Madeira's Hotel, and having organised by electing J. V. Robinson President, proceeded to pass the following resolutions:

Resolved, That the President and two Directors be a committee to employ a capable engineer, to make a reconnaissance of such line or lines as may be deemed necessary for the Scioto and Hocking Valley railroad from Portsmouth to Newark.

Resolved, That no further action of this board take place until the town and county elections shall determine what amount the counties of Pike, Ross, Pickaway, Fairfield and Licking will subscribe to the stock of said road—unless a meeting of the board which may be called by order of at least four Directors shall otherwise direct.

Ordered that the proceedings of this day be published in the newspapers on the line of said road.

The board then adjourned.

New Hampshire.

Boston, Concord and Montreal Railroad.

The annual meeting of the Boston, Concord and Montreal Railroad Company took place last week, and the Directors submitted a Report of the third year of the operations of this road up to the 1st of May, 1849, which report has just come to hand.

This road has been carried forward with a good degree of spirit and economy, chiefly from money raised by the people along the line. It is a cheaply built road, having a light rail of some 40 lbs. to the yard.

The chartered line of this road extends from Concord, through Meredith, Plymouth and Rumney to the Connecticut river in Haverhill, and thence to a point opposite the mouth of Well's river, a distance of 93 miles.

The road was opened as far as Sanbornton, May 22, 1848; to Meredith Bridge, August 8, 1848; to Lake Village, October 1, 1848; and to Meredith Village on the 19th of March 1849, 38 miles.

Twenty-three miles more of the distance are under contract, which will carry the line to West Rumney, a distance of 61 miles from Concord. Of this 23 miles, three are graded, on nine miles more the grading is about half finished, and it is one-third done on the remaining 11 miles under contract. The company have expended \$865,530, and the Directors estimate the cost of 61 miles finished at \$1,175,521.

The receipts from assessments on the capital stock paid in is \$759,460, and the Directors state the capital stock taken at \$903,200.

The Directors express the belief that sufficient new stock can be disposed of to pay for the grading and masonry, and they recommend the hiring of the balance necessary to finish the road to West Rumney, rather than offer stock below par. The stock sold recently at prices from 82 to 85 per share. The old Board of Directors was re-elected with the exception of B. F. Simpson, Esq., of Lowell, who declined. The Board consists of

- Josiah Quincy, of Rumney,
- Z. Clement, of Sanbornton,
- S. C. Lyford, of Meredith,
- Ira Goodall, of Bath,
- Geo. B. Chandler, of Danville, Vt.
- J. M. Whiton, of Boston,
- John L. Clark, "

There has been a sharp competition between this company and the Northern and Passumpsic roads during the past year.

The earnings of this road to January 1,

1849, were.....	\$32,329
The expenses of running to the same time were.....	13,492

Net earnings..... \$18,837

The cost of this part of the road was about \$450,000.

The following remarks of the Directors will explain the position of the road, and the views of the Directors:

The time allowed in the charter for completing the road will expire December 1st, 1855. We have no reason to fear any competing or rival lines. The Legislature hitherto have acted on the principle of refusing to charter roads that might be regarded as materially injuring other previously chartered roads, especially while in process of construction; and there seems, at present, no public necessity for interfering with this reasonable policy. Our line, occupying the ancient and natural route of the travel between Northern Vermont and New Hampshire, and Concord, Lowell and Boston, has a large business on its border that will not be turned away from it. There is no reason to suppose the remaining part of the line will not be constructed as cheaply as the part already constructed. The line will be one of the cheapest, if not, considering its length, the very cheapest railroad, in New England.

It must be borne in mind that this corporation has had no aid from the monied interest of New England; for the most part, the means have been furnished by the country through which the line passes, of which the great number of our stockholders, and the small amounts in which the stock is held, is an evidence.

The confidence in the ultimate value of the stock appears to be great, and justly so. That it should have sustained itself, without any adventitious aid, in the face of a stringent money market and forced collection and sale of a large amount of delinquent shares, and sales of new stock, shows that it is so; and there is little doubt that the accumulations of the community along the line, aided as they will be by the part of the road already built, will, in a comparatively short time absorb all the new stock needed for the completion of the work.

Cheshire Railroad.

Since our last issue, we have been favored with a printed copy of the last annual Report of the Di-

Directors of the Cheshire railroad company, Our readers will recollect our strictures upon the Report of the Directors, submitted to the Massachusetts Legislature in January last.

We have read the report of the Directors with much care, but see no reason to modify our opinions before expressed, as to the accuracy of the Legislative returns. In regard to the capital, or total cost of the road, the Directors say:

"The full cost of the road, or, in other words, the amount at which the capital of the road must ultimately stand, it would be difficult to state now with precise accuracy; but it can be done very nearly. To the amount of payments, as above \$2,259,997 37

Must be added—

1st. The discount on the 5711 shares of stock issued at 75 per cent.....	142,775 00
2d. The amount now due for rails, and other outstanding claims, and for expenditures necessary to entirely finish the road.....	105,000 00
3d. Interest due to stockholders up to May 1, 1849.....	132,526 00
	2,670,298 37

To be deducted from this amount is

1st. Cash on hand.....	28,298 97
2d. Amount of real estate in Winchendon, Fitzwilliam Troy, Keene, and Westmoreland, not absolutely necessary to the use of the road, including buildings, wood lands, &c., estimated at.....	24,500 00
3d. Assessments due on old and new stock, on which part has been paid.....	34,545 50
4th. Notes receivable.....	23,310 00
	110,654 47

Total cost, or capital..... 2,559,643 90

The total cost of the road, it will be seen, exceeds very much the early estimates. It has overpassed all the limits which have been fixed and enlarged from time to time, as the road has progressed.

Though not a very unusual result in works of this magnitude, it is one that occasions something of surprise and disappointment to each successive class of adventurers who undertake and accomplish them. We believe, in our case, it has not arisen from any disposition on the part of the board of Directors, or the Engineer who has had charge of the work—and to whose energy, ability and untiring devotion to it the company are greatly indebted for its successful prosecution—to allow careless or improvident expenditures; or from any want of effort to carry out a system of strict and rigid economy.—Losses and somewhat unprofitable expenditures to some extent inevitably attend all like operations.—If such have occurred on our own line they are of very limited amount, and are nothing, comparatively, in making up the large outlay which we have found necessary. To account for this we must look to other causes. Something of this excess of expenditure may be accounted for by the unexpectedly high cost, during the construction of the road, of the elements which go to make up the aggregate amount. There has probably been no period, and there is now no prospect that one will soon again occur, when the prices of provisions, materials and labor have ranged so high as in years when the great body of our work was done, 1846, '47, and summer of '48. These prices pressed upon the contractors, and through them upon the company.

Another portion of this excess arises from the time consumed, and comes to us in the shape of a large amount of interest paid and to be paid to stockholders and others, for use of capital while unproductive.

The cost of the road should be put as high as \$2,584,143, which includes the real estate mentioned. This makes the cost of the road a trifle over \$48,000 per mile. The capital stock paid in amounts to \$1,453,379, leaving a balance of indebtedness of \$1,140,764.

The Directors express the opinion that the character of the work upon this road will compare favorably with that of any road in the country, in proportion to the amount of work actually done upon it. We quote the following interesting details:

"The masonry is of the most durable and substantial kind. Nothing less would sustain the heavy weight with which much of it is necessarily loaded. All except a few small culverts is built wide enough for a double track.

The bridging is on the most approved plans; and the bridge across the Connecticut, when completed will be a structure of which any corporation might be proud; and the sufficiency of which no person who may have occasion to use it will doubt.

The superstructure is a 60 lb. rail laid on chestnut sleepers of full size and thickly set, to give solidity to the track.

The depot buildings, without designing to be extravagant, have been intended to be such as would be likely to furnish at the different points the accommodation to be required hereafter, as well as at the present time.

The road furniture, it is hardly necessary to say, is not inferior to that in use on any other road.

In all the details of building and furnishing, we have had in view permanent future use, and a large business.

The difference in expense of construction between a well built and a half built road, might be very considerable; but if saved, it might turn out in the end to be a present saving at a larger future loss. The maxim that "what is worth doing at all is worth doing well," applies we think no where with more force than in the building of railroads. To account, however, mainly for our expenditure, we must look to the character of the country over which our line is laid. It needs not the computations of an Engineer to satisfy any one who has passed over it of its severity. The amount of work which has been done on the entire line is as follows:

Earth excavation.....	3,926,000 yards.
Rock do.....	318,000 "
Loose rock.....	20,000 "
Total.....	4,294,000 "

Masonry..... 65,530 yards, an amount of work which exceeds, in proportion to the length of the road, the average amount of work on any road in New England, not excepting the Western.

But notwithstanding the severity of the work, and the large amount expended, it will be found, on comparison, that the amount, with all the additions of discount and interest, neither exceeds the cost of other roads on important routes, nor is such as to preclude the reasonable expectation of satisfactory returns to the stockholders.

OFFICERS OF THE CORPORATION FOR THE ENSUING YEAR.

Directors.

- Thomas M. Edwards, Keene,
- Thomas Thatcher, Boston,
- Hiram Hosmer Watertown,
- Salma Hale, Keene,
- Benjamin F. Adams, Keene,
- Ephraim Murdock, Jr. Winchendon,
- George Huntington, Walpole.

President:

Thomas M. Edwards.

Clerk:

Benjamin F. Adams.

Treasurer:

Charles J. Everett.

Northern Railroad of New Hampshire.

There is quite an overhauling of matters going on in many of the New England roads. The annual meeting of the directors of the Northern railroad of New Hampshire was a stormy affair. The old board of Directors, except the President, gave way to a new set, under the cry of "economy and reform." Of 20,027 votes thrown for directors, Mr Nesmith, now President of the road, had 20,011. It is now composed of the following gentlemen: Geo. W. Nesmith, of Franklin, John R. Brewer, of Boston; Francis N. Fisk, of Concord; Geo. A. Kettell

of Charlestown; Josiah B. French, of Lowell; W. J. Walker, of Boston; Timothy Kendrick, of Lebanon.

The Report of the Directors has been published. We gather from it the following facts:

Length of main line.....	69½ miles.
Length of Bristol branch.....	12½ "

Total..... 81½ "

Cost of the road \$2,766,500, or at the rate of \$34,000 per mile.

Cost of the main line \$2,530,500, or at the rate of \$36,400 per mile.

The net earnings for the last financial year were.....	\$408,455
Expenses and interest.....	211,378

Net earnings..... \$167,277

Balance of debt \$129,978.

Dividend in November, 1848, 3¼ per cent.

The stockholders voted to apply the balance of the earnings toward the payment of the debt.

The stock of the road went down last week from 80½ to 78 and 78½. This road was built in too much haste. In passing over it last year we were surprised to see a cheap quality of hemlock cross ties or sleepers laid upon the road.

It is a sad mistake for directors to hurry a road into use before it can be properly finished and equipped.

Concord Railroad.

The choice of Directors of this road took place last week. The following gentlemen were elected Directors:

- Ira Spaulding, Nashua.
- C. H. Peaslee, Concord.
- Robert Read, Manchester.
- R. McGaw, Merrimack.
- Josiah Stickney, Boston.
- Uriel Crocker, "
- Edward Raymond, "
- Ira Spaulding is President.
- N. P. Lovering, Treasurer.
- J. H. George, Clerk.

The capital stock of this company is \$1,350,000.

The length of the line 34 miles. The road and equipment we suppose therefore must have cost about \$40,000 per mile, including a double track. The State of New Hampshire does not require any returns from railroad companies, and we are not well informed as to the condition of this road. It divided 10 per cent. in 1848, and is regarded as one of the best roads in New England. The stock has been as high as 30 and 35 per cent. above par during the last four or five years, and now sells for more than twenty per cent. advance. We give below a statement of its receipts, expenditures, net income and dividends for the last five years.

	Receipts.	Expen.	Net income.	Div.
1844.....	\$139,080	\$65,106	\$73,913	\$66,315
1845.....	181,842	82,938	98,913	97,500
1846.....	228,479	135,054	93,424	80,000
1847.....	210,228	176,453	113,775	100,000
1848.....	311,326	180,697	130,538	120,000

Peterboro' and Shirley Railroad.

The annual meeting of the Stockholders of the Peterboro' and Shirley Railroad took place a few days since, and the following gentlemen were elected Directors.

- Samuel Adams, Townsend.
- S. K. Ames, Peterboro'.
- D. Needham, Groton.
- D. F. McCillery, Boston,
- Stephen Thayer, New Ipswich.
- George Elliot, Mason.
- George Taft, "

AMERICAN RAILROAD JOURNAL.

Saturday, June 9, 1849.

Boston and Worcester and Western R. R.

Three years ago last winter, we were present at several meetings, in Boston, of the Stockholders of the Boston and Worcester Railroad, and the Stockholders of the Western Road, called for the purpose of considering certain propositions that had been made to effect an union of the two companies.

The Directors and Shareholders of the Western road were dissatisfied with the terms charged by the Boston and Worcester railroad for transporting passengers and freight brought to it by the Western road.

A spirited discussion was had among the shareholders in both companies, and no little feeling elicited by the friends of the respective roads. A very general desire was felt in Massachusetts at that time in favor of a consolidation of the two companies into one, to be called the *Boston and Albany Railroad*.

The shareholders in the Western road were willing at that time to make it a common stock, allowing the shareholders in the Boston and Worcester five shares for every four in the Western road, or in other words, calling the stock of the Boston and Worcester road worth \$120, and the stock of the Western \$100 per share.

This offer was rejected by the stockholders of the Boston and Worcester road, after full discussion, by a decisive vote.

Addison Gilmore, Esq., of Boston, was called to the head of the Western railroad, soon after these negotiations terminated, and under his guidance, as President, the road has continued from that time to this. Some temporary arrangement was soon effected between the two companies, and the business has been conducted since then, without any disagreement to our knowledge.

The stock of these two companies has fluctuated considerably in the market during the last three years, but on Thursday of last week, the stock of each stood at \$107 in Boston market, and they do not materially vary in price at the present time, as will appear by our share list.

It seems strange to us that no comments have been made upon this matter by any of the Boston presses. We propose to examine into this matter by and by.

The impression now prevails that the two companies will be consolidated, and that a movement to this effect is in progress. Mr. Hale retired from the Direction of the Boston and Worcester road the present week. He has held the situation of President of the Corporation for many years, from the time of its organization till now, according to our recollection.

Since writing the above we have received an account of the annual meeting of the company in Boston on Monday last for the choice of Directors. The directors submitted their report, by which it appears that in addition to the amount of the capital stock paid in, the claims upon the company up to the present time, including the expense of running the road, amount to \$460,000. If we understand the report, the company has used its earnings as received, and the cost of the road represents the sum of \$4,960,000 on the 31st May, 1849.

Messrs. Hale, Henshaw, Lowe & Hathaway, of the old board, go out this year, and are succeeded by Messrs. William Parker, Thomas Hopkinson, Isaac Emery and J. M. Edmonds, who with Messrs. Daniel Denny, Nath. Hammond, T. C. Leeds, B. F. White and G. B. Blake, constitute the new board.

Some dissatisfaction was expressed by the stockholders committee, that the company should have been suffered to get into debt. A committee was appointed to report a proper testimonial to Mr. Hale for his services to the company, over which he has presided for eighteen years.

In view of the facts before given, we are impelled to make the inquiry, when should the construction account of a railroad cease? If railroad directors are to keep constantly charging off to construction, the outlays for repairs and equipment, and divide the entire amount of earnings, above the mere expenses of running, the cost of a road can never be ascertained.

In our view the proper course is, to apply a sufficient portion of the net earnings of a road to keep it in repair. Every other policy must prove disastrous in the end. An inflated price of shares invites investment from parties little conversant with railway management, who, in time, find themselves possessed of a depreciated stock, from facts being brought to light, of which they had no knowledge, and over which they have no control.

We ask the directors and shareholders of the Western railroad to look carefully into this matter.

Iron Trade.

The advices from Europe continue to show a decline in the price of iron. Scotch pig has touched a lower point than it reached in January last.

Parties in this country who have stock on hand, are disposed to run it still lower, in the hope of checking importation. Rails sold at £5.

Whitehall Mining Company.

The first annual meeting of the shareholders of the Whitehall Mining company took place at the mines on the 1st day of June instant.

Commodore Stockton submitted his report, as Treasurer of the company, showing the operations of the company to May 31, 1849 inclusive. The report was submitted to a committee of three of the Directors. T. A. Dexter, Esq., of Boston, on behalf of the committee submitted a report, a copy of which has been placed in our hands. We have space only for a brief summary of the report in this day's Journal.

From this report we learn that the condition of this company on the 31st of May, 1849, was as follows viz:

Gold raised, and already coined at the U. S. Mint.....	\$36,652 01
In specimens.....	5,158 50
Cash received from other sources.....	10,000
Expences incurred to May 31, 1849, for buildings, machinery, mules, &c.. salaries and expenses.....	\$29,362 09
Balance in Treasury.....	\$22,448 42

The shareholders voted to make a dividend of \$5 per share on 3,000 shares, or \$15,000 in amount. This will leave a balance in the treasury of \$7,448 42. The dividend is payable at Philadelphia on the 12th of June current.

This company has been in operation a few months only, and its machinery and erections are all new, having been only a short time in use at the mines.

This report certainly shows a most gratifying result to the shareholders, and we shall not be surprised to find that the superior skill and machinery now employed in working vein mines in Virginia, may lead to a complete revolution of opinion as to

the comparative value of vein and deposit mines of gold.

Our readers will recollect a very interesting account of the mode of working this Whitehall mine in our paper of April 21, 1849.

Utica and Schenectady Railroad.

The following gentlemen were chosen Directors for the present year at the recent annual meeting of the Utica and Schenectady railroad company.

Erastus Corning, Nicholas Devereux, Nathaniel S. Benton, A. C. Paige, John Townsend, James Hooker, T. W. Olcott, M. T. Reynolds, G. G. Howland, J. P. Phoenix, E. T. T. Mather, Livingston Spraker and John Ellis.

Indiana.

JEFFERSONVILLE RAILROAD.

It is almost impossible in our Journal to keep pace with the rapidity with which railroads in the west are projected, and pushed towards their completion. The homogeneous nature of its territory, unbroken by high mountain ranges, render the construction of railroads there an easy task when compared with the rugged features of many of the Eastern States, while the soft and yielding character of its soil unfitted for ordinary roads, render these works indispensable to those living at a distance from the great water courses. These causes are leading to the construction of railroads in every part of that great section. The west is to be the great theatre of railroad construction for time to come.— We have no doubt too, but that the western roads are to be the best paying roads in the country.— The immense surplus of products of this section are of a bulky character, and must pay a large freight, in transportation, while its inhabitants must continue to import over their road for a long time to come most of the necessaries of life that their farms do not furnish them. The road from Madison to Indianapolis is one of the highest priced roads in this country, and the character which this railroad sustains abroad, must do much for the credit of similar undertakings in this state.

The project of a railroad from Jeffersonville on the Ohio, opposite Louisville, to connect with this road at Columbus, is undoubtedly new to many of our readers. We ourselves were not aware that such progress had already been made towards its construction, and are happy to give a part of a letter from an intelligent gentleman residing in that state, showing the progress already made in this new work:

"It is only little more than twelve months since our engineers were put in the field, and preliminary surveys made between Jeffersonville and Columbus, a distance of 66 miles, at which place we intersect the Madison and Indianapolis railroad.— In October last, the grubbing, clearing and graduation of 27 miles were put under contract and will be ready for the superstructure early in the summer. 1200 tons T rails have been contracted for, and will arrive during the fall.

Our surveys show that the maximum grade going north need not exceed 26 feet per mile, and coming south only 23 feet per mile.

The 27 miles under contract extend beyond the range of knobs or high lands, usually found between the Ohio and the waters flowing into White river. The summit of this range of high land is crossed by our line at an elevation of 172 feet above high-water mark at the head of the Falls of the Ohio, the point of crossing this elevation is 23 miles from Jeffersonville, it is a remarkable depression in the main ridge, of easy access both from the south

and north; on each side of this gap the hills rise to a great height. 8 miles west, the summit is 567 feet; on the east, they rise more gradually. This gap is not one mile from a straight line; and the road will only be about 2 miles longer than a straight line from Jeffersonville to Columbus."

Money and Business.

There is a general apathy apparent in all branches of business. Money is becoming abundant, from the absence of ordinary calls for new transactions.

The railway share market has shown great changes the last few weeks, as will be seen by comparing our share list. In three weeks the stock of the Boston and Maine has decl'd from 105½ to 101 a 102 Vermont Central " " 53½ to 49½ Vermont and Mass. " " 45½ to 42 Old Colony " " 80½ to 78 a 79 Long Island " " 23½ to 21½ Albany and Sch'dy has adv'cd from 82 to 85 Boston and Lowell " " 116 to 118 Eastern " " 99½ to 104 N. York and Erie " " 61 to 64 Utica & Schenectady " " 120 to 123

Many other changes will be seen by referring to the share lists.

Locomotive Engines.

Railway companies who are in want of railroad equipment, will please look to our advertising list, embracing as it does several of the leading shops in the United States. The improvement of the locomotive engine within the last few years, has surpassed that made in any other branch of mechanical science. Every company should now look to it that they secure the best possible equipment to their roads. There is as much difference in locomotive engines as in horses. The latest improvement and the best workmanship should be secured. In this connection we beg leave to call attention to a new advertisement in to-day's paper of Messrs. A. & W. Denmead & Son, of Baltimore, who are now ready to receive orders for locomotive engines and railway machinery, in addition to other branches of manufacture.

To Railroad Engineers.

We announced our willingness to publish regularly the address of Engineers, in our paper under date of 10th of March last.—Several engineers have adopted the suggestion. The advantage is so obvious to engineers themselves, and so satisfactory to companies seeking their acquaintance, that we are induced to renew the suggestion. Our plan has been the means already of important engagements to several parties; and will serve to keep up more closely the acquaintance of engineers.

We therefore renew the offer to insert the names of engineers and their address for two dollars a year from subscribers, and five dollars a year to others not taking the Journal.

The Danville Railroad.

The City Council of Richmond has appointed a Committee to confer with the Board of Public Works for the purpose of requesting the Board of Directors of the Danville railroad company to call a meeting of the stockholders, to reconsider the resolution by which the Board was instructed to adopt the most direct route between Richmond and Danville. The importance of bringing the road as near as possible to Lynchburg, with a view of connecting it by a branch road with our great south-western improvement, is now confessed by all in Richmond. It is believed that a route farther north than the one which was rejected, may be found and which will bring the road still nearer to Lynchburg. We presume there will be no objection to the call of the meeting, and we trust the resolution, referred to, will be reconsidered and the Board left at liberty to adopt such route as they think best.—*Virginia Paper.*

Explosion of Steam Boilers.

No. 1.

Such are the tremendous and fearful results of the explosion of steam boilers, that it is highly desirable that the causes of these disasters should be known and understood, in order that they may be effectually guarded against, and prevented. Scarcely a week passes, that the public press does not announce an explosion, by which human life is sacrificed, and large amounts of property destroyed. Many scientific writers, without practical knowledge, and many practical engineers, some with, and others without, an intimate acquaintance with scientific principles, have written on the subject, with the aim of arriving at safe and satisfactory conclusions; yet, little has hitherto been done, but to wander in the maze of conjecture, and to erect hypotheses on suppositious premises; during the discussion, the evil continues unmitigated. One thing, however, is certain—whatever may be the original operating cause of these explosions, the immediate one is and must be, carelessness in some quarter or other. If the original cause be, as some suppose, the contact of water or gases with highly heated metals, then the deficiency of water in boilers must be that cause, and must be attributable to the carelessness of the engineer, or to his ignorance. If we suppose a boiler of the proper strength to be exploded by means of too great a pressure of steam, in such case, we necessarily arrive at a similar conclusion. If the boiler be too small for safely generating the required power, or too light, or too much worn, the owner must incur blame for permitting the use of such boilers, while the engineer incurs still greater blame, because without his aid, they could not be used at all. If the boiler is made of unsound materials, or if it is badly fabricated, the maker is culpable, because it is in his power to know whether his materials and work will or will not successfully stand the proper test. Our conclusion therefore is, that, let steam boiler explosions result from what cause they may, they are the results of carelessness or ignorance. We might cite a number of cases to prove the correctness of this opinion as tested by long experience; but will now allude to one only, which, in our opinion, is amply sufficient.

In a memorial submitted to Congress January 22, 1841, the following statement occurs: "The first steamboat which navigated Long Island Sound, (if your memorialist is correct in his recollection,) was the Fulton, commanded by Capt. Elihu H. Bunker, which was put on the route in the year 1815 or 1816, to run as a regular passage boat between the cities of New York and Providence. From about that time to the present, a period of some twenty-five years, a regular communication has been kept up between the two cities by means of steam navigation, and for a very large proportion of the time, daily each way. On this route there have been employed, for longer or shorter periods, most of them several years each, the following steamboats, viz: the Fulton, Connecticut, Chancellor Livingston, Washington, Benjamin Franklin, President, Boston, Providence, Rhode Island, Massachusetts, Lexington, Cleopatra, Narragansett, John W. Richmond, and Mohegan; making the number sixteen, besides several others which have run during longer or shorter periods." The memorial from which the above extract is made, was presented to Congress by the writer of this article, more than eight years since. During this period, steam navigation has been continued on this route, as before, sometimes between New York and Providence, and sometimes between the former city and Stonington. And in the whole

time, more than thirty-three years, and with some twenty or twenty-five different steamboats, no accident has ever occurred from the explosive power of steam, to the loss or jeopardy of life, limb or property. During the last ten or twelve years also, intercourse by steam navigation has been carried on, daily, by means of a number of steamboats, between the city of Boston and various ports in the State of Maine, with the same pleasing result.

And now permit us to inquire, what has given to travellers on these routes, such perfect safety and security, while hundreds on some other routes, have perished by means of steam boiler explosions?—There has been the same power used here as elsewhere, generated in the same manner, in boilers of the same materials, and applied in the same way. Besides, these boats have navigated L. Island, Sound and Massachusetts bay, as rough and tempestuous at times, as the broad Atlantic. How then have disastrous explosions been avoided? The reply is at hand, and, withal, very simple. The proprietors of these steam packets have considered safety as the first, greatest, and most important object.—Hence, they have ever been careful to have the best articles of steam boilers, etc., that could be obtained, and to employ none but the very best engineers; and to place the latter as to the business of their own peculiar departments, entirely beyond the control or interference of others. This is the great secret of safety, and the only one. Let this same system be adopted by every one having anything to do with steam boilers, and the entire evil will be corrected.

At the same time, speculative suggestions and conclusions, serve to divert the attention from the true means of safety. And, farther, they very much increase the danger. Avaricious and dilatory habits, induce the desire to make money with as little expense and trouble as possible. Satisfy persons of such habits that all the danger of explosion results from a deficiency of water, and you have at once opened the way for the destruction of many lives. Light and insufficient boilers will be obtained, and old, worn and dilapidated ones, continued in use to save expense and room, and prevent trouble and delay. Ignorant men will be employed as engineers, merely because they can be had at lower wages.—And this will be done, and probably, in many instances, is now done, on the supposition that, however small, light, old or dilapidated a boiler may be, and however ignorant an engineer, if the latter does but know enough of his business to start and stop an engine, and has the bump of caution sufficiently developed to ensure a full supply of water, there can be no danger. So long as such vague notions have possession of the minds of people, and is fostered by the speculations of scientific men, and some engineers who are practical men, steam boilers will continue to be exploded, and life and property to be destroyed. A boiler maker should never suffer a boiler to go out of his hands, even at the solicitation of a purchaser, unless he knows it of fully sufficient capacity for the purpose intended, and of sufficient strength. No engineer should ever, on any occasion, for a single hour, consent to operate with any other. Every engineer should be thoroughly acquainted with his business, and be well known to others as being so. And every man who shall use an insufficient boiler, and employ any but a thoroughly qualified engineer, should be rigidly held responsible for all injuries that may be caused by explosions on his premises. Try this first—strike at the root of the evil—at known causes of explosions. If this fails, then explore the regions of speculative science for others. But let us not neglect the real for the imaginary. Let us not neglect known truths for far fetched hypotheses. C. T. J.

Albany and West Stockbridge Railroad.

The following is the list of Directors of the Albany and West Stockbridge railroad, chosen the present week.

M. T. Reynolds, T. W. Oleott, Tunis Van Vechten, Friend Humphrey, Lewis Benedict, John L. Praya, George Dexter, Samuel S. Fowler, William H. Tobey, Geo. Bliss, and Addison Gilmore.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburg Railroad, Boston, Mass.

Ford, James K.,

New York.

Floyd-Jones, Charles,

New York and Harlem Railroad Extension, Lithgow, Dutchess Co., N. Y.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Dudley B. Fuller & Co.,

IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH,
West Newton.
June 8, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand.
Baltimore, June 6, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Prest, Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Secy,**
at Beaver Meadow, Pa.

May 19, 1849. 20tf

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the graduation and masonry of about 25 miles more of this road, beginning at a point some 64 miles west of Cumberland, and ending at a point about 13 miles west of Cheat river, embracing all the sections from No. 64 to No. 88, both inclusive. The graduation on nearly all of these sections will be heavy, and will include one Tunnel of considerable length and three short ones. There will be also two Viaducts of medium size.

Specifications and plans of the work will be ready for distribution to proposers by the 13th of June, prox., at the Company's office in Cumberland. The proposals will be addressed to the undersigned, and will be received up to Saturday, July 7th, inclusive, at the same place. Proposers are earnestly requested to examine the line closely before bidding, and to avail themselves of the ample means of information of the value of the work, which will be furnished them, as contractors from a distance, accustomed to more difficult excavations than those to be met with on this line, will otherwise be likely to make their estimates too high. The best testimonials will be required, and an energetic prosecution of the work will be necessary. The payments will be cash, with the usual reservation of one-fifth till the completion of the contract. By order of the President and Directors. **BENJ. H. LATROBE,**
Baltimore, May 31, 1849. Chief Engineer.

To Contractors.

OHIO AND PENNSYLVANIA RAILROAD. Proposals will be received at the office of the Ohio and Pennsylvania railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburgh, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and is easy of access at all points.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.
Pittsburgh, May 21, 1849.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
 Nos. 85 and 87 Broad St.
 New York, June 8, 1849.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

- ½ Round and square, to 6 inches.
 - ½ Flat " " " " " "
 - Ovals, half-ovals and half-round.
 - Hoop, band and scroll iron.
 - Nail plates, superior charcoal Horse shoe, Iron, sheet and Boiler iron.
 - Tire iron for locomotives.
 - Railroad spikes.
 - Pig iron of superior quality for chilling.
 - do. for foundry purposes.
- For sale by **JOHN F. MACKIE,**
 85 & 87 Broad Street.
 Sole agent for the New Jersey Iron Co.
 June 9, 1849.

American and Foreign Iron.

- FOR SALE,**
- 300 Tons A 1, Iron Dale Foundry iron.
 - 100 " 1, " " " "
 - 100 " 2, " " " "
 - 100 " " Forge " "
 - 400 " Wilkesbarre " "
 - 100 " "Roaring Run" Foundry Iron.
 - 300 " Fort " " "
 - 50 " Catocin " " "
 - 250 " Chikiswalungo " " "
 - 50 " "Columbia" "chilling" iron, a very superior article for car wheels.
 - 75 " "Columbia" refined boiler blooms.
 - 30 " 1 x ½ Slit iron.
 - 50 " Best Penna. boiler iron.
 - 50 " "Puddled" " "
 - 50 " Bagnell & Sons refined bar iron.
 - 50 " Common bar iron.
- Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 64 South street
 New York.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
 68 Broad street.
 New York, June 1, 1849. if
 The above will favorably compare with any other rails.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.
 All fit to re-lay. For sale cheap by
PETTEE & MANN,
 228 South St., New York.
 May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferriss, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
 May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by
A. & G. RALSTON,
 4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
 22 South William street,
 New York.
 February 3, 1849.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
 Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
 November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.
 For Sale by **A. & G. RALSTON & CO.**
 No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
 45 North Water St., Philadelphia.
 March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,**
 41 Broad street.
 March 29, 1849. 3m.13

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Braom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other purposes.
 German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
 Genuine "Sykes" L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

LAP - WELDED WROUGHT IRON TUBES

TUBULAR BOILERS, FROM 1 1-2 TO 8 INCHES DIAMETER. These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
 Patentee.
 28 Platt street, New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
 Albany Iron and Nail Works, Troy, N. Y.
 The above Spikes may be had at the following prices, of Erastus Corning & Co Albany; Menitt & Co., New York; E. Pratt & Br 1 & c, Baltimore, Md



INCORPORATED BY ACT OF PARLIAMENT.
NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDSBERT,
 Secretary U. C. M. C.
 Hamilton, 24th February, 1849. 12tf

Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

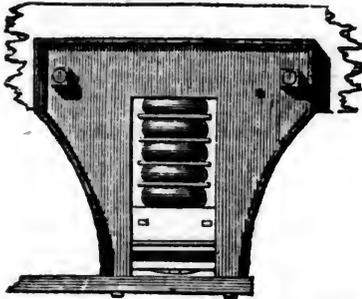
Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849.

6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.

2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.

3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.

4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relaying the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3½ by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,

Eng. New Orleans and Carrollton Railroad." New Orleans, March 14, 1849.

Orders received and full information by

J. ELNATHAN SMITH, Patentee, 22 John street,

New York, May 26, 1849.

Practical Geology and Metallurgy.

JAMES T. HODGE WILL EXAMINE AND report upon Mines and Ores; construct and conduct Blast-furnaces; and give important information as to the best localities for their establishment. To parties desirous of building the nearest furnaces to New York city he can furnish the control of ores, which will warrant the enterprise.

Office at No. 1 New St., corner of Wall. When absent from the city, inquiry may be made at the office of this Journal, 54 Wall St.

P. S. DEVLAN & CO'S Patent Lubricating Oil.

THE Subscribers invite the attention of Railroad, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,

5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

a45 N. E. cor. 12th and Market sts., Philad., Pa.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,

Reading, Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,

Patterson, N. J., or 60 Wall St., New York.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring, nor is any spiral spring required. The Patentee is now able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 38 Broadway, New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

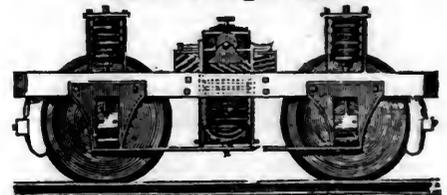
Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

Spring. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].
INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

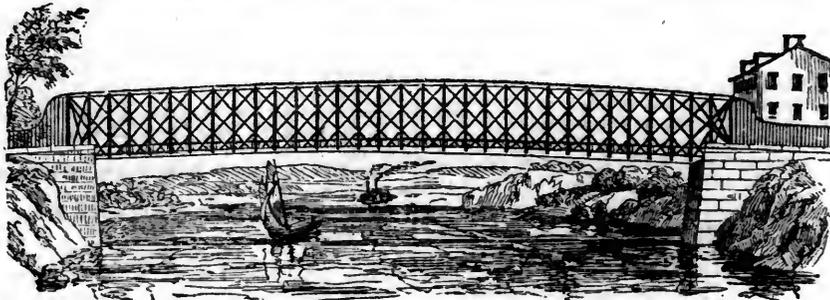
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 3, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIVER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 93 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES

for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Mr. Hale:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

14tf

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 5½ Pine St., New York.

May 12, 1849.

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RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)
Leave Norwich at 5 am., and 5 pm.
Leave Worcester at 10½ am., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 18, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ am., from Norwich at 9 am.

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S. H. P. LEE, Jr., Sup't.

May 20, 1849.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, '49.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Salem, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Manchester, 10, a.m., 3, 5½ p.m.
Gloucester, 10, a.m., 3, 5½ p.m.
Newburyport, 7, a.m., 2½, 4½, 7, p.m.
Portsmouth, 7, a.m., 2½, 4½, p.m.
Portland, Me., 7, a.m., 2½, p.m.

And for Boston,

From Portland, 7½ am., 3 pm.
Portsmouth, 7, 9½ am., 5½ p.m.
Newburyport, 6, 7½, 10½ am., 6 p.m.
Gloucester, 7, am., 2, 5½ pm.
Manchester, 7½ am., 2½, 5½ pm.,
Salem, 7, 8*, 9*, 10½, 11-40*, am., 2½, 6*, 7* pm.
Lynn, 7½, 8½*, 9½*, 10½, 11-55*, am., 3, 6½*, 7½*, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave
Marblehead for Salem, 6½, 8½, 10½, 11-25, am.
2½, 4½, 5½, pm.
Salem for Marblehead, 7½, 9½, 10½, am., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 10½ am., 3½, 6½ pm.
Salem for Gloucester at 10½ am., 3½, 6½ pm.
Trains leave
Gloucester for Salem at 7, am., 2, 5½ pm.
Manchester for Salem at 7½ am., 2½, 5½ pm.
Freight trains each way daily. Office 17 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.
Outward Trains from Boston

For Portland at 6½ am. and 2½ pm.
For Rochester at 6½ am., 2½ pm.
For Great Falls at 6½ am., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
For Lawrence at 6½, 9, am., 12 m., 2½, 4½, 6, 7½ pm.
For Reading 6½, 9 am., 12 m., 2½, 4½, 6, 7½, 9½* pm.

Inward trains for Boston

From Portland at 7½ am., 3 pm.
From Rochester at 9 am., 4½ pm.
From Great Falls at 6½, 9½ am., 4½ pm.
From Haverhill at 7, 8½ 11 am., 3, 6½ pm.
From Lawrence at 6, 7½, 8½, 11½ am., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9, am., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9½ am., 12½, 2½, 5½, 6½, 9½* pm.
Leave Medford at 6½, 8, 10½ am., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.

Leave Boston at 7½ a.m., 12 m. and 5 p.m.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.

Leave Boston at 7 5 and 9½ a.m., 2½, 4½ & 6½ p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.

Leave Woburn Centre at 6, 7, 9, 10 a.m., 1½ and 4½ p.m.
Leave Boston at 8, 11½ a.m., 3, 5½ and 7 p.m.

On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7½ a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,

Agent Boston and Lowell Railroad Cor.
Boston March 5, 1849. 22tf.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover. On and after Thursday, March 15,

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.
Salem for South Danvers at 8, am., 12.45, 3.45, 6.30, pm.

Salem for North Danvers at 8, am., 12.45, 3.45, pm.

Salem for Lawrence, 8, am., 3.45, pm.
" North Andover 8, am., 3.45, pm.
" Middleton 8, am., 3.45, pm.

South Danvers for Salem at 6.45, 10.15, am., 2.15, 5.45, pm.

North Danvers " 10, am., 2, 5.40, pm.
Middleton " 9.45, am., 5 15, pm.
North Andover " 9.20, am., 5.05, pm.
Lawrence " 9 15, am., 5, pm.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, APRIL 2d, the
Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 am., and 4 pm. Leave Providence at 8½ a.m., and 4, pm.

Dedham Trains—Leave Boston at 8½ am, 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, am., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5½ pm. Leave Stoughton at 11½ am., and 3½ pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 am., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, am., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.—

On and after Monday, April 23d, 1849, Trains will run as follows:
Express Train.

Leaves Boston at 7½ a.m.; Fitchburgh at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains.
For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.
Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.

Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.
West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains.
From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.
Groton, 8 20 a.m., 12 30 and 5 15 p.m.
Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.
Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 pm. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

NEW YORK AND ERIE RAILROAD. EXTENDED TO OWEGO.

On and after the 1st June, the trains will run as follows, excepting Sundays: For Passengers—Through trains will leave New York for Owego by steamboat, from the Duane-st. pier, at 7 o'clock, A.M. and 5 o'clock, P.M. stopping at Ramapo Station, Chester, Goshen, Middletown, Otisville, Port Jervis and all the way stations west of the last-named place; and will leave Owego on and after the 4th June, at 6 A.M. and 7 P.M.; and Binghamton, on and after the 1st June, at 7 A.M. and 8 P.M. arriving in New York at 7 1/2 P.M. and 8 1/2 A.M. stopping at all the way stations between Owego and Port Jervis; and, east of Port Jervis, at Otisville, Middletown, Goshen, Chester, Ramapo Station and Spring Valley. Way Trains for Port Jervis and all the intermediate stations, will leave New York, by steamboat Thomas Powell, from Duane-st. pier, at 7 1/2 A.M. and 4 P.M.; and will leave Port Jervis at 6 A.M. and 4 P.M. Milk Trains—A train leaves Otisville at 5 1/2 A.M. arriving in New York about 11. The afternoon milk is taken by the train leaving Port Jervis at 4 o'clock P.M. and arriving in New York about midnight. Freight—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Owego every morning at 6 o'clock; and another will leave Port Jervis, as usual, every morning at 8 o'clock, with market freight, &c. JAS P. KIRKWOOD, Superintendent. May 30, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.
Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 4.15, 5.30 pm.
Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.
Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.
Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.
Fordham and William's Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.
Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.
Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.
Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham. A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40 and Morrisiana and Harlem at 8 o'clock.

S. T. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at . . . 7 am.
" " " " . . . 3 pm.
Leaving Montreal at . . . 10 am.
" " " " . . . 6 pm.

THOMAS STEERS, Secretary.
May 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:
Leave Baltimore at . . . 9 am. and 3 1/2 pm.
Arrive at . . . 9 am. and 6 1/2 pm.
Leave York at . . . 5 am. and 3 pm.
Arrive at . . . 12 1/2 pm. & 8 pm.
Leave York for Columbia at . . . 1 1/2 pm. & 8 am.
Leave Columbia for York at . . . 8 am. & 2 pm.

Fare:
Fare to York . . . \$1 50
" Wrightsville . . . 2 00
" Columbia . . . 2 12 1/2
Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg . . . \$9
Or via Lancaster by railroad . . . 10
Through tickets to Harrisburg or Gettysburg . . . 3
In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at . . . 5 1/2 pm.
Returning, leaves Owing's Mills at . . . 7 am.
D. C. H. BORDLEY, Sup't.
Ticket Office, 63 North st.
31 ly

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton, 271 miles.	Between Charleston, and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollowware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight's payable at Dalton.
F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9 1/2 o'clock, am., and 2 1/2 o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
Returning, leave Springfield, at 2 1/2 o'clock, and 9 1/2 o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9 1/2 o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9 1/2 o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:
A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2 1/2 o'clock, pm. Train from Cincinnati.

The 2 1/2 pm., Train from Cincinnati, and 2 1/2 am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia . . . \$1 90
Do do Springfield . . . 2 50
Do do Sandusky City . . . 6 50
Do do Buffalo . . . 10 00
Do do Columbus . . . 4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.
The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburg. Time of arrival at both Cumberland and Baltimore 5 1/2 P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburg \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburg \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5 1/2 P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm.
Leave Baltimore 9 am., and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.
Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.
Through ticket, Philadelphia to Pittsburg, \$12.
" " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.
Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7 1/2 am., 4 and 7 pm.

Newcastle Line.
Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm.
Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.
I. R. TRIMBLE, Gen. Supt.

PHILADELPHIA & READING RAILROAD.
 Passenger Train Arrangement for 1848.
 A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
 The Train from Philadelphia arrives at Reading at 12 18 m.
 The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	53	2.25	and 1.90
" " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.
 Passenger Depot in Philadelphia corner of Broad and Vine streets. Sstf.

CENTRAL RAILROAD—FROM SAVANNAH to Macon. Distance 190 miles.
 This Road is open for the transportation of Passengers & Freight.

Rate of Passage	Freight
On weight goods generally,	50 cts. per hundred
On measurement goods	13 cts. per cubic ft.
On brls. wet (except molasses and oil)	1 50 per barrel.
On brls. dry (except lime)	80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery	40 cts. per hundred
On hhd. and pipes of liquor, not over 120 gallons	\$5 00 per hhd.
On molasses and oil	\$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forward ed free of commission.
THOMAS PURSE,
 Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PAS- senger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads— and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.
 Fare through from Charleston to Montgomery daily \$26 50
 Fare through from Charleston to Huntsville, Decatur and Tuscumbia 22 00
 The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.
 From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.
 On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
 This is the most expeditious route from the east to any of these places.
CHAS. F. M. GARNETT,
 Chief Engineer

PATENT MACHINE MADE HORSE-SHOES.
 The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.
 Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent,
 Troy Iron and Nail Factory, Troy, N. Y.

TO LOCOMOTIVE AND MARINE ENGINE
 Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by
MORRIS, TASKER & MORRIS,
 Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

Norwich Car Factory,
 NORWICH, CONNECTICUT,
 AT the head of navigation on the River Thames, and on the line of the *Norwich & Worcester Railroad*, established for the manufactory of
RAILROAD CARS,
 OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
 ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS TRUCKS, WHEELS & AXLES
 Furnished and fitted at short notice.
 Orders executed with promptness and despatch.
 Any communication addressed to
JAMES D. MOWRY,
General Agent,
 Norwich, Conn.,
 Will meet with immediate attention. 1yb

THE NEWCASTLE MANUFACTURING CO.
 continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.
 The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.
ANDREW C. GRAY,
 President of the Newcastle Manuf. Co.
 445

DEAN, PACKARD & MILLS,
 MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,
 SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
 — ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
 OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished at short notice; also, **STEEL SPRINGS** of various kinds; and
SHAFTING FOR FACTORIES.
 The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
 SPRINGFIELD, MASS.
 1y48

NORRIS' LOCOMOTIVE WORKS,
 SCHENECTADY, N. Y.
THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.
 Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
 Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.
 Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.
 April 11, 1849.

India-rubber for Railroad Cos.
RUBBER SPRINGS—Bearing and Buffer—*Fuler's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.
HORACE H. DAY,
 Warehouse 23 Courtlandt street.
 New York, May 21, 1849.

CAR MANUFACTORY
 CINCINNATI, OHIO.



KECK & DAVENPORT would respectfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
 Cincinnati, Ohio, Oct. 2, 1848. 44tf

Rolling Mills for Sale.
THE MASSACHUSETTS IRON COMPY offer for sale their two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 ft. by 174, including sheds. The two contain 15 double Puddling furnaces, and 9 Heating Furnaces.—There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with, and will be sold at the same time, about 400 000 feet of upland, on which are erected, besides the mills, 4 blocks, containing each 4 brick dwelling houses for workmen: a wooden counting room with dwelling adjoining, a horse stable, and a coal shed 210 feet long by 70 feet wide now containing 2967 chaldrons Pictou coal and 933 tons of pig iron.
 The terms of sale will be made liberal. For further information, apply to B. T. REED, Treasurer, Suffolk Buildings.
 May 17, 1849.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,
 Surviving partner of **STANCLIFFE & DRAPER.**

No 23 Pear street, below Walnut, Philadelphia.
 y1 0 near Third,

AMERICAN RAILROAD JOURNAL
 PUBLISHED BY **J. H. SCHULTZ & CO.**
 NOS. 9 & 10 PRIME'S BUILDINGS,
 (THIRD FLOOR.)
54 WALL STREET,
NEW YORK CITY.

TERMS.—Five Dollars a year, in advance.
RATES OF ADVERTISING:
 One page per annum.....\$125 00
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 Professional notices per annum..... 5
 LETTERS and COMMUNICATIONS this Journal may be directed to the Editor,
HENRY V. POOR, 54 WALL ST

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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SATURDAY, JUNE 16, 1849.

[WHOLE No. 686, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, June 16, 1849.

Iron Ores and the Iron Manufacture of the United States.

MASSACHUSETTS.

Continued from page 355.

Blast Furnaces.—The number of furnaces at present in Berkshire county is seven, and arrangements have been made for building another. They are all provided with hot blast apparatus, and all but one are driven by water power. I will give a short account of each of these establishments, and a table of their operations together with those in the same geological district in the States of New York and Connecticut, after completing a similar account of them.

North Adams Furnace.—This is situated in the village of the same name on the Housatonic river, at the northern termination of the North Adams railroad. It is owned by Messrs. Stephens, Cone, and others; was built in 1846. The furnace is 36 feet high, and about 8 feet diameter across the boshes. Hardly sufficient power is furnished by the river for the blast, and the room for ore yard, etc., about the furnace is rather contracted. Charcoal is supplied from the high hills on the east and west at five and six cents per bushel; the location is a good one for this important item. They have succeeded in making iron here with hot blast for a short time at a consumption of only eighty bushels to the ton—average produce about five tons per day.

The ore comes from various sources—some from the *Kingsley bed* two and a half miles from the furnace has been delivered at \$2 75 per ton. This bed is situated directly in the range of the quartz rock on the east side of the Hoosac river. Immense masses of this rock of great hardness lie on the surface around the bed; among them the strata of ore have been uncovered, and are now seen exposed, dipping steeply to the east and overlaid by horizontal strata of clay. The ore promises to be abundant, but it is highly siliceous resembling what is called in Connecticut "*frost ore*," at the Kent bed, and it can only be used to advantage by mixture with other varieties. For this reason and because of the trouble of draining the bed and of digging the ore among the quartz rocks, the full development of this mine is neglected, and the company now look to more distant sources for their ores.

One of these is at South Adams—the *Anthony bed* so called. The ore here costs one dollar per ton for mining, and probably about \$1 50 more for transportation and *duty* or cost in the mine. Of its quality I am only able to say that it has a better reputation than the ore from the *Kingsley bed*. Other ore comes from the gorge between Dalton and Lanesboro', where directly in the quartz ridge (an unusual position for iron ore) an excellent bed has been opened, which promises to be of great extent. It is traced over many acres of table land, whose surface is covered with loose masses of quartz rock, and with it is found black oxide of manganese pure from iron ore. The quantity is altogether uncertain, but it promises to be great. The iron ore is hauled to the railroad, about one mile and a half distant, and then taken to North Adams. The cost of this ore must be to the company not less than \$3 25 per ton. A portion of their ore goes a still farther distance, the bed being by the side of the Western railroad (of which the North Adams is a branch) about a mile beyond Pittsfield to the west—some 22 miles from the furnace. This ore probably costs delivered about \$3 per ton. The expense of transportation to Boston is \$4; to Troy \$3 per ton.

Cheshire.—Arrangements have been made for building a furnace at Cheshire on the North Adams railroad as soon as the iron business will warrant it at a locality possessing unusual advantages for the supply of ore and charcoal. A bed of ore now known as the *Brown bed*, was worked many years since on the Northwestern side of the village only

three-quarters of a mile from the railroad, which, on being re-opened, has proved to be of considerable extent, great purity, and very conveniently situated for mining. The workings are in a field situated at an elevation of three or four hundred feet above the railroad. To the east the land falls off rapidly, presenting an easy grade for hauling the ore to the proposed site of the furnace on the railroad. To the west it rises higher and higher, the boundary of the ore bed on this side being a high ridge of talcose slate. The position of the bed is marked on the surface by many ancient pits, which are traced over a width of a hundred feet, and about three times as far on a due north and south course. Two shafts sunk on the north extremity of these pits failed to strike any solid layer of ore until at the depth of about 45 feet from the surface. They were principally in the old workings, and then in unproductive clays and ochres. But at this depth layer after layer of ore was penetrated, and on drifting through them, they were found to alternate with the clays and ochres all pursuing a north and south course, and dipping about 45° to the west. The thickness of one of the layers of solid ore penetrated in the level, measured horizontally, was 18 feet, which is reduced to 12·7 feet measured at right angles to the dip. Other layers of less thickness were passed through in the same short tunnel, whose aggregate thickness is about 20 feet. It appears from the little depth attained, that this is but a small portion of the ore that will be found.

The quality of this ore is remarkably good. It is a hematite of great purity, fine grain, and rich chocolate and black colors. Its associates are principally of a talcose nature, derived from the decomposition of the same rock which furnished the ore itself.

About a mile and a half from the railroad towards the east, up the valley of a small stream, is another large deposit of hematite, called the "*King bed*."—It is in the woods along the banks of a little brook, which pursues a northerly course till it unites with the larger stream running west towards the railroad. A high ridge of quartz rock bounds this little brook on the east side, and the loose masses that have fallen from it lie strewed with rocks of hematite in the narrow valley between the ridge of a long knoll parallel with it on the east side. Towards the south the little valley extends with the same features more than half a mile. For about 100 feet in width and 50 rods in length it has been explored carefully by

shallow pits, and this portion seems to be underlaid almost wholly with ore. In one pit, 20 feet in diameter, a bed of ore was struck near the surface, which proved to be about 12 feet thick, resting on blue clay 3 to 4 feet thick; and under this was ore again to the bottom of the pit, about 12 feet more in thickness. The ingress of water prevented the workmen from fully proving this lower stratum.—The position of these strata is more nearly horizontal than those of the Brown bed, and their dip is in the contrary direction—viz: to the east—somewhere about 25°. In all the pits ore was found near the surface in this regular stratiform arrangement. Seams of clay and ochres occur with it, but the ore prevails over all other materials. Its associates are of a siliceous character, quartz in small particles being more or less mixed with the ore; but it is of much purer character, than is often found in such close proximity to extensive ledges of pure quartz, and moreover it will probably prove advantageous, in consideration of its use with the ores of the Brown bed, that the impurities of the one should be siliceous, while those of the other are talcose; ores of these different natures working better together, than do those of the same character. This locality is not so well situated for draining as the other; the brook however will carry off the surplus water, and will be useful for washing the fine ore. A furnace located on the railroad between these beds will be supplied with ores at an average distance of transportation hardly exceeding one mile; and at a cost for mining and hauling safely estimated at \$1.50 per ton. Its advantages for the supply of charcoal from the neighboring hills are also very great, the cost of this item being estimated not to exceed 5 cents per bushel.

With these data and 150 bushels allowed to the ton of iron, the expense of manufacture will stand about thus—

Ore, 2½ tons, at \$150.....	3 75
Charcoal, 150 bush., at 5 cents.....	7 50
Flux, say 25c, Labor, \$2 50.....	2 75
Superintendence, interest and repairs.....	3 00

\$17 00

Lanesboro' Furnace.—In 1847 was built in Lanesboro' by Samuel Smith Esq. of Boston a large furnace 40 feet high and 10 feet across the boshes. Its situation is in the centre of the village, by a small stream, which affords however no water power, so that it has been necessary to put up a steam engine. This is of 50 horse power, intended for two furnaces—should the business of the company warrant the construction of another. About three miles to the southwest from the furnace is the *Sherman ore bed*, which supplies an excellent quality of brown hematite. It lies on the east side of a low ridge of limestone, which dips to the east passing under the ore. The ore bed is traced for 40 or 50 rods along the point of this knoll, and is found to consist of layers of solid ore interstratified with clays and ochres. The quantity seems to be great, but the proportion of the ochres and influx of water render it not the least expensive mine to work. The development of ore here has proved to be very great since the above was written.

The company also own another mine called the *Newton bed*, four and a half miles from the furnace in the same direction. This is situated in a high ridge of micaceous and talcose slates and quartz rock, which closely resemble the gold bearing rocks of the south. The ore is in a heavy bed of some 50 feet in thickness. It consists of varying proportions of ore, clay and ochre; stands nearly vertically in the hill, and pursues the same north and

south course with it. The quality of this ore is different from that of other localities in Berkshire; its color is rather a light brown, texture compact, and it has not the appearance of being a very rich ore. Samples of it were found by A. A. Hayes, Esq., to contain from 40 to 46 per cent. of iron, about 7 per cent moisture, and 25 to 35 per cent. of micaceous rock, as gangue.

The furnace commenced making iron in March 1848 with hot blast, and its yield has been as high as seven tons per day. The North Adams railroad passes up the next valley to the east, and the distance over the ridge to the depot is about a mile and a half. On account of the steep hill the expense of hauling a ton of iron to the railroad cannot be estimated at less than half a dollar, thence to Boston the transportation by railroad is four dollars—to Troy three dollars.

The company own a considerable body of woodland on Saddleback mountain and the neighboring hills, where they have several kilns scattered about for charring the wood. Charcoal costs them delivered from five to six cents per bushel.

Richmond Furnace.—This furnace, built about 20 years since, has been under the direction of Samuel Gates, Esq., agent of the Richmond Iron Company. The company also owns the furnace at Vandeuenville in Great Barrington. The ore is obtained from the bed at West Stockbridge, the right of mining in a part of which is owned by this company, as also by the Lenox Iron Company, the title being held by the Stockbridge Iron Company.

The Richmond ore bed in the town of Richmond also belongs principally to the Richmond Company, but it is not found so profitable to work as the bed at West Stockbridge. It is interesting as being the locality where the mineral "*Gibbsite*," was first discovered, and from which all the specimens have been obtained. For the last few years it has been impossible to find more than thin incrustations of the mineral on the hematite.

The furnace is about one mile from the junction of the Housatonic railroad with the Western railroad, at the "*State Line Depot*," and from one and a half to two miles from the West Stockbridge ore bed. The ore costs about two dollars per ton delivered, as stated to me by John Coffing, Esq., also an agent of the same company. Charcoal is brought down from distances varying from four to fifteen or sixteen miles, and the estimated average cost of this is 6½ or 7 cts. per bushel.

The furnace is hot blast, of the usual size of the Berkshire furnaces, and is stated by Mr. Coffing to make 4½ tons per day. It is on a small branch of the Housatonic river, the fall of which affords too little power for a blast furnace.

Lenox Furnace.—This is owned by the Lenox Iron Company, chartered in 1848, though the works are the oldest of all those in Massachusetts. It is situated on the Housatonic river a mile east of the village of Lenox, and six miles from the West Stockbridge railroad depot. The ore is hauled from the West Stockbridge ore bed, seven miles, at a cost of \$1.40 per ton. Estimating the mining at one dollar, and the value of the ore in the ground at 37½ cents, its cost at the furnace is \$2.77 per ton. The town of Lenox appears to be situated upon limestone and ore, and the furnace has used a considerable quantity of ore taken from this locality, also some from another bed about a mile west of the town; but the ore from neither of these sources proves of so good quality as that from West Stockbridge and is now little used. The position of this ore is on the west side of an out crop of limestone; at one

locality it is found going down vertically against the ends of the limestone strata, which dip away from the bed towards the east. The ore seems to be deposited either in a *vaull* or in what is called in the southern States a limestone sink, or great cavity left by the removal of the stone and sinking of the surface.

Up to the present year the company have been obliged to haul their iron to West Stockbridge, six miles, and over a mountain to the railroad depot. They will now soon have the benefit of railroad transportation directly from the furnace, the road which is in progress from the Housatonic road at Vandeuenville to the Western Railroad at Pittsfield passing up the valley of the Housatonic river and within a few rods of the furnace. Possibly their ores may be brought by the same road, and afforded at a less rate for transportation than is now paid.

Though this furnace is not supplied with ore at the cheapest rates, and its charcoal costs about the same as at the other establishments in the neighboring towns, and, moreover, it is at a greater distance from railroads than the others, it has done a good business, and is in good times a prosperous concern. Its yield is about 5½ tons of pig iron per day.

Mississippi Floods.

MR. EDITOR:—The floods of the Mississippi are matters of such wide concern, that it may not be out of place to bring under the notice of your readers a measure by which I have proposed to prevent the recurrence of these floods. A knowledge of the locality to which my remarks apply, and a varied experience in works of river drainage, during the course of a professional engagement under the Board of Public Works for Ireland, lead me to venture on the consideration of an engineering question so immense in idea as the drainage of the Mississippi. The floods of that river are evils of the first importance to this great country; and as they are not to be paltered with any longer, sinking a pile here, and spreading a barrow of earth in another place, but looked boldly in the face as things to be overcome, I beg leave now with the view of inviting the criticism of my professional brethren throughout the Union, to bring forward thus publicly a measure by which I propose to prevent the recurrence of those same floods.

Before entering on my proposal, I must consider in this letter the two preventative measures which seem to stand most favorably in public opinion in the south—"levees" and "cut offs."

First then, as to levees.—The velocity of a stream increases on the same grade, very nearly as the square root of the depth; and therefore, the impact and friction increasing as the square of the velocity, the depth itself is the measure of the wear and ear on the banks. Now raise the levees of the Mississippi, and you raise the depth of water within them in time of floods; and the consequently increased velocity brings down an increased amount of alluvium, which, falling to the bottom of the duller waters, spreads over it year after year, until the river has re-established its *regime*, that is to say, brought itself back to its former average depth.—Then floods set in anew—up go the levees, and with them up go the waters; and so on, always raising the bed of the river as we raise the top of the levees. Let us inquire in the next place how facts agree with this theory.

The cloaca maxima, an arched sewer some thirty feet high, which discharged the drainage of ancient Rome into the Tiber, is now almost buried below the bed of that river. Is this geological

progress solely? Certainly not; for while the Coliseum maintains its ancient level in reference to the country generally, the foundations of that building, which were drained by this very cloaca maxima, are now filled with water from it. What then, it may be asked, is the cause? The History of the River Po will answer this question.—In the Middle Ages, ignorant men sought to confine that river within embankments. They succeeded in doing so for a time; but the return of the floods after a few years lead to a further piling up of these embankments; and so on, each succeeding course on the embankments keeping out the floods for a season, until the beds of the river and its several tributaries had risen to such a height, that the waters rising with them, reduced their several districts to the condition of mere swamps. In the sixteenth century, fifteen hundred square miles of country were flooded by this river; and at the present moment the water within its levees is higher than the roofs of the houses in Ferrara. Zandrini, one of the fathers of hydraulic philosophy, pronounced leveeing the cause of the altered level of the Po, and in looking for a remedy in the case, proposed a new waste channel to carry off the surplus waters. These facts, therefore, are in exact keeping with my theory.

To sum up my objections to 'levees': if you raise levees along the river, you raise permanently the level of the water; if you raise the level of the water, you increase the danger and devastation of crevasses; and while their maintainance will be a source of progressive taxation on the locality, the substratum is so porous that, holding a head of water above it you will undoubtedly reduce the rich valley of the Mississippi by underground floods, to a pestilential swamp.

'Cut-offs' seem very plausible at first sight; but not quite so much so on a closer examination. This favorite measure contemplates straight cuts from the sea to the source working gradually upwards. The river itself is to execute the work. Now there is no doubt the river is quite equal to the task; but who will give security that an agent so very likely to have a will of its own will execute the work according to the wishes of its employers? Who will undertake to say it will do no more than is necessary—that it will not, like the River Po, alter its course altogether; or like the Zuyder-Zee, spread out its immense volume into a lake? What is to become of the spoil? For every mile of such a cut the river has to carry before it some fifty millions of cubic yards of earth and boulders; and who will pretend to say what proportion will reach the deep sea, what will heap itself up into bars at the mouth what into shoals up-stream? Finding very probably a greater amount of resistance in the deposit along its channel to the sea, may it not take a shorter route, and, bursting into Lake Borgue, swallow New Orleans on its way? What, I say, is to prevent this? The levees? the piles? They would be to the Mississippi as chaff to a hurricane. This proposal is therefore wild, preposterous;—and a new channel for the Mississippi could hardly in even the days of Sesostris or Cheops have become a question of manual labor. But it is urged by the advocates of 'cut-offs': the Mississippi has already made a straight cut across one of its curves with all the docility of a Negro. This will oblige me to look at the matter in another light, and unfortunately in one less popular than could have been wished.

The strata and stream of a river bear to each other a fixed relation; the stream that rushes rapidly over rock, glances perhaps even quickly over gravel, but always sobers down where it enters a for-

mation of clay or marl. This is a law of nature.—Break this equilibrium—increase the rate of flow—and the banks, unable to resist the action of the stream, are borne before it. Every material then has its maximum flow, some bearing twenty miles an hour, some ten miles, some five. Bossuet gives the following expression for the velocity of a stream: Nine-tenths of the square root of the product of the slope in two miles multiplied by the mean hydraulic depth. Now, the cut proposed will lessen the length of the channel by suppose one-third; and the total fall between the extreme points being a constant, the rate of fall will therefore be increased by one-half. But the velocity has been seen to be nine-tenths of a mean-proportional between the mean hydraulic depth and the fall in two miles, and therefore assuming the velocity the same in both channels, the mean hydraulic depth in the new one will be only two-thirds of that in the old. Consequently, the flood level in this new channel will be some forty feet below the top of the levee when we take the velocity as equal; and therefore assuming no increase in the velocity, the consequences of these cut-offs would be, especially in the south, the reduction of the Mississippi valley to an arid waste. But the velocity will not be the same in the proposed channel as it is in the existing one. By increasing the fall one half, let it be assumed that the velocity will be increased one-fourth, raising it from say 6 to 7½ miles an hour. Now the impact of the stream increases as the square of the velocity, and therefore while a steamer going up the Mississippi has to overcome in the existing channel a resistance of only 36, she will have to overcome in the new channel a resistance of 56, that is to say a resistance one-half more than that at present. But this is not all.—The water in the existing channel loses an immense amount of force in overcoming the resistance of elbows and the like; and this amount expresses a motive power which, in the straight cut proposed, acts conjointly with the fall in accelerating the velocity. The velocity arising from these causes will place navigation out of the question. But will the banks resist it? Certainly not; for they are composed of a material that has already been carried away under the existing regime, seeing that the lower valley of the river is merely one great deposit from the upper. The banks will consequently continue to cave in until the bed shall have been filled up to such an extent, that the river will once more discharge itself into the sea over the whole width of its lower valley. It is needless to add any more on this head; and indeed it would have been equally so to have dwelt even so much upon it, did not the advocates of 'cut-offs' bring forward a fact to show cause for their scheme.

In a word then, 'cut-offs' are objectionable on these grounds: either by lowering the Mississippi they reduce its districts to a parched desert; or by increasing the velocity of the water they prevent navigation, and ultimately choking up the bed, spread the river out into a wide lake.

So much on measures recommended for the drainage of the Mississippi. Reserving my own proposal for a second letter, I may assure you here that, considering the question as one of the deepest importance to thousands, I am quite prepared to meet the remarks I invite in a spirit of friendly inquiry, and altogether apart from any weak fondness for my own idea.

I have the honor to be

Your very obedient servant,

M. BUTT HEWSON,

New York, June 5, 1849.

Civil Engineer.

Explosions of Steam Boilers.—No. 2.

On the subject of steam boiler explosions, as upon every other, persons make up their opinions in accordance with what appear to be circumstances of the case. It often unfortunately happens that those persons whose opinions are taken as authority in such a case are not sufficiently acquainted with scientific principles to enable them to judge correctly of the causes at work which occasioned the explosion; and this may probably be correctly attributed to the wide-spread notion among practical engineers, that steam boilers are frequently exploded by means of hydrogen gas. It is much to be regretted, that most scientific men, by their silence on this subject, tacitly countenance the fallacy, while a very few have seemed to admit its bare possibility. A still smaller number have combated it, and treated it in a proper manner. The engineer understands that water is decomposed by coming in contact with heated iron;—that hydrogen is consequently given off, and that this gas is highly inflammable and explosive. Having obtained the knowledge of these facts, and supposing that hydrogen gas, because inflammable, will readily be ignited by coming in contact with metal raised to a red heat, he jumps at once to the conclusion, that by such means, the steam boiler is, or may be, exploded, when highly heated in consequence of deficiency of water. Were it possible, in the first place, to generate a sufficient quantity of hydrogen gas in the interior of steam boilers already full of water, to produce such an effect in case of its ignition, there is, it is believed, no known principle in chemical science, by which this could take place under such circumstances. Certainly, all practical experience is directly opposed to it. Steam, it must be recollected, however high its temperature and elasticity, is but water still, though expanded by heat; and no particle of it can be decomposed, nor its hydrogen liberated, by heat alone. It is believed that no attempt hitherto made to explode or ignite that gas, except in the presence of common air or oxygen, has proved successful. Like all other combustible matter, it requires a supporter of combustion to ignite it. When issuing from a jet into the atmosphere, it is readily inflamed, and rapidly consumed. In a vessel containing a quantity of the gas, and another of atmospheric air, the introduction of a lighted match, or any other flame, produces an instantaneous and violent explosion. But the hydrogen alone will quench the flame of the match, taper, &c. when plunged into it, as quickly as water itself. How then is it possible that, in a steam boiler, the entire capacity of which is filled with steam and water, and crowded to a pressure of perhaps seven or eight atmospheres, the gas should be ignited at all? It cannot be pretended that there is atmospheric air enough present; to cause combustion which shall produce such a tremendous effect as the explosion of the boiler, there can be no free oxygen to promote combustion, for there could have been no more than that liberated by the decomposition of the water from which the hydrogen was produced. And in the very act of that decomposition, as a necessary part of the process, all that oxygen was absorbed by the heated metal. These simple statements are believed to be scientifically correct, and in full accordance with all practical experience, and all known facts. If this be true, then it cannot be true that steam boilers are exploded by the combustion of hydrogen gas.

But, we inquire, in the second place, is it possible to produce a sufficient quantity of hydrogen gas in a steam boiler, to explode the boiler? even ad-

mitting the gas could be ignited? The first hypothesis is, that, the water having subsided below its proper level, the metallic substance of the boiler becomes highly heated, and that then the water injected by means of the supply pump, comes in contact with the heated metal, and a portion of it is decomposed. The question now is, how much of that water can thus come in contact with the heated metal?

Suppose a set composed of six common high-pressure boilers, each thirty feet long, and thirty inches diameter at the water line. The upper surface of the water would then contain four hundred and fifty superficial feet. Again, suppose the metal above the water line to have attained a red heat. It will require the operation of the supply pump one minute to discharge into the boilers about sixteen gallons of water. Thus, in about four seconds of time, these boilers receive one gallon of water, which, instead of being thrown on the heated iron, is thrown directly into the body of water already in the boiler, and having, as above seen, a surface of four hundred and fifty superficial feet. The entire surface is therefore raised just as much as this one gallon of water will raise it by being spread over its whole area, and the entire quantity (sixteen gallons) thrown in in a minute, will raise the surface less than one-sixteenth part of an inch.

It cannot be supposed that under so very slight and gradual an increase of water, such an entirely different state of things should take place, and a sufficient quantity of hydrogen gas be formed to create the instantaneous explosion of the steam boilers. That it is not by any protracted process by which the gas is accumulated in any considerable quantity, is obvious, because a great proportion of steam boiler explosions occur, especially those attributed to low water, immediately on starting the engine, and before time has been allowed to supply even two gallons of water.

C. T. J.

Visit of the Governor and others on the Baltimore and Ohio Railroad.

On Monday, agreeably to previous invitation from the President of the road, Governor Thomas, Dr. Claude, the State Treasurer, Colonel Stansbury, the Mayor of Baltimore, and other invited guests, with several of the Directors, made an excursion over the road for the purpose of examination and to visit the coal region in Allegheny county.

In passing up the road, the attention of the party was called to the various improvements in the location between Baltimore and Monocacy river, 57 miles distant, which have been made from time to time by the company within the last ten years, and some of the most important of which are still in progress. This section of the line, it is known, was the earliest opened and was laid out and constructed in the infancy of the enterprise, when there was no experience anywhere upon the subject. West of the Monocacy, the location having been made with improved knowledge and through a more favorable country, has not needed any amendment. The changes in the bed of the road east of that river have avoided or ameliorated most of the abrupt curvatures along the crooked ravines of the Patapsco and Bush Creek, the former location having been changed in upwards of thirty different points. At two of the most striking of these the company left the train for their closer examination. The first is a tunnel of upwards of 400 feet in length through a bend of the Patapsco river hill, about 26 miles from Baltimore. The rock is granite, and of so firm a texture that no artificial arching will be required, and the perforation will present on that account a bolder and not less pleasing appearance. The second is an excavation some 40 feet in depth through a circuitous neck of land upon Bush Creek, about 53 miles from Baltimore. These several improvements in the bed of the road, together with the reconstruction of upwards of 60 miles of the original track laid upon it, have added, and are still adding,

a largely increased capacity to the work for all the purposes of safe, cheap and comfortable transportation.

At Harper's Ferry, where the company stopped some time for dinner and an examination of the interesting works at that place, the extensive and remarkable viaduct across the Potomac was inspected by them, and much interest shown in its plan, presenting some uncommon features, due to its peculiar position. This bridge has been entirely rebuilt during the last four years, and is believed to be now one of the most permanent structures of the kind in the country. At Martinsburg, opportunity was given to look at the large and substantially built engine house and machine shop at that point, where the company was about to establish their central station between Baltimore and Cumberland.

Upon the remainder of the line to Cumberland, but a passing view was taken of the several objects of interest, among which were the viaducts which had been reconstructed in an improved manner within the last three years, and are now in the best condition.

The general state of the company's works impressed the Board and their guests as highly satisfactory. The railway track is in excellent order, and stores of materials seasoning for repairs, appearing at frequent intervals along the road, gave evidence of a provident care of the future.

The company had an opportunity of inspecting a piece of track near Cumberland, just laid upon a new plan suggested by the Chief Engineer, which promises some important improvements, and is now undergoing the test of experiment. Its simplicity of construction, combining utility and economy, was observed with particular attention by the visitors, and great confidence was felt in its entire success on a more full trial.

The visit to the mines above Cumberland was very gratifying. The train, consisting of three cars having been attached to a six wheel locomotive of 16 tons weight, ascending the grade of 135 feet per mile, at a velocity of from 10 to 15 miles per hour, to the Eckart mines on the National Road, a mile east of Frostburgh, where a hospitable reception was met with from M. O. Davidson, Esq., Engineer and Agent of the Maryland Mining Company. After visiting the mines, into which many of the visitors penetrated for a distance of upwards of a quarter of a mile, they proceeded to Frostburg, where after a handsome entertainment given them by Col. McKaig, the President of the Forestburg Coal Co., they descended to the mines of that company, and after a view of them and of those of Col. Young, in the vicinity, took their seats in a train of the coal cars of that company cleanly swept out for their accommodation, and ran down, without any power than that afforded by the descent, to the Mount Savage Works. Here a couple of hours were profitably and agreeably spent in examining the various works of this extensive property. The works are not at this time in operation, but are undergoing improvements, suggested by the practice of similar establishments elsewhere, and tending to a considerable economy in the manufacture of iron. The attention of the visitors was directed to the very excellent fire brick produced at these works, from a clay procured from their vicinity, and judges of the article who were present, pronounced them to be superior to the famous Stourbridge bricks. The company returned to Cumberland in the evening by the Mount Savage railroad, descending the grade of 100 feet per mile at a speed of about 12 miles per hour.

The arrangements of the depot at Cumberland, particularly the part of it appropriated to the passenger trains, were favorably mentioned; and the general thriving appearance of the town appeared to produce a marked impression, made not the less agreeable by the excavations going on within it upon the line of the new road, on which ground has been broken upon a number of points, one of them conspicuously in view from the present terminus.

The arrival of the party at Cumberland on Monday, was delayed to a late hour by a derangement in the running of the ironage trains, due to a slight accident within a few miles of Cumberland, and a detention in their return to Baltimore was also experienced, by a collision which took place between the special train containing the visitors, and the Frederick passenger train, at about 24 miles from Baltimore, owing to a misunderstanding as to the

place of passing. With the exception of these two circumstances, which did not interfere in any degree with the main objects of the excursion, it was in all respects satisfactory and pleasant, and cannot but tend to happy results.

The Governor expressed high approbation of the condition of the road, and of the importance of its completion, at the earliest possible day, than to which end, he said, the energies of the State and city could not be more usefully directed.—*Patriot*.

Pennsylvania.

The Central Railroad.—Among the subscriptions to the Pennsylvania railroad the Philadelphia Inquirer mentions \$20,000 by the Bank of Pennsylvania, \$20,000 by the Hand-in-Hand Fire Insurance company, and \$15,000 by the Franklin Fire office. The Philadelphia Bank has also agreed largely to augment its subscription.

The returns of the block committees, appointed at the recent railroad meeting to solicit subscriptions to the stock of the Central railroad, show that upwards of six thousand shares had been subscribed, amounting to between \$300,000 and \$400,000.

The work of the road is progressing rapidly towards the Allegheny Mountains. The injury done to the bridge over the Susquehanna by the recent storm, has been repaired, and the whole frame work of the structure will be up in about two weeks. It was all up on Saturday except the spans. The enterprising contractor is pushing the work rapidly to completion.—*Harrisburgh Intel*.

Buffalo and Pennsylvania State Line Railroad.

A preliminary survey of the route of the Buffalo and Pennsylvania State Line railroad is to be made immediately, under the direction of William Wallace the Superintendent of the Buffalo and Attica road. The Buffalo Republic is urging upon the corporation of that city a subscription of \$500,000 to the railroad from Buffalo to Erie. The Buffalonians, and all on the line from that city to Erie, are busy obtaining stock for a railroad between those two points.—*Id*.

Ohio and Pennsylvania Railroad.

Stark County, Ohio, has subscribed \$75,000 to the stock of the Ohio and Pennsylvania railroad.—A public celebration of the commencement of the first twenty miles of the road is to take place on the 4th of July.

New Hampshire.

Cochecho Railroad.

NEW ROUTE TO THE LAKE AND MOUNTAINS.

A cargo of iron for the Cochecho road arrived at Portsmouth, N. H., a few weeks ago. The track, we learn from the Dover Gazette, is now being laid, and the road will be open between Dover and Farmington in a few weeks. A ride of some ten miles by stage from Farmington, carries the traveller to Alton Bay. From that point the little steamer "Lady of the Lake," just launched and to be ready by the middle of June, will convey passengers across the beautiful lake "Winnipisseegee" to Wolfborough, Centre Harbor or Weir's Bridge. Centre Harbor is on the direct route to the White Mountains; and from Weir's Bridge the cars of the Montreal railroad will soon be ready to convey the travelling public to the village of Plymouth on a direct route to the Franconia Notch, 23 miles above Plymouth.

The little "Lady of the Lake" is under the charge of Capt. William Walker, formerly of the Eagle Coffee House, Concord. A trip to the Lake, Red Hill, White Mountains, Franconia Mountains, &c., is made so easy and cheap by this route, that it will doubtless soon become a favorite one. With a railroad connection between Portsmouth and Dover, after the Cochecho road is finished to Weir's Bridge, or even Alton Bay, the summer travel between the lakes and mountains and the sea beaches in the vicinity of Portsmouth will be vastly increased.

Railroad Meeting in Maine.

PHILLIPS, May 15, 1849.

Mr. Noble, the engineer, employed to survey a route for a railroad, from Phillips through Farmington to Bartlett's Corner, in Jay, has this day made his report at a full and interesting meeting of the citizens of the county of Franklin, held at Strong,

of which Col. Theodore Marston, of Phillips, wa Chairman.

The report was favorable, and a determination to obtain a charter at this session of the Legislature was manifested, by the adoption of prompt and energetic measures directed to that end.

In the progress of events, no one is more certain than that the valley of the Sandy river, is sooner or later, to witness the construction of a railroad, favourable towards its source; and there is every reason to believe, that measures to obtain so desirable an end, are already in operation.

Respectfully yours,
M. W. DUTTON, Secretary.

Connecticut and Passumpsic Railroad.

The receipts of this road for April were: Upward freight, \$1,918 21; downward freight, \$1,914 04; passengers, \$3,762 43. Total, \$7,624 71.

Air Line Railroad.

The bill repealing so much of the charter of the New York and Boston railroad company, as authorises a bridge over the Connecticut river at Middletown, has passed both branches of the Legislature of Connecticut. The vote for repeal in the House was 129 to 85—in the Senate 16 to 5.

Rutland and Whitehall Railroad.

The line of the Rutland and Whitehall railroad, 24 miles in length, has all been put under contract to be completed July 1, 1850.

SEVENTY-two loaded freight cars went up the Worcester railroad on Tuesday morning last. The Grafton locomotive walked off with this immense load without flinching in the least. Estimated weight of freight and cars about six hundred tons. This is by far the largest number of cars and the heaviest load ever transported on the road with one engine.—*Prov. Jour.*

Railway Management.

The following remarks in the *Boston Traveller* of last week, were called forth by the failure of the *Norfolk County railroad company*:

Anciently, we heard the proverb, frequently, "as good as the bank," but, some ten years ago, the public came almost to the conclusion that any thing almost was better than the bank. Some banks failed, all were in bad odor. But after a while the public began to examine. It was found that, bad as the banks were, there were some of them that had been honestly and prudently managed. So after the first surprise was over, the good ones resumed their standing, the tainted ones reduced their capitals, or otherwise put their houses in order, and the bad disappeared altogether. Railroads, in our judgment, are now passing through a similar ordeal.—Hitherto their high standing has given facilities for a reckless mismanagement, by unprincipled or inexperienced men, by which innocent and confiding stockholders are injured, the money market embarrassed, and general disappointment and loss to all concerned occasioned.

In this country our railroad experience has been short, and we have much to learn yet in reference, not only to their construction, but their management. The old-fashioned virtues of honesty, integrity, economy, &c., can no more be neglected in their management than in the business of the farmer, mechanic, or manufacturer. That those roads laid out with judgment and constructed with economy, will prove safe and profitable investments in the long run, is not to be doubted. Of this, the progressive growth of the country affords a guarantee. But there are many premature and ill-managed enterprises, that must result disastrously to the parties concerned, and especially will this be the case in respect to companies the direction of which show themselves such models of shrewdness and far-sightedness as have those in the *Norfolk County*.

Galena and Chicago Railroad.

Twelve hundred and twenty-one passengers have been carried on this road during the month of April. The road is now finished twelve miles, or one mile beyond the Des Plaines river. Workmen are busy in building the superstructure and laying the rails. The *Chicago Democrat* says that the acting

director of the road is now at the east on business connected with the road. He is empowered to contract for iron, locomotives, &c., and will do all that can be done under the circumstances, to advance the interest of the enterprise.—*Id.*

American Locomotives.

A treatise with this title is in course of publication by Mr. Emil Reuter, of Reading. The work will be in 16 monthly numbers, at 75 cents each.

A practical treatise on Locomotives has long been wanted, and it is creditable to our city that it should originate here. Mr. Reuter is personally known as the principal draughtsman of the extensive machine-shops of the Reading railroad company, and every facility has been placed in his hands, by those accomplished machinists, Messrs. Kirk & Milholland for making his work what it ought to be. The treatise will contain 42 elaborate drawings, giving the plans and working details of twelve of the best American locomotives from the shops of the principal builders in this country.

America is distinguished for the superiority of her locomotives, and this work will show mechanics how that excellence has been attained. It is, besides, a practical treatise on steam power, and will no doubt soon be in the hands of every machinist. It deserves to be popular, and will be so.—*Berks and Scuykill Journal.*

Superstructure of Railroads.

If there is one subject in the whole range of railway economy more important to the public and to the railway interest than any other, it undoubtedly is, the question as to the best form of superstructure for a road. Originally stone blocks were introduced for the bearings of the rails. These were found so unyielding that the wear of iron caused a gradual supplanting of stone sleepers by wooden ones.—

The crosstie track has been more generally adopted in this country; but recent investigation has induced several engineers to substitute the continuous bearing track in place of the crosstie.

The following interesting statement on this subject, we copy from the latest received number of the *Railway Chronicle*.

At a recent meeting of the Institution of Civil Engineers, in London, May 8, Mr. J. Field, President, in the chair—

A paper was read, describing a kind of permanent way, which had been laid down on the Lancashire and Yorkshire railway, by Mr. Hawkshaw. The principle was that of a bridge rail, weighing 75 lb. per yard, placed upon continuous longitudinal timber bearing, and the novelty consisted in having at each joint a malleable iron plate chair, with a projection on the upper surface, fitting within the interior of the rail, and the flanges, which were 14 inches long, by 8 inches wide, and half an inch in thickness, attached to the rail by rivets in such a manner as to fix them firmly together, and yet to allow for expansion and contraction. The details were simple and complete, and in an extent of twenty miles so laid, over which numerous heavy trains had run daily, at considerable speed, for the last year, only three rivet heads were found to have been knocked off.

May 15.—Mr. J. FIELD in the chair.—The discussion on Mr. Hawkshaw's paper, 'On a longitudinal continuous bearing Permanent Way,' was continued throughout the evening, to the exclusion of every other subject. Some interesting observations were made on the actual destruction of the cast iron chairs and double-headed rails, and the advantages that would result from the more general substitution of continuous longitudinal timber bearings for the present transverse sleepers and cast iron chairs. The gradual ameliorations that had taken place in the forms and strengths of the bridge rails and their various fastenings were discussed; and it was contended that the hollow bridge rail was more durable than any other, that the upper surface was more compressed in rolling, and that the system of connecting the end, whether by riveting to a plate or by bolts and nuts, made a better and more even joint, and therefore produced a more level surface for the engines and carriages to run upon. The duration

of the timber was declared to be such, that a second set of bridge rails had been laid down on the longitudinal timbers, whereas the cross sleepers had never been able to bear that. This, however, it was asserted, arose principally from common timber being used for transverse sleepers—whilst the best kind, well creosoted, was used for the longitudinal bearers. The system of inserting a piece of hard wood between the rail and the main timber, as on the Great Western, was much approved; as was also the plan of side transoms halved into the main timbers, as it enabled a better system of drainage to be employed than had been usual with that kind of permanent way. The new systems tried by Mr. Samuels on the Eastern Counties, and of which several models were exhibited and described, received much commendation, particularly the plan for dispensing with the joint chair and uniting the ends of the rails by two side pieces, or fishes, of cast iron, bolted through and to each other, so as to render that part equal in strength to the body of the rail.—The question of the means of allowing for the contraction and expansion of a line of securely fastened rails was discussed, as was the creeping or advancing motion of rails in the direction of the traffic. The general opinion seemed to be decidedly in favor of the longitudinal bearing, although it was admitted that many of the transverse sleeper railways, for instance, such as had been laid on the plans of Cubitt and of Hawkshaw, were so good that it was not to be presumed they would be removed to make way for the longitudinal system.

York and Cumberland Railroad.

At the late meeting of the stockholders of this company, a report was read by the President, from which we extract the following:

The means of the company may be stated as follows:—

Subscription list.....	\$430,000
Stock taken by contractors.....	\$100,000
	\$530,000

The cost of the road is estimated as follows:—

Contract price.....	\$525,000
Expenses of engineer corps.....	20,000
Salaries and incidentals.....	15,000
Damages.....	30,000
	\$590,000

It will be seen by this exhibit, that it will be necessary, before the work is closed, either by an increase of subscription or some other means, to provide for raising this additional sum of sixty thousand dollars, together with any deficiency caused by a failure in the payments of stock subscription. It is however gratifying to us to say, that we shall without difficulty be able to get along until toward next winter with our present means, and without embarrassment, as the Board rely most implicitly upon the universal good standing of our present stockholders, for such prompt payment of the instalments as will carry us safely through that far.

Gen. Columbus O'Donnell, John Hopkins, Benj. Deford, J. H. Carter and Thomas C. Jenkins were appointed a committee to devise means to raise the additional money required to finish the road.—*Balt. Clipper.*

Portland, Saco and Portsmouth R. R.

At the annual meeting of the Portland, Saco and Portsmouth railroad company, holden at Portland on the 4th inst., the following gentlemen were chosen directors:

Ichabod Goodwin, David A. Neal, C. E. Barrett, Josiah Calef, J. D. Lang, Thos. West, James Hayward, Esqs. And at a subsequent meeting of the board of directors, Ichabod Goodwin, Esq., was chosen President, James Sweetser, Esq., Treasurer, and C. E. Barrett, Esq., Clerk of the Company.

Providence Railroad.

At a meeting of the Stockholders of the Boston and Providence railroad, June 6, Charles H. Warren, Wm. Appleton, George R. Russell, William Amory, Joseph Grennell, Wm. Dwight and John Barstow were chosen Directors. Mr. Dwight is the only new director, and he takes the place of Ignatius Sargent, resigned. A motion to have a supervisory committee of stockholders was voted down.

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Capital stock paid in.	Debts more than surplus.	Ruling grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Atlantic and St. Lawrence	146	...	36	In progress	...	...	...	..	...	...	...	...	78 a 81	
Androscoggin & Kenneb.	55	...	6	In progress	...	...	...	..	...	...	...	...	70	
Albany and Schenectady.	16½	...	16½	\$1,606,196	100,000	...	...	..	...	...	...	1 5-9	69	
Auburn and Rochester...	78	...	78	2,644,520	34,000	...	...	..	175,922	...	...	8	86a87	
Auburn and Syracuse...	26	...	26	1,125,886	43,300	...	...	..	454,721	...	...	2 9-10	79a80	
Attica and Buffalo...	31½	...	31½	821,313	26,000	...	...	..	172,185	...	...	4½	...	
Alleghany Portage...	36	...	36	...	...	...	...	..	150,959	...	...	...	...
Albany and W. Stockb...	38½	...	38½	1,924,701	50,000	...	...	..	...	...	...	...	Leas'd to Western railroad.	
Annapolis and Elkridge.	21	...	21	...	...	...	...	..	...	...	...	...	...
Bangor and Oldtown...	11½	...	11½	...	...	...	...	..	...	...	...	...	...
Boston and Lowell...	25½	1½	27½	2,013,687	73,200	1,800,000	...	10 up, 30 down.	461,339	268,707	192,631	8	118½	
Boston and Maine...	74½	5	79½	3,571,832	45,000	3,249,804	249,715	47½	511,627	264,534	247,893	8½	101a102	
Boston and Worcester...	44½	22	66½	4,960,000	74,700	4,500,000	460,000	40	716,284	406,303	310,080	8½	106a107	
Boston and Providence...	41	6½	47½	3,031,106	63,800	2,893,300	26,878	37½	354,375	183,361	170,013	6½	95	
Bost., Concord and Mont.	90	...	38	In progress	...	...	...	..	...	...	...	...	82a85	
Berkshire...	21	...	21	600,000	28,500	...	...	..	...	...	...	7	...	
Buffalo and Niagara...	22	...	22	250,396	11,500	...	...	..	60,014	...	...	6 1-3	...	
Buffalo and Black Rock.	3	...	3	...	...	...	...	..	...	...	...	...	...
Baltimore and Susqueh'a.	36	...	36	...	...	...	...	..	...	...	...	...	...
Beaver Meadow...	26	...	26	...	...	...	...	..	...	...	...	...	...
Buck Mountain...	...	...	4	...	...	...	...	..	...	...	...	...	...
Baltimore and Ohio...	...	178	...	...	...	...	...	..	...	...	...	...	...
Washington Branch.	...	31	...	13,136,940	61,900	...	...	..	1,468,828	805,530	663,198	...	40 a 41	
Frederick Branch.	...	3	...	...	...	...	...	..	...	...	...	...	...
Calais and Earing...	3	...	3	...	...	...	...	..	...	...	...	...	...
Concord...	34	...	34	...	...	1,350,000	...	..	311,326	180,699	130,639	...	122	
Cheshire...	54	...	54	2,584,143	48,000	1,453,379	1,140,764	60	...	...	...	...	72	
Connecticut and Passump.	115	...	40	...	...	...	...	..	...	...	...	...	85	
Connecticut River...	50	2	52	1,589,184	30,500	1,234,970	426,013	32	165,242	95,658	69,583	8	96½	
Cape Cod Branch...	28	...	28	587,116	20,900	343,000	217,395	40	...	...	...	...	62	
Corning and Blossburgh..	...	...	40	...	...	...	...	..	18,069	...	...	...	...
Cayuga and Susquehanna	29	...	29	...	...	...	...	..	...	...	...	...	...
Camden and Amboy...	61	...	96½	3,200,000	33,000	...	...	..	...	...	...	...	136 a 140	
Trenton Branch.	6½	...	...	...	...	...	...	..	...	...	...	...	...
New Brunswick Br..	29	...	...	...	...	...	...	..	...	...	...	...	...
Columbia...	82	...	82	...	...	...	...	..	...	...	...	...	...
Camden and Woodbury..	9	...	9	...	...	...	...	..	...	...	...	...	...
Cumberland Valley...	...	...	52	...	...	...	...	..	...	...	...	...	...
Carbondale & Honesdale.	26	...	26	...	...	...	...	..	...	...	...	...	...
Chesterfield...	12	...	12	150,000	13,500	...	...	..	...	...	...	...	...
City Point...	9½	...	9½	195,867	15,919	...	...	..	...	...	...	...	...
Central of Georgia...	191	...	191	3,222,289	16,800	...	...	30	516,252	266,450	250,226	...	80	
Central of New Jersey...	63	...	36	...	...	...	...	..	...	...	...	...	...
Dorchester and Milton...	3½	...	3½	114,224	35,100	72,990	41,234	39	...	...	...	...	...
Detroit and Pontiac...	25	...	25	...	...	...	...	..	...	...	...	...	...
Eastern...	54	19½	73½	...	...	...	...	40	...	...	...	8	104a105	
Essex (Salem to Law.)...	22½	...	22½	421,574	18,700	263,746	160,958	55	...	...	...	...	...
Erie and Kalamazoo...	33	...	33	...	...	...	...	..	...	...	...	...	...
Fall River...	42	...	42	1,145,982	27,300	1,050,000	83,177	45	184,344	109,390	74,953	7½	87	
Fitchburgh...	49½	6½	56	2,945,630	52,300	2,735,910	67,504	..	486,265	286,046	200,219	8½	114½	
Franklin...	...	...	22	...	...	...	...	..	...	...	...	...	...
Greenville and Roanoke.	21	...	21	283,917	13,500	...	...	..	...	...	...	...	...
Germantown Branch...	6	...	6	...	...	...	...	..	...	...	...	...	88 a 90	
Gaston and Raleigh...	96	...	96	...	...	...	...	..	...	...	...	...	...
Georgia (Augusta to At'a)	171	...	...	...	...	...	...	40	477,052	267,173	209,879	...	121	
Athens Branch...	39	210	...	...	...	...	...	..	...	...	...	...	...
Harrisburg and Lancaster	37	...	37	...	...	...	...	..	...	...	...	...	88 a 90	
Hartford and New Haven	62	...	62	...	...	...	...	17	...	...	...	...	104 a 105	
Housatonic...	74	...	74	...	...	...	...	..	...	...	...	...	87	
Hudson and Berkshire...	31½	...	31½	818,983	26,500	...	...	..	...	...	...	...	...
Hazleton and Lehigh...	10	...	10	...	...	...	...	..	...	...	...	...	...
Jackson and Brandon...	13	...	13	...	...	...	...	..	...	...	...	...	...
Lexington and W. Camb.	6½	...	6½	252,680	38,900	...	...	55	...	...	...	...	...
Lowell and Lawrence...	12½	...	12½	283,248	22,650	...	...	45	...	...	...	...	85	
Long Island...	98½	...	98½	2,173,646	22,100	...	...	..	...	...	...	...	22½	
Lockport and Niagara...	23	...	23	221,000	9,700	...	...	..	...	...	...	...	...
Lewiston...	3½	...	3½	33,673	10,300	...	...	..	...	...	...	...	...
Lykens Valley...	16	...	16	...	...	...	...	..	...	...	...	...	...
Little Schuylkill...	23	...	23	...	...	...	...	..	...	...	...	...	...
Louisa...	50	...	50	474,137	9,482	...	...	..	...	...	...	...	...
Lexington and Frankfort.	29	...	29	450,000	15,600	...	...	..	...	...	...	...	...
Little Miami...	84	...	84	1,513,402	18,000	...	...	..	...	...	...	...	...
Machiasport...	8	...	8	...	...	...	...	..	...	...	...	...	...
Morris and Essex...	45	...	45	...	...	...	...	80	...	...	...	...	100	
Mauch Chunk and R. Run	36	...	36	...	...	...	...	..	...	...	...	...	...
Mine Hill & Sch. Haven.	25	...	25	...	...	...	...	..	...	...	...	...	136	
Mount Carbon...	7	...	7	
Mt. Carbon & Pt. Carbon	2½	...	2½	
Mill Creek...	6	...	6	
Montgomery & W. Point	67	...	67	

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ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Capital stock paid in.	Debit more than surplus.	Rating grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Madison and Indianapolis	86	...	86	.....	.....	.....	.....	..	.....	.....	.....	.....	110	
Mad River and Lake Erie	102	.....	102	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mansfield and Sandusky.	56	.....	56	\$1,106,121	19,700	.....	.....	..	.....	.....	.....	.....	.....
Michigan Central.....	221	.....	221	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Michigan Southern.....	70	.....	70	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tecumseh Branch.....	10	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Macon and Western.....	101	.....	101	.....	.....	.....	.....	30	.....	.....	.....	.....	45a48½	
Mississippi.....	30	.....	30	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Nashua and Lowell.....	14½	.....	14½	525,063	36,200	525,000	.....	13	169,187	109,599	59,588	10	.....
Northern (Ogdensburg).....	12	.....	12	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
" (Concord to Leb'n.)	69½	.....	69½	2,762,500	34,000	.....	129,977	..	408,455	241,370	167,277	.....	76	
Bristol Branch.....	12½	.....	81½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
N. Bedford and Taunton.....	20	.....	20	499,065	24,990	400,000	.....	40	136,151	96,220	39,225	6	.....
Norfolk County.....	26	.....	26	621,488	23,900	414,256	.....	35	.....	.....	.....	.....	30	
N.Y. & N. Haven (14 mls. Har RR)	62	.....	62	.....	.....	.....	.....	..	.....	.....	.....	.....	86½	
New Haven Canal.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Norwich and Worcester..	59	7	66	2,187,829	33,100	.....	.....	32	218,073	170,297	.....	.....	40½	
New York and Harlem..	80½	.....	80½	3,579,567	44,600	.....	.....	..	.....	.....	.....	.....	56½	
New York and Erie.....	200	.....	200	.....	.....	.....	.....	..	.....	.....	.....	.....	62	
New Jersey.....	29	.....	29	.....	.....	.....	.....	..	.....	.....	.....	.....	108 a 110	
Newcastle & Frenchtown	17	.....	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
N. Orleans and Carrollton	5½	.....	5½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Old Colony.....	37½	7½	45	2,080,903	46,200	1,601,415	683,648	40	227,350	139,592	87,757	6½	78a79	
Oswego and Syracuse.....	41	.....	41	.....	.....	.....	.....	..	.....	.....	.....	.....	6	
Portland, Ports. and Saco.	51	.....	51	1,350,000	26,400	.....	.....	..	.....	.....	.....	.....	96½	
Peterboro' and Shirley..	12	.....	12	208,311	17,300	.....	.....	..	.....	.....	.....	.....	.....
Pittsfield and N. Adams.	18½	.....	18½	447,755	24,000	.....	.....	66	.....	.....	.....	.....	.....
Providence and Worcester	43½	.....	43½	1,873,895	43,000	.....	573,058	26	193,814	83,889	109,954	.....	82½	
Paterson and Hudson R..	16½	.....	16½	.....	.....	.....	.....	..	.....	.....	.....	.....	110a111	
Philadelphia and Trenton	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	10	130 a 140	
Philad. Wilm. and Balt..	97	.....	97	6,173,851	66,000	.....	.....	..	638,142	382,608	.....	.....	54	
Philadelphia City.....	6	.....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philad. Germ. and Nor..	17	.....	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philadelphia and Reading	93	.....	93	.....	.....	.....	.....	..	.....	.....	.....	.....	38½	
Penn Township.....	2	.....	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Petersburg.....	59	.....	59	946,361	16,040	.....	.....	..	163,092	87,131	.....	.....	.....
Ponchartrain.....	4½	.....	4½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Pt. Had., Jack. and Clint.	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rensselaer and Saratoga.	25	.....	25	661,910	26,400	.....	.....	..	.....	.....	.....	.....	.....
Rainapo and Paterson...	15	.....	15	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rich. Fred. and Potomac.	75½	.....	75½	1,474,001	19,459	.....	.....	..	206,858	100,568	.....	.....	.....
Richmond and Petersburg	22	.....	22	877,484	39,886	.....	.....	..	.....	.....	.....	.....	.....
Sullivan.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
South Shore.....	11½	.....	11½	255,748	22,200	135,935	128,075	35	.....	.....	.....	.....	33½	
Stony Brook.....	13	.....	13	246,659	19,000	216,829	29,189	40	.....	.....	.....	.....	.....
Stonington.....	50	.....	50	.....	.....	.....	.....	..	.....	.....	.....	.....	53	
Saratoga and Washington	40	.....	40	948,372	23,700	.....	.....	..	.....	.....	.....	.....	.....
Syracuse and Utica.....	53	.....	53	1,968,036	37,060	.....	.....	..	677,671	.....	.....	.....	120 a 121	
Schenectady and Troy...	20½	.....	20½	659,668	32,100	.....	.....	..	47,025	.....	.....	.....	.....
Saratoga and Schenectady	22	.....	22	331,036	15,000	.....	.....	..	57,018	.....	.....	.....	.....
Summit.....	2	.....	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Schuylkill Valley.....	14	.....	14	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Shamokin.....	22	.....	22	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Swatara.....	4	.....	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Seaboard and Roanoke...	76½	.....	76½	1,519,110	20,460	.....	.....	..	.....	.....	.....	.....	.....
S. Carolina Main Stem } Columbia Branch..... } Camden Branch..... }	136	68½ 37½	242	5,943,678	24,500	.....	.....	..	800,073	303,802	401,271	.....	.....
Sangamon and Morgan...	56	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Taunton Branch.....	11	.....	11	305,085	27,600	250,000	.....	35	168,101	90,485	17,615	.....	.....
Tonawanda.....	43½	.....	43½	974,865	22,400	.....	.....	..	218,301	.....	.....	.....	.....
Troy and Greenbush....	6	.....	6	273,625	45,900	.....	.....	..	60,055	.....	.....	.....	.....
Tuckahoe & James River	4½	.....	4½	69,322	14,999	.....	.....	..	.....	.....	.....	.....	.....
Tallahassee and Port L..	26	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tusculum and Decatur..	44	.....	44	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Utica and Schenectady..	78	.....	78	3,161,688	40,500	.....	.....	..	795,239	.....	.....	10	122a123	
Vermont and Mass.....	69	.....	69	.....	.....	.....	.....	55	.....	.....	.....	.....	43a43½	
Vermont Central.....	121	.....	69	In progress	.....	.....	.....	..	.....	.....	.....	.....	48a48½	
Vicksburg and Clinton..	46	.....	46	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Western.....	117½	.....	117½	7,975,452	67,700	.....	.....	83	1,332,068	.....	.....	8	102a102½	
West Stockbridge.....	2	.....	2	41,515	15,000	.....	.....	..	.....	.....	.....	.....	.....
Worcester and Nashua..	45	.....	45	.....	.....	.....	.....	48	.....	.....	.....	.....	50a51½	
Wrightsv. York & Gettys.	13	.....	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Whitehaven and Wilkes.	20	.....	20	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Williamsport and Elmira	26	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westchester Branch.....	10	.....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
West Feliciana.....	21	.....	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Winchester and Potomac.	32	.....	32	509,415	15,919	.....	.....	..	.....	.....	.....	.....	.....
Wilmington and Weldon	163	.....	163	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westminister Branch.....	10	.....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Western and Atlantic...	100	.....	100	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
York and Maryland Line.	21	.....	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

AMERICAN RAILROAD JOURNAL.

Saturday, June 16, 1849.

Plank Roads.

"A Manuel of the Principles and Practice of Road-making; comprising the Location, Construction, and Improvement of Roads, (common, macadam, pared plank etc.) and Railroads." By W. M. Gillespie, A. M. C. E., Professor of Civil Engineering in Union College. New York: published by A. S. Barnes & Co. 1848. 340 pages, octavo.

It is no little pleasure to meet with a practical work like this, distinguished at the same time for its sound science, its strong good sense, and its eminent usefulness. Its subject is of consequence to every person—to the producer, whose goods are transported to a market; to the consumer, who pays for the transportation; occasionally to him, who for pleasure, health or business is transported himself, whether over the smooth railway and the well macadamised turnpike, or the roughnesses and sloughs of our common roads.

The preface of the work commences with the statement that, "the common roads of the United States are inferior to those of any other civilised country." This is no doubt true, and may be explained from the great extent of territory compared with the amount of population, the want of fixedness of a large part of this population, and the attention directed of late to railroads, causing the common roads to be in a great measure neglected. The system adopted throughout the country of making and repairing the roads by the taxes payable in personal service, directed by overseers replaced every year, is shown in the sixth chapter of this book to be a radical evil, involving of necessity bad work with great waste of the money devoted to this purpose.—To make and keep in order the public roads ought to be as much a trade by itself as the making and repairing of public buildings. Skill and experience are required in this business as in any other, and to entrust to new hands, and these often unpaid, a matter affecting directly the comfort and prosperity of every member of the community, bespeaks an oversight and want of prudence somewhat inconsistent with the Yankee character. The author widely recommends to the Legislatures of the several states a re-modelling of the road law. That money be raised by the towns and placed in the hands of a skilful engineer especially qualified for this business; several small adjoining towns employing the same agent. That he should appoint his deputies, and they hire laborers as required. The engineers and deputies giving their whole attention to this important subject. The County Commissioners of some of our states in part perform the duties which would devolve upon the new officer proposed. But even if well qualified, which is not to be expected of them, they cannot give the matter that attention which is due to it. An engineer of experience is alone capable of determining satisfactorily the kind of road required—the mode in which it shall be built, and of making the most judicious contracts for its construction. Even with the advantage of this admirable treatise on roads as a guide, men of good judgment would want some experience to be familiar with the details of the operation.

A supplement to this work is a little treatise on *Plank Roads*, a subject now attracting much attention in districts where lumber is cheap and the roads interior. They were introduced into Canada, it seems, from Russia, by Lord Sydenham in 1834;—five hundred miles have since been built in the pro-

vince, and as many more in the state of New York since July, 1846. The track recommended is of plank eight feet long and three inches thick, laid across two sleepers, which run with the road, and are a foot wide and four or five inches thick. The plank may be spiked down or not. The bed of the road is raised and well drained, and graded up for turnouts on one side, adding twelve feet to the width occupied by the plank. The planks are finally covered with fine gravel or sand over an inch in thickness. A double track is rarely necessary.—When required, it had better be a separate eight-foot track, than a wide one of 16 feet. "Over a single track near Syracuse, 161,000 teams passed in two years, averaging over 220 teams per day, and during three days 720 passed daily."

The planking of a single track "will require per mile 8x3x5280=126,720 feet; and on sleepers (2) x1x3x5280=31,680 feet; in all 158,400 feet; or, say, 160,000 feet board measure. *Shaping* the road bed and *laying* the sleepers and planking costs from 30 cents to \$1 per rod, according as the line is new, or on an old bed, and the soil easy or hard to work."

"The following estimate gives the extremes of the cost per mile:

Plank—160 M.; 4 to \$10 per M.....	\$640 to \$1,600
Shaping and laying, 30 cts. to \$10	
per rod.....	96 to 320
Gate houses; per mile.....	50 to 150
Engineering and superintendence...	100 to 100
Contingencies.....	100 to 200
	\$986 \$2,370

This is exclusive of extra earth-work, bridges, culverts, &c.

Instances are given of several plank roads in the state of New York which cost with lumber, at \$4 to \$5 20 per M.; from \$1,300 to about \$2,000 per mile.

The durability of the road depends much upon the kind of plank used, amount of travel, &c. The Syracuse and Central Square road, built of hemlock, was worn down an inch by the 161,000 teams. A Canada pine road, travelled two years by 50,000 teams a year, was worn only one-quarter of an inch. The pine roads in Canada last about eight years, varying from seven to twelve. The sooner the plank is worn out, the quicker the road is paid for. One set of sleepers outlasts the planking.

"A Canadian engineer thinks that \$20 per mile would be required the first year to restore the grade when it had settled, to fasten loose planks, &c. For the next five years \$10 per mile, and then there would be some planks to be replaced. The repairs would then increase, so as to amount to a renewal of the surface at the end of four years more, making ten for the age of the road."

"Two horses draw two tons with ease upon them; and on a Canada road of 52 miles always carry 16 barrels of flour. On a level plank road they easily draw four or five tons."

"Upon the first eight miles of the Syracuse Central Square plank road, the tolls during its first two years ending July, 1848, amounted to \$12,900, and the expenses for salaries and repairs to \$1,500; leaving \$11,400 for dividends and rebuilding. This amount of travel has worn the plank down one inch. Another inch could be worn down before a renewal would be necessary; and the road would then have earned \$22,800 above expenses, or \$2,850 per mile."

The tolls established by the New York Plank Road Law, are as follows:—Vehicles drawn by two horses 1½ cents per mile; and half cent for each

additional animal; vehicles drawn by one horse ½ cent per mile; for horse and rider, or led horse 1 cent; for every score of sheep, swine or neat cattle one cent per mile.

We commend this work to the consideration of our friends who have written to us for information on the subject of plank roads. We should be happy to publish more of this subject if we could spare the space.

Minifie's Text Book of Mechanical Drawing.

We are happy to call the attention of our readers to an advertisement of this work in another column. It is recommended by artists and gentlemen who are best qualified among us to judge correctly of its merits, as being the most thorough and complete work of the kind ever published in this country, and as indispensable to those whose calling requires a knowledge of the principles of geometrical drawing or sketching, and as a suitable guide and companion to amateurs in this delightful art. It has received universal commendation from the press, and we believe it fully merits all that has been said in its praise.

Blake's Metallic Fire Proof Paint.

This is certainly a remarkable combination of earthy or mineral substances, by which they seem prepared to serve one of the most useful of purposes. One might be tempted to believe that the mine where it is found was the paint shop in the great laboratory of Nature, and what has now been discovered is what remained after her work of creation was completed. When first taken from the mine, it can be easily reduced by the thumb and finger to the finest powder. A few days exposure gives it the hardness of a stone. The only use of oil in the preparation, is to aid in putting on the paint. It does not depend in any degree on oil for its adhesive qualities. As soon as applied it unites firmly with the grain of the wood. The longer it remains the closer it adheres, and the harder it grows, and becomes as imperious to fire and water as slate itself. To railroad companies it must be invaluable as affording a fire proof coating for the interior of the depots and engine houses, as well as to all who are desirous of making their buildings fire proof, within and without. For a more detailed description, we refer to the advertisement in another column.

Traffic on the English Railroads.

The returns made to the Railway Commissioners for the year ending June 30, 1848, show the aggregate amount of the traffic on the lines in operation, amounting July 1, 1848 to 4,357½ miles, as follows:

	Passengers.	Receipts.	£	s.	d.
First class.....	7,190,779	1,792,533	3	8	
Second class.....	21,690,510	2,352,152	11	5½	
Third class.....	15,241,529	661,038	7	5½	
Parliamentary.....	13,092,489	902,851	1	8½	
Mixed.....	749,763	11,807	4	10	
Total.....	57,965,070	5,720,382	9	1½	
Goods, mails, etc.....		4,213,169	14	5½	
Grand total.....		9,933,552	3	7½	

JUDGE HOPKINSON of Lowell, has been chosen President of the Boston and Worcester Railroad Co. His acceptance of the office will render necessary his resignation as Judge of the Court of Common Pleas.

The Western Railroad Company have declared a semi-annual dividend of 4 per cent., payable in July. The receipts for the first half year ending June 1st, were \$566,000; last year, \$572,000—falling off, \$6,000.

Portable Steam Engines.

We are happy to call the attention of our readers to an advertisement in another column, of C. W. Bentley & Co., of Baltimore, manufacturers of a compact, portable steam engine, which, possessing sufficient power for ordinary purposes, occupies but a very small space, one of six horse power requiring only a space of three feet by six, and requiring no brick work to set them up. In large cities, like New York and Philadelphia, where room is of more value than any thing else, and where scarcely any branch of industry is now carried on without the aid of the steam engine, the above engines are peculiarly adapted to our printing and manufacturing establishments, and possess those recommendations which should introduce them into general use.

Intercourse of Engineers.

A distinguished engineer at the south in a recent note to us says: "I am pleased with the results of your plan of giving the address of Engineers. I have received many valuable documents, which would not otherwise have reached me. I would cheerfully pay a much larger sum rather than have it discontinued."

Another eminent engineer of the south says: "I have already received benefit from placing my name in your list of Engineers, from the receipt of several documents of interest, from various quarters, by its affording the senders my address."

Essex Railroad.

At a meeting of the Stockholders of this Company, holden in Salem Saturday, June 9th, the following gentlemen were chosen Directors, viz: Benjamin Wheatland, Nathaniel B. Mansfield, Stephen C. Phillips, Wm. D. Pickman, of Salem; George Hodges of Andover; Eben Sutton of Danvers; and Francis Freeto of Marblehead.

Hudson River Road.

An election for Directors of the Hudson River road took place on the 11th inst., and resulted in the election of the following gentlemen:

James Boorman, Thomas Leffern, Elisha Peck, John D. Wolfe, Gouverneur Kemble, Jas. Hooker, Japhet Bishop, Moses H. Grinnell, Erastus Corning, Gardner G. Howland, John B. Jervis, Edward Jones and Edwin D. Morgan.

At a subsequent meeting of the board, the following officers were elected: Jas. Boorman, President; Edward Jones, Vice President; John B. Jervis, Chief Engineer; John M. Hopkins, Treasurer; G. B. Butler, Secretary and Legal Agent. Mr. Azariah Flagg was President last year, and Mr. Boorman was Vice President.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mial & Co., and superior to anything of the kind manufactured in England. For sale by G. T. SNOW, 109 Water Street, New York.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md., Offer for sale, Charcoal Pig Iron made at the Calocin (Maryland), and Taylor (Virginia), Furnaces; also best quality Shenandoah Blooms and Boiler Iron from the mills of Edge & Hilles in Delaware, for which establishments they are agents. The productions of the above works can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and Bar Iron, furnished at lowest prices. Agents for Rich & Cos. Fire Proof Salamander Iron Chests. Baltimore, June 14, 1849.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,
1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.
2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.
3d. An introduction to Isometrical drawing, with 4 plates of examples.
4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.
5th. Examples for the projection of shadows.
The whole illustrated with 50 STEEL PLATES.
Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md.
Price \$3, to be had of all the principal booksellers.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Ford, James K.,
New York.

Floyd-Jones, Charles,
New York and Harlem Railroad Extension, Lithgow, Dutchess Co., N. Y.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' - 'Potomac' and other good brands of Pig Iron.

J. T. Hodge,
EAGLE RIVER P. O., LAKE SUPERIOR.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practical ly at a moderate premium.
May 26, 1849.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR
Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.
It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.
Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.
Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

BLAKE'S PATENT FIRE & WEATHER-PROOF PAINT, OR ARTIFICIAL SLATE.

This extraordinary substance is found in a stratum of rock in Sharon, near Akron, Ohio; when taken from the mine it has all the appearance of the finest Indigo, and is no harder than cold tallow; but exposure a few days to the atmosphere turns it to hard slate or stone; it is reduced to a fine powder, mixed with Linseed Oil to the consistency of thick paint, and applied with a brush, and after an exposure a few months to the atmosphere, this coating becomes a perfect slate, protecting whatever covered, from the action of the weather and from fire. It has been found upon analysis by Dr. CHILTON, of the city of New York, to consist of larger proportions of Silica, Alumina, and Black Oxide of Iron and Magnesia, with lesser of Lime and Carbon; the transition therefore [according to the opinion of Drs. Chilton and Locke] from the liquid paint to the



hard slate is accounted for according to nature's own laws, as the oil absorbs and evaporates by the action of the atmosphere, the powerful adhesive attraction incident to the Black Oxide of Iron, binds and attracts not only the particles together, but too the substance covered, so that the longer on, the more powerful the attraction, consequently the harder the slate, and the closer it will adhere to the substance applied; and as it contains a large amount of Alumina and Magnesia, two of the best non-conductors of heat that we have, consequently the coating [after it turns to slate] is indestructible by fire, therefore it protects the wood from the air, and where there is no air there is no blaze or combustion, the wood therefore will char before the coating will give way. It is being used extensively for covering roofs of either shingles, matched boards, tin, zinc,

sheet iron, or thick paper; if your shingles have been on for years you have only to sweep off the moss and lint with a stiff broom and cover with two or three good coats and in a few months you have a perfect slate roof impervious to the action of weather and fire.— There is nothing equal to it for Steamboat and Car decks, for all kinds of iron, as it forms a coating nearly as hard as the iron itself and never cleaves off. It is used upon brick walls both as a paint and cement, it forms a perfect stone coating, through which not a particle of moisture can pass; in fact, it is used

upon anything you wish to protect from fire or weather. The Government has granted a patent to me for the discovery of its application as a fire and weather-proof composition, or artificial slate. The Fair of the American Institute, held last fall, awarded me a Medal, and the Fair of the State of New York a Diploma. The examining committee of the American Institute, of whom Dr. J. R. Chilton was chairman, and had some three years previous analysed it, states in the report, that it was an article superior to anything that had been presented as a weather and fire-

proof covering. I would call the attention of the public to a discovery I made about three years since of an article similar to my black pigment, but instead of its being colored with the black oxide of iron, it is colored with the red, giving to the substance a beautiful Chocolate, the fashionable color of the day, for sides of buildings. It does not become quite as hard as the black, consequently is not quite so good for roofs, but is preferred on account of color for sides. I have a large quantity of this now prepared for market and can supply all demands.

LOOK-OUT FOR FRAUD.

For the last few months there have been scores of individuals engaged in digging, grinding and sending to a distance all kinds of stuff, much of it no better than dirt from the street or clay from any bank, calling it all good fire and weather proof paint, like mine they say, but of a different color. Now it is impossible for them to know anything of the weather proof qualities of this article, as it has not yet been a year since they first commenced digging it, and according to the opinion of Dr. Chilton, of New York., and Dr. Locke, of Cincinnati, this stuff is entirely worthless, as an outside coating, as it has neither the red or the black oxide of iron in it, consequently there can be no cohesive attraction; therefore, as the action of the atmosphere destroys the oil with which it is applied, it will wash or rub off like chalk or whitening. Others are mixing enough of mine to give it the color, and selling it as mine. Others are engaged in digging, grinding and offering for sale precisely the same article I have patented, contending that they have a right to sell it in its powdered state, and that those who buy and mix with the oil to make the compound, must take the responsibility of the infringement of the patent. I therefore will give notice to all, that I have instructed

my agents throughout the country, to take the name and residence of every individual who shall buy and mix with oil and use this compound [except from me or my authorised agents] that I shall hold them to a strict accountability, and shall call upon all such to settle with and pay me for thus infringing upon my patent, and in case they refuse I shall commence suits at law against them. Some of those engaged in this nefarious traffic in order to push their article into market, contend that my patent will not stand; that the substance was known and used for years previous; and a statement to that effect was got up and published by Thomas Caldwell, and signed by several individuals, every one of whom [so far as I know them] was either in the business or preparing to go into it. Now I will not bandy words with a set of men who have not moral honesty sufficient to deter them from stealing, and appropriating to their own use the inventions and discoveries of others, but will insert a statement of all the officers of the township of Sharon, who have no interest further than to state the truth; the which statement, coming as it does from such a source, must be sufficient to convince any unprejudiced mind of the falsity of their position.

We, the officers of the township of Sharon, will state that we do not believe there ever was a Patent more honestly or laboriously earned, or more deservedly granted than the one granted to Mr. Blake for a weather and fire-proof composition or artificial slate, as he pursued his experiments with the most indomitable perseverance, under very discouraging circumstances, as the public had not the least confidence that there could be anything valuable made from the substance. He therefore had to encounter, for years, the jeers and scoffs and ridicule of nearly the whole community; and we do not believe that there is one man in a thousand who would have persevered under all the difficulties. But he has at last triumphed over all obstacles; and we believe there is now but one opinion in awarding to him the merit of this valuable discovery.

GEO. W. CRANE, }
HORACE GIBBS, } Justices of Peace.
JNO. EVERHARD, }
LEWIS C. CHATFIELD, } Trustees
R. W. MILLS, } of
BFNJ. JONES, } Township.
WM. F. EVERETT, } Township Clerk.
ALLEN HOWFS, } Treasurer.

How is it possible to know anything of the lasting qualities of this Counterfeit stuff? as it is not a year since the first was tried. The Public therefore to be safe should purchase from my Agents, and see that every Barrel is marked "Blake's Patent Fire-proof Paint."

This may certify that we have been acquainted with Blake's Patent Fire-proof Paint for some years, and are well assured that it is really what its name indicates—fire-proof. And we will here state to the public that buildings well covered with this paint will be taken at our several offices at lower rates of insurance than those covered with tin or zinc, as we consider it a better fire proof.

H. K. SMITH, Sec. Summit Mutual Fire Ins. Co.
DAN'L S. LEE, Agt. Medina Co. Mutual Ins. Co.
D. B. HADLEY, Agt. Stark Mutual Insurance Co.
Akron, March 5, 1849.

MR. BLAKE—Dear Sir: From the nature of my business, I have had my attention turned for several years to your "Patent Fire-proof Paint," and as a protection against fire to those buildings to which it is thoroughly applied I consider it preferable to tin or zinc.

R. F. CODDING, Agt. Portage & Farmer's Insurance Co.
Copley, April 12, 1849.

We, the undersigned, in our statement to Caldwell, had reference only the grinding or fineness of the different paints, and we will further state that [aside from BLAKE'S PATENT] we feel it a duty we owe to Mr. Blake to purchase of him, as no others had anything to do with Fire-proof Paint, until after Mr. B. by years of

DIRECTIONS. Mix the Powder with Linseed Oil to the consistency of Thick Pain, and apply two or three good coats with a common paint brush, being careful to keep the paint well stirred in the pot while putting on. 100 lbs. will cover the roof of a building 33 feet square, or 1,000 superficial feet.

experiments, had discovered its value and introduced it to the public. R. A. STINEHOUR, }
L. C. NOTT, } Painters.
S. J. MILLER, }
Akron, April 9, 1849.

MR. BLAKE—Dear Sir: I had a building adjoining the wall of my Stone Cotton Factory, the roof of which was covered with your Fire-proof Paint, or Artificial Slate. The factory took fire, and during the progress of its destruction, large numbers of burning shingles and other combustible materials fell upon this roof, so covered, and I expected every moment to see it burst into flames, but after the factory burned down I examined said roof and found it literally covered with coals and cinders, but the fire had not made the least impression upon it. After this test, there certainly can be no doubt as to its fire-proof qualities. SETH C. JONES.
Rochester, N.Y., Sept. 1848.

AMERICAN HOTEL, }
Broadway, New York, Oct. 4, 1848. }
MR. BLAKE—Dear Sir: We last Spring covered the roof of the American with your Fire-proof Paint. We now find that it has become as hard as slate, and the almost constant tread of the servants [who use the top of the house for drying clothes] does not affect it in the

least, and it proves all that it was recommended. TABER & BAGLEY.
We, the undersigned, inhabitants of Sharon, have for the last three years watched with much interest the trial of Blake's Metallic Fire-proof Paint found in this town, we have covered our houses with this fire-proof paint, and can now with confidence state to the public that it is an article of great value; that the sun, rain or frost has no other effect than to turn it to stone, so that we now have to all intents a perfect Slate roof, and so perfectly does it protect the roof from moisture that frequently several gallons of dew runs from the eaves in the morning; and where there is no moisture there is no decay, and the rain that falls from the roof is as pure and clear as the purest Spring water, and from the nature of the article it must be an excellent FIRE PROOF; we therefore can unite in recommending it to the public, and believe that no good building where shingles are used ought to be left unslated.
Wm. Chatfield, Joseph W. Crane, Wm. Ingham, Adam Kooder, Thomas Rhodes.
Shanon, June 1, 1847. —
All Letters and Communications addressed to the Patentee, at No. 3 Broad street, near Wall, New York, or at Akron, Ohio, will meet with prompt attention.
WM. BLAKE,
Patentee of Fire-proof Paint.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, N. J., are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
 Nos. 85 and 87 Broad St.
 New York, June 8, 1849.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

1/2 Round and square, to 6 inches,

1/4 Flat " " " "

Ovals, half-ovals and half-round.

Hoop, band and scroll iron.

Nail plates, superior charcoal Horse shoe,

Iron, sheet and Boiler iron.

Tire iron for locomotives,

Railroad spikes.

Pig iron of superior quality for chilling.

do, for foundry purposes.

For sale by **JOHN F. MACKIE,**

85 & 87 Broad Street,

Sole agent for the New Jersey Iron Co,

June 9, 1849.

American and Foreign Iron.

FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.

100 " 1, " " " "

100 " 2, " " " "

100 " " Forge " "

400 " Wilkesbarre " "

100 " " Roaring Run" Foundry Iron.

300 " Fort " " "

50 " Catocin " " "

250 " Chikiswalungo " " "

50 " "Columbia" "chilling" iron, a very superior article for car wheels.

75 " "Columbia" refined boiler blooms.

30 " 1 x 1/2 Slit iron.

50 " Best Penna. boiler iron.

50 " "Puddled" " "

50 " Bagnall & Sons refined bar iron.

50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

64 South street

New York.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,

68 Broad street.

New York, June 1, 1849.

The above will favorably compare with any other rails.

Railroad Iron.

100 Tons 2 1/2 x 1/2, | 30 Tons Railroad.

All fit to re-lay. For sale cheap by

PETTEE & MANN,

228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc. by

JOHN A. ROEBLING, Civil Engineer,

Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddled Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES Imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York.

February 3, 1849.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N.Y.

ERASTUS CORNING, Albany.

WARREN DELANO, Jr., N.Y.

JOHN M. FORBES, Boston.

ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2 1/2 by 1/2 Flat Bars.

25 Tons of 2 1/2 by 9-16 Flat Bars.

100 Tons No. 1 Gartsberrie.

100 Tons Welsh Forge Pigs.

For Sale by **A. & G. RALSTON & CO.**

No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,

45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street.

March 29, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N.J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to **COOPER & HEWITT, Agents,** 17 Burling Slip, New York.

October 30, 1848.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Br om, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

LAP - WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1/2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works

have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of **Erastus Corning & Co Albany; Merrill & Co., New York; E. Pratt & Br: 1st, Baltimore Md**

Monument Foundry.

A. & W. DENMEAD & SON, Corner of North and Monument Sts.,—Baltimore.

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for

Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing.

Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted.

Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

**P. S. DEVLAN & CO's
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1yl4

TO RAILROAD COMPANIES AND MANUFACTURERS OF Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—*Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Large Pumps.

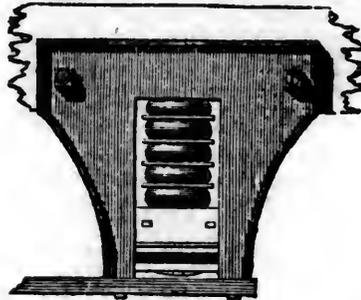
THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849.

6w20

Patent India-rubber Springs.

FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having *tried to make a spring which Mr. Fuller did make and patent.* If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

To Contractors.**OHIO AND PENNSYLVANIA RAILROAD.**

Proposals will be received at the office of the Ohio and Pennsylvania railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburg, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and is easy of access at all points.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburg, May 21, 1849.

Extension of the Baltimore & Ohio Railroad.**TO CONTRACTORS FOR GRADUATION AND MASONRY.**

PROPOSALS are invited for the graduation and masonry of about 25 miles more of this road, beginning at a point some 64 miles west of Cumberland, and ending at a point about 13 miles west of Cheat river, embracing all the sections from No. 64 to No. 88, both inclusive. The graduation on nearly all of these sections will be heavy, and will include one Tunnel of considerable length and three short ones. There will be also two Viaducts of medium size.

Specifications and plans of the work will be ready for distribution to proposers by the 13th of June, prox., at the Company's office in Cumberland. The proposals will be addressed to the undersigned, and will be received up to Saturday, July 7th, inclusive, at the same place. Proposers are earnestly requested to examine the line closely before bidding, and to avail themselves of the ample means of information of the value of the work, which will be furnished them, as contractors from a distance, accustomed to more difficult excavations than those to be met with on this line, will otherwise be likely to make their estimates too high. The best testimonials will be required, and an energetic prosecution of the work will be necessary. The payments will be cash, with the usual reservation of one-fifth till the completion of the contract. By order of the President and Directors.

BENJ. H. LATROBE,
Baltimore, May 31, 1849. Chief Engineer.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article; combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy of fuel are unsurpassed.

All kinds of machinery made to order. Steam engines, Force Pumps, Wrought Iron Pipes, etc., constantly on hand. Baltimore, June 6, 1849.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

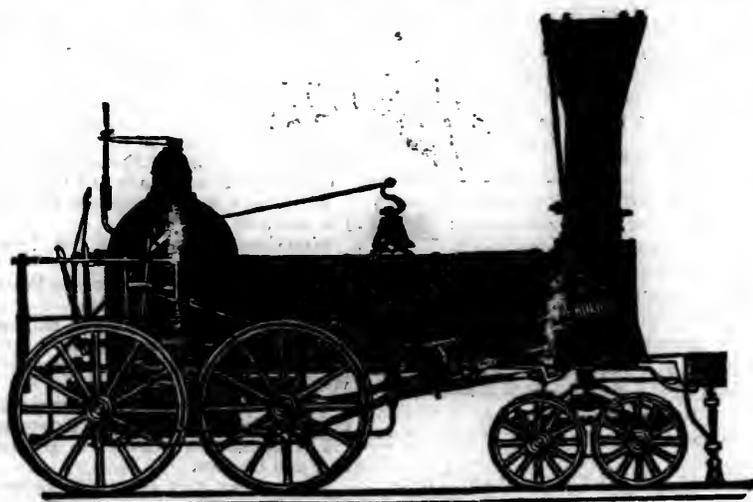
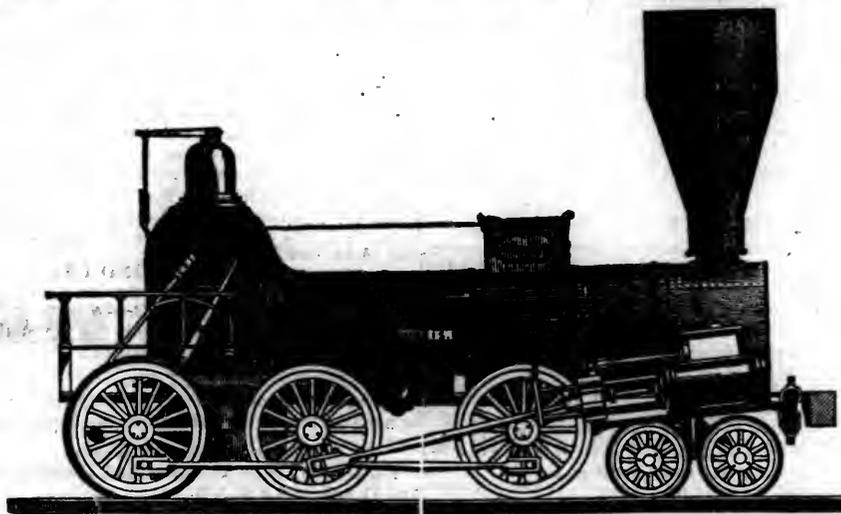
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speed execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

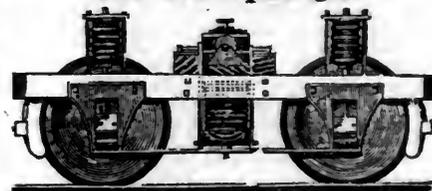
Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevelt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevelt, as will be seen by the following from his paper of June 3, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were used, that we were in an error, and that the springs are introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 99 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

14tf

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 5 1/2 Pine St., New York.

May 12, 1849.

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RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 5 a.m., and 5 p.m. Leave Worcester at 10 1/2 a.m., and 4 1/2 p.m., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 p.m.—At New York from pier No. 18, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 a.m., from Norwich at 9 a.m.

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S. H. P. LEE, Jr., Sup't.

May 20, 1849.

EASTERN RAILROAD. Spring and Summer Arrangement. On and after Thursday, March 15, '49.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10, a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Salem, 7, 10, a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Manchester, 10, a.m., 3, 5 1/2 p.m.
Gloucester, 10, a.m., 3, 5 1/2 p.m.
Newburyport, 7, a.m., 2 1/2, 4 1/2, 7, p.m.
Portsmouth, 7, a.m., 2 1/2, 4 1/2, p.m.
Portland, Me., 7, a.m., 2 1/2, p.m.

And for Boston,

From Portland, 7 1/2, a.m., 3, p.m.
Portsmouth, 7, 9 1/2, a.m., 5 1/2, p.m.
Newburyport, 6, 7 1/2, 10 1/2, a.m., 6, p.m.
Gloucester, 7, a.m., 2, 5 1/2 p.m.
Manchester, 7 1/2, a.m., 2 1/2, 5 1/2 p.m.,
Salem, 7, 8, 9, 10 1/2, 11-40*, a.m., 2 1/2, 6*, 7* p.m.
Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55*, a.m., 3, 6 1/2, 7 1/2, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 6 1/2, 8 1/2, 10 1/2, 11-25, a.m. 2 1/2, 4 1/2, 5 1/2, p.m.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, a.m., 12 1/2, 3 1/2, 5 1/2, 6 1/2, p.m.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 10 1/2, a.m., 3 1/2, 6 1/2 p.m.
Salem for Gloucester at 10 1/2, a.m., 3 1/2, 6 1/2, p.m.
Trains leave Gloucester for Salem at 7, a.m., 2, 5 1/2 p.m.
Manchester for Salem at 7 1/2, a.m., 2 1/2, 5 1/2, p.m.
Freight trains each way daily. Office 17 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6 1/2 a.m. and 2 1/2 p.m.
For Rochester at 6 1/2 a.m., 2 1/2 p.m.
For Great Falls at 6 1/2 a.m., 2 1/2, 4 1/2 p.m.
For Haverhill at 6 1/2 and 12 m., 2, 4, 6 p.m.
For Lawrence at 6 1/2, 9, a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 p.m.
For Reading 6 1/2, 9 a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2* p.m.

Inward trains for Boston
From Portland at 7 1/2 a.m., 3 p.m.
From Rochester at 9 a.m., 4 1/2 p.m.
From Great Falls at 6 1/2, 9 1/2 a.m., 4 1/2 p.m.
From Haverhill at 7, 8 1/2 11 a.m., 3, 5 1/2 p.m.
From Lawrence at 6, 7 1/2, 8 1/2, 11 1/2, a.m., 1 1/2, 3 1/2, 7 p.m.
From Reading at 6 1/2, 7 1/2, 9, a.m., 12 m., 2, 3 1/2, 6, 7 1/2 p.m.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2* p.m.
Leave Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 5 1/2, 6 1/2, p.m.

* On Thursdays, 2 1/2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.
Leave Boston at 7 1/2 a.m., 12 m. and 5 p.m.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.
Leave Boston at 7 5 and 9 1/2 a.m., 2 1/2, 4 1/2 & 6 1/2 p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.
Leave Woburn Centre at 6, 7, 9, 10 a.m., 1 1/2 and 4 1/2 p.m.
Leave Boston at 8, 11 1/2 a.m., 3, 5 1/2 and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7 1/2 a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,
Agent Boston and Lowell Railroad Co.
Boston March 5, 1849. 22tf.

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Thursday, March 15, 1849, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 8, a.m., 12.45, 3.45, 6.30, p.m.
Salem for North Danvers at 8, a.m., 12.45, 3.45, p.m.
Salem for Lawrence, 8, a.m., 3.45, p.m.
" North Andover 8, a.m., 3.45, p.m.
" Middleton 8, a.m., 3.45, p.m.
South Danvers for Salem at 6.45, 10.15, a.m., 2-15, 5.45, p.m.
North Danvers " 10, a.m., 2, 5.40, p.m.
Middleton " 9.45, a.m., 5.15, p.m.
North Andover " 9.20, a.m., 5.05, p.m.
Lawrence " 9.15, a.m., 5, p.m.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, APRIL 2d, the

Trains will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m., and 4 pm. Leave Providence at 8 1/2 a.m., and 4, pm.

Dedham Trains—Leave Boston at 8 1/2 am, 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7, 9 1/2, a.m., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 a.m., and 5 1/2 pm. Leave Stoughton at 11 1/2 a.m., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 a.m., and 6 pm. Leave Providence at 4 a.m., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, a.m., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD. On and after Monday, April 23d, 1849, Trains will run as follows:

Express Train.

Leaves Boston at 7 1/2 a.m.; Fitchburg at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains.

For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.
Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.
Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.
West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains.

From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.
Groton, 8 20 a.m., 12 30 and 5 15 p.m.
Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.
Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 pm. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

PHILADELPHIA & READING RAILROAD.
Passenger Train Arrangement for 1849.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.
The Train from Philadelphia arrives at Reading at 12 18 m.
The Train from Pottsville arrives at Reading at 10 43 am.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and \$3.00
" " Reading	53	2.25	and 1.90
" " Pottsville	34	1.40	and 1.20

Five minutes allowed at Reading, and three at other way stations.
Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

CENTRAL RAILROAD—FROM SAVANNAH
to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers & Freight.

Rate of Passage	\$8 00.	Freight—
On weight goods generally,	50	cts. per hundred
On measurement goods	13	cts. per cubic ft.
On bris. wet (except molasses and oil)	1 50	per barrel.
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On iron in pigs or bars, castings for mills, and unboxed machinery	40	cts. per hundred
On hhd. and pipes of liquor, not over 120 gallons	\$5 00	per hhd.
On molasses and oil	\$6 00	per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.
THOMAS PURSE,
Gen'l Sup't Transportation.

SOUTH CAROLINA RAILROAD.—A PAS-
senger Train runs daily from Charleston, on the

arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculmbia Railroad in N. Alabama.
Fare through from Charleston to Montgomery daily - \$26 50
Fare through from Charleston to Huntsville, Decatur and Tusculmbia 22 00
The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.
JOHN KING, Jr., Agent.

THE WESTERN AND ATLANTIC RAIL-
ROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculmbia, Alabama, and Memphis, Tennessee.
On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.
This is the most expeditious route from the east to any of these places.
CHAS. F. M. GARNETT,
Chief Engineer

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

TO LOCOMOTIVE AND MARINE ENGINE
Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

Norwich Car Factory,
NORWICH, CONNECTICUT,

At the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of

RAILROAD CARS,
OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES
Furnished and fitted at short notice.
Orders executed with promptness and despatch.
Any communication addressed to
JAMES D. MOWRY,
General Agent,
Norwich, Conn.,
Will meet with immediate attention. 1y8

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,
SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and
SHAFTING FOR FACTORIES.
The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

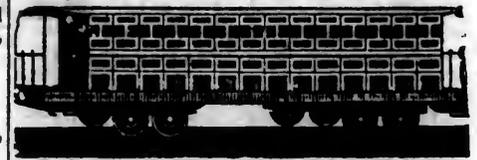
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SCHENECTADY, N. Y.

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Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.
Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.
April 11, 1849.



UPPER CANADA MINING COMPANY.
INCORPORATED BY ACT OF PARLIAMENT.
NOTICE is hereby given, that an ASSESSMENT OF ONE SHILLING AND THREE PENCE PER SHARE has been levied on the STOCK OF THE UPPER CANADA MINING COMPANY—one half thereof, or Seven Pence Halfpenny per share, being payable, at the office of the Company, in Hamilton, or to Messrs. W. & J. CURRIE, Agents, Wall St. New York, on the First Day of April next, and the other half on the First day of July next ensuing. By order,
J. D. BRONDEGAST,
Secretary U. C. M. C.
Hamilton, 24th February, 1849. 12tf

CAR MANUFACTORY
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECT-fully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.
Cincinnati, Ohio, Oct. 2, 1848. 44tf

Rolling Mills for Sale.

THE MASSACHUSETTS IRON COMPY offer for sale their two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 ft. by 174, including sheds. The two contain 15 double Puddling furnaces, and 9 Heating Furnaces.—There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with, and will be sold at the same time, about 400,000 feet of upland, on which are erected, besides the mills, 4 blocks, containing each 4 brick dwelling houses for workmen: a wooden counting room with dwelling adjoining, a horse stable, and a coal shed 210 feet long by 70 feet wide now containing 2967 chaldrons Pictou coal and 933 tons of pig iron.
The terms of sale will be made liberal. For further information, apply to B. T. REED, Treasurer, Suffolk Buildings.
May 17, 1849.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No. 23 Pear street, below Walnut,
y10 near Third, Philadelphia.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
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(THIRD FLOOR,)
54 WALL STREET,
NEW YORK CITY.

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LETTERS and COMMUNICATIONS
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HENRY V. FOOR, 54 WALL ST

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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SECOND QUARTO SERIES, VOL. V., No 25]

SATURDAY, JUNE 23, 1849.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, June 23, 1849.

Iron Ores and the Iron Manufacture of the United States.

MASSACHUSETTS.
Continued from page 370.

Stockbridge Furnaces.—Three miles and a half below the village of Stockbridge, are the two furnaces of the *Stockbridge Iron Company*. They are built on an excellent privilege afforded by the Housatonic river, which falls at this place over a dam 21 feet in height. One of them was built in 1832; the other by C. C. Alger, Esq., in 1846.

As these furnaces, under the skillful management of Mr. Alger, have produced greater results than other furnaces of their size supplied with the same ores, I shall describe them somewhat in detail; and the great extent and importance of the mine which furnishes them with ores, will call for particular notice of it also.

The *West Stockbridge ore bed* lies a mile north-west from the village of this name, and this is about five more from the furnaces. It is principally owned by the *Stockbridge iron company*—the *Lenox* and *Richmond* companies having a right to dig ore in a small portion of it, paying a duty of 37½ cents for every ton of ore removed. It is about half a mile south of the *West Stockbridge railroad*—a short

road of 2½ miles, which connects the Housatonic with the Western and with the Hudson and Berkshire railroads, meeting the two last at the "State line depot." A branch is laid out from the mine down to the W. S. railroad. When this is completed, the ore will go down the Housatonic railroad to Vandeventer and thence by the new road now in progress up the valley of the Housatonic directly past the furnaces. Hitherto the ore has been hauled by teams at an expense of one dollar per ton. By the Hudson and Berkshire railroad it may be carried to the Hudson river a distance of about 32 miles at the same expense, and be there smelted with anthracite.

The ore bed lies along the southeast side of one of the limestone ridges, so common in this region. A gap in the ridge, through which passes the county road, divides the mine at present into two parts.—The one on the north side is called the *Leet-bed*; the one on the south side the *Chauncey Leet-bed*. The workings are fast approaching each other, and will no doubt ultimately meet, proving the continuity of the deposit of ore. Admitting this, the whole extent of the bed, so far as proved, is 124 rods—more than a third of a mile in length. Its extension towards the north is limited with the ridge, the ore ceasing where this abruptly terminates. But against the ridge a deep chasm, commenced in 1826, has been opened 100 feet wide and 70 feet deep. Altogether it may be four or five hundred feet in length. Throughout this space the ore was found in alternating strata with ochres and clays—their materials sometimes confusedly mixed together, and sometimes showing a stratiform structure with a dip of about 45° towards the southeast, conforming to the dip of the limestone. The layers of solid ore occasionally exceed ten feet in thickness; and parallel layers are separated from each other by a few inches or many feet of clays and ochres. The quantity of ore in any given limits cannot be determined, therefore, in this portion of the mine with any accuracy.

The quality of the ore is generally very good—being a pure hematite little mixed with siliceous matters: the talcose character of some of the clays seems to indicate that it may have been derived from talcose slates; but the ore itself is generally free from foreign mixtures. The prevailing variety is of a chocolate brown color passing into black—of porous structure, and from this passing to close compact ore. It contains some manganese, and a bed of tolerably pure plack oxide of manganese of un-

known extent is found a few rods northeast of the great excavation. Phosphoric acid in small quantity is also detected by analysis, but neither this nor the manganese is in sufficient quantity to injure the ore. On the contrary the latter is thought to improve it essentially, not only in aiding to flux the ore, but also in giving to the iron a superior toughness. In two previous numbers of the *Journal* I have given analyses of a specimen of hematite from this mine, and also of the *carbonate of iron*, found in ledges associated with the hematite in the northerly part of the *Leet bed*. This ore, thrown away for many years, in consequence of its light color and stony appearance, was found by Mr. Alger to be exceedingly well adapted to work with the hematites; and it is now highly prized. The quantity is very uncertain; the principal supplies seeming to be limited to the northern parts of the mine.

The large excavation from this point is drained to the depth of ninety feet from the surface by an adit-level of more than a thousand feet in length. This work was projected and executed by Mr. Alger several years since at an expense of over \$3500. A shaft had been sunk below the adit about thirty feet in the same materials as are found above. The ore, however, seems to increase in proportion to the other materials with the depth. Most of the work, fortunately, in this large excavation has been executed without system, and with total disregard to the permanent interest of the mine, and indeed to the safety of the workmen—their good fortune alone having saved them from being buried alive by the occasional slip of large portions of the steep banks. Though no lives have been lost, great quantities of good ore are rendered inaccessible at any expense within their value. At the southern extremity of the *Leet bed*, near the road, a shaft has been sunk to the depth of 100 feet, and levels have been run in different directions through the clays, ochres and ores. A pump worked by the steam engine, 870 feet distant across the road, keeps this portion of the mine dry. From the whole mine on the north side of the road, 130,000 tons of ore have been taken.

The *Chauncey Leet bed*, on the south side the road, extends over some fine meadows, that have been long under cultivation, and whose deep soil concealed the ore below. A shaft was sunk in one of these fields in 1846 by Mr. Alger to the depth of 100 feet, and a steam engine was put up to drain the mine. Excepting a stratum of hematite about six feet thick near the surface little ore was found in this

suat, the ground being clay and ochre. Levels run at different depths struck large bodies of ore, however; and surface excavations to the southwest revealed extensive deposits. At one place it was found in a solid mass near the surface, so that from a shaft 40 feet in diameter and 47 ft deep 4000 tons of good ore were extracted: this is equivalent to one ton to 14½ cubic feet. If perfectly solid, one ton of this ore would occupy about ten cubic feet, its specific gravity being 3.75. At this spot another large excavation is laid out, which promises to be more systematically conducted than the other—the walls being carried down by slopes, and the rubbish all removed to a proper distance. In some parts of this excavation the ore presents a breast of 40' to 80 feet in thickness, dipping from 35° to 45° towards the southeast. Whether the lowest stratum is reached is uncertain. Clays, gravel and ochre here lie between the ore and the limestone: but in the other mine the ore is often found in close contact with this rock. At its southern extremity the limestone ridge flattens away somewhat, the dip of the strata is less, and the ore seems to give out. Whether this may not curve up again and be found occupying a synclinal trough between the limestone and the mica slate ridge which rises on the east side, is a matter to be determined by future operations. Some loose ore, it is said, is found on the slopes of this mica slate hill. But until shafts have been sunk to a much greater depth than any yet projected, there seems to be little prospect of arriving at any clue to the limits of this bed. Already about 30,000 tons have been extracted from these fields, the deepest excavations (excepting the engine-shaft) not reaching below 60 feet from the surface. When examined this spring by Prof. Hall of Albany and myself it seemed safe to us to calculate on 400,000 tons of hematite on the south side the road within the first hundred feet of the surface. The preparations made by Mr. Alger for its removal are such that he can raise at the rate of 1000 tons a week. This is in anticipation of the establishment of anthracite furnaces at Hudson, as well as for the supply of furnaces near the Housatonic road in Connecticut and the Stockbridge furnaces.

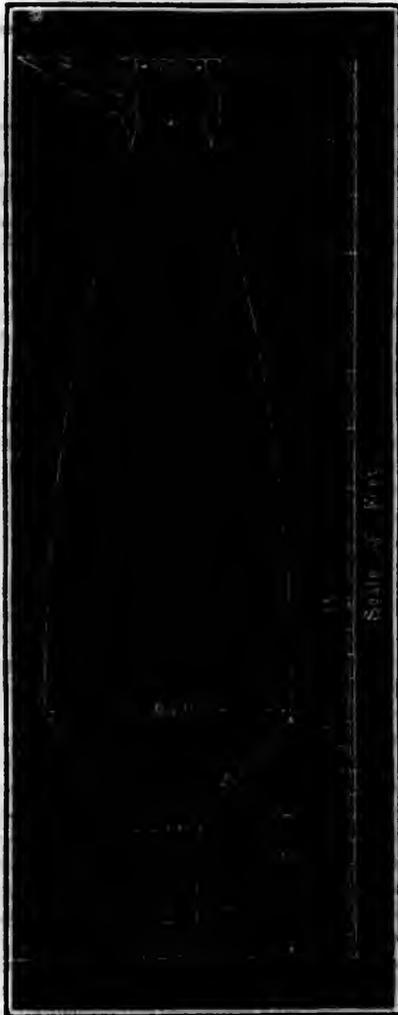
The quality of this hematite is unsurpassed by that from any other mines; and the iron made from it, whether grey pig for foundry purposes, or hard iron for puddling, is found among the very best qualities produced from any ores.

The cost of raising it in the old Leet bed is about a dollar a ton; in the Chauncy Leet bed half this sum will pay for mining, as well as the additional labor of washing the fine ore. A little stream winding through the meadow near the shaft affords water for this purpose, and the engine itself supplies more from the bottom of the mine. This wash-ore is used without roasting, mixed with the roasted lump ore.

The furnaces are in the southwest corner of the town of Stockbridge on the Housatonic river. By an addition made to the old dam in 1847 the whole river is backed nearly half a mile, affording a large reservoir and a fall of 21 feet. The water carried from the plume in an iron pipe comes up under a Scotch motive wheel, causing it to revolve with 100 horse power. The shaft carries at its top a horizontal toothed wheel, which drives two other horizontal wheels, and these, by an upright pin acting as a crank, work the two pistons of the blowing cylinders. These cylinders of cast iron, five feet diameter and four feet stroke, connect with a globe regulator of boiler plate iron strongly riveted together,

whose diameter is 16 feet, and capacity somewhat over 2000 cubic feet. From this the blast pipes lead to the hot air chamber back of the tunnel head; where by the admission of the escape heat the blast is heated, or by its exclusion (by the interception of a gate or valve) the air passes through cold and so down to the tweres.

The furnaces stand side by side—only three feet apart at the base: they have the same casting house, and the top-houses are on one platform—one bridge answering for the two. The new furnace is 38 feet high, and 9½ feet across the boshes; the old one six inches less in each of these dimensions.



The hot air chamber back of the tunnel head of each furnace, is provided with ten tons of iron pipes for heating the blast. They consist in each of two bed pieces a foot in diameter and nine and a half feet long, pierced with fifteen holes for as many uprights to each one. These upright pipes are of oval form, nine inches by three and a half inches—outside measurement—and nine feet long. At the top each pair is connected by another piece in the form of an arch or semicircle. The two bed pieces lie parallel to each other two feet apart and extend through the oven: the two parallel rows of arched pipes stand upon them, and reach to the height of about ten feet. The blast passes in at the end of one of the bed pieces, and then circulates through all the upright pipes; which by their oval form present a large surface to the flame playing between them. Finally the air passes out through the other bed piece at the opposite end from which it entered

—and then by two pipes set between the lining of the furnace and the outer wall is led down to the twere arches, and go into the furnace. This arrangement for keeping the blast at an equable temperature is a plan of Mr. Alger's, for which he has received letters patent. The effect is found to be very decided in increasing the temperature of the blast also, as has been proved by trials made at the tunnel head and the tweres of pipes so arranged and of those brought down in a casing of brick outside the stack. This must certainly be the case when cold winds are allowed to blow upon the brick casing, or rain and snow to fall, melt and evaporate upon it. The pipes are so placed that no inconvenience is caused by their contraction and expansion, and that they can be taken out and replaced without disturbing even the lining. One set has been in use eight years without requiring any attention.

The furnaces for the most part have been blown with hot blast; but iron made with cold blast, whether it is really better or not, bringing a considerably higher price, one of the furnaces is sometimes worked cold to supply this demand, though with less production and greater consumption of stock. The tables below give the details of supplies of ores, fuel, blast, flux, etc., together with the daily production at different times. They are copied from the furnace journal, which has been regularly kept in this form for more than ten years.*

Considerable care is given to the sorting and cleaning of the ore, and the large lump ore is always well roasted; the charges are weighed, not measured, as they are put into the furnace. When the furnace is working hot and the hearth is large, after being worked sometime, the production is then greater, and consists of forge pig—running slow with less blast, the iron is soft grey suitable for the strongest castings. The hearth seldom lasts more than a year. At present one of the furnaces is out of blast, and the other will soon stop until some improvement has taken place in the iron market.

Vandusenville Furnace.—This has been referred to before as belonging to the Richmond iron company. It was built fifteen years since at the village of Vandusenville, a part of Great Barrington, on a branch of the Housatonic, and only a few rods from the Housatonic railroad. John Coffing, Esq., formerly of Salisbury, Conn., has for several years had charge of the establishment, and has carried on a successful business. The ore is brought in wagons from West Stockbridge, a distance of about eight miles, at a cost of \$1 12½ a ton. Adding to this one dollar for mining, and thirty seven cents ore-leave, it stands at the furnace at \$2 50 per ton. Charcoal is estimated to cost \$6 25 per hundred bushels. The furnace makes six tons of hot blast pig-iron daily, with consumption of 150 bushels of charcoal to the ton. Its cost, delivered on the railroad, is from \$19 to \$20; to which when sold are to be added freight, commissions, guaranty, storage, etc.

The whole number of furnaces above described in Massachusetts is seven. Five of these make about 1500 tons each per annum—equal to 7500 tons. The two Stockbridge furnaces, when both run, make at a greater rate than 4500 tons. The capacity then of the Massachusetts furnaces may be estimated at 12,000 tons.

A table containing the cost of ores, fuel, transportation, etc., at these furnaces will be given at the close of the account of the Connecticut furnaces—the table including these also and the hematite furnaces of New York.

* The tables will appear in our next number.

Notes of Travel.

Detroit, June 10, 1819.

In passing from Albany to Buffalo, we were greatly struck by the changes produced along the line of the railroad during the last three years. Every place had made rapid progress in improvement; small towns had grown larger, larger ones had become cities; and cities were more altered than all by the great extent of their improvements. Even the railroad itself, over which we used to think ourselves fortunate to be carried in twenty-four hours, has shared in this spirit of progress, and now transports its passengers in sixteen hours, which is at the average rate of twenty miles an hour. To Utica, the first hundred miles, a double track is laid nearly all the way. This is soon to be completed and extended through to Buffalo. More comfortable cars are placed on the line, particularly for night travel, so that the fatigue of the journey now is little more than of that from Albany to Boston.

On the south, the Erie road steadily progresses westward, and as it goes on, branches are projected interlocking it with the southern line of roads. Before it reaches its western terminus, this terminus will have moved farther along the shores of Lake Erie, and the fine boats, that move on its waters, like those on the Hudson, will soon find they have swift competitors on the land. The change of improvement goes on with constantly accelerated force. Each new road is the trunk from which springs many branches; and here no blight seems yet to have fallen upon them to check their growth.

In this beautiful region of central New York, a new element of prosperity has of late been introduced of little less consequence to its farmers and land owners, than its long line of canals and railroads. There are its plank roads, a notice of which has already appeared in a previous number of the Journal. Though of humble pretensions compared with the iron roads, they promise to be of incalculable benefit to the state. Over one lately finished to Albany, recourse is had to extensive timber districts formerly too remote for their products to be of any value, excepting their bark trade from their trunks for tanning. This stripped off, like the hides of the buffalo and the deer in western prairies, the body was left to rot, too remote for removal. But now a portion of these fine hemlock trees are sawed into planks and laid as a road, it has given a value to wide forests, whose products will no longer be esteemed a mere nuisance to be got rid of by fire and slow decay. No less than seven of these roads are either completed, or are in progress of entering the city of Utica. One of these is eighty miles long, extending into the wild territory of St. Lawrence county. Some of these roads will ere long open a way to more of the wonderfully rich and productive iron mines of this region, an account of which will appear in due time in the pages of the Journal.

Farther west, the rich clayey soil of the limestone lands is quite unsuitable for good roads, and plank roads here being found cheaper than macadamising, they are covering the country. It is not a little strange that with the materials always at hand, and the process so simple, we should never have discovered this use of them; but finally at this late day be indebted to the Russians for their application.—So it is, if we are at times astonished by our progress, we seem nevertheless to be but beginning to learn the uses of things; and a few hundred years hence we shall be looked back upon as only just emerging from the abyss of savage life, which now seems to be so immeasurably behind. How we should prize the gift of a glimpse into that future!

But it is only with the present we now have to do.—To join our feeble strength to that our fellow men to push on the work of progress—to level the mountain and build up the plain—to make the crooked straight and the rough places smooth—to add to the comforts and convenience of all—to bring all men nearer to each other, and develop to their full extent the hidden resources of nature for their use and the glory of Him, who so skilfully provided and arranged them. With this spirit let us watch the work as it goes on, encouraging and aiding our fellow laborers.

With its fertile fields and internal improvements the interior of New York is treading close upon the heels of its neighboring New England States, who could boast of few natural resources but rocks and ice and water power. Its fine soil, its salt wells, its gypsum, its iron mines and its springs have secured to it a rapidly increasing and industrious population; while its boldly projected canal and railroads have made it the principal thoroughfare between the great east and west. Its towns, mostly new, have been planned, laid out, and built up with much uniformity of structure and have consequently escaped those deformities common to the slow growth of more ancient places, whose extent and importance was unforeseen and unprovided for. We were particularly struck with this at Canandaigua, where without any particular object we stopped one night to take the morning train to Buffalo. To our surprise, we found ourselves in a town of extraordinary beauty and freshness. Its houses seemed to have been built simultaneously, and were all surrounded with gardens of shrubbery, all displaying a highly refined taste and ample means for its indulgence. The contrast between the dull walls of the city with its hard pavements, and the fresh grass of the fields and the green foliage of the trees was most striking. There we had left a long and tedious northeasterly storm.—Here the sun sank clear into the west and the moon rose full and bright, sending her clear rays over the neighboring lake and town and fields. For hours we wandered up and down the streets and into the country, enjoying the sweet influence of the scene.

Buffalo, we found, had not been behind the other places in its progress. In the Commercial Advertiser, the reported arrivals from various ports on the lakes above, from Saturday to Monday noon previous, were 13 steamers, 5 propellers, 1 bark, 8 brigs, and 70 schooners, freighted with 200,000 bushels of wheat, 180,000 bushels of corn, and 24,000 barrels of flour, besides other provisions and lumber. By the enterprise of the Boston capitalists, who direct the Michigan Central railroad, the old "combination," that has ruled for years the lake boats, has been broken up, and an independent line of first class steamers is now running between Buffalo and Detroit at prices, against which the combination itself cannot compete. Its fine boats have had their day, and must now take their turn to give way, as many other boats have before them. The railroad company take their passengers directly across from Detroit to Lake Michigan in ten hours, a distance of 218 miles, and thence by another line of their boats to Chicago, 35 miles farther. From Detroit to Chicago by steamboat it is 729 miles;—but as the railroad boats leaving Buffalo in the morning go direct to Detroit, and the other boats stop at the intermediate ports on the south shore, the whole distance by the one route from Buffalo to Chicago is estimated at 518 miles, and by the other 1,056, making a difference of 538 miles, and a saving of time of from 2½ to 3 days in favor of the Michigan Central railroad. The boats of this line leave Buffalo

every morning and evening, and the time of the morning boats is 16 hours, of the others stopping at Erie and Cleveland, 24 hours. On Lake Erie the railroad company have six boats, and on Lake Michigan four.

We were so fortunate as to meet the new boat May Flower, Captain Van Allen, and secure a passage in her to Detroit. Though familiar with the magnificence of our eastern boats, and not unacquainted with the fine boats that have before plied upon these waters, we were not prepared to see one quite equalling the best qualities of all others, and in some respects superior to any thing we have seen elsewhere. She was built the last winter at Detroit by Mr. J. Lupton from New York, J. W. Brooks, Esq., Superintendent of the railroad company, having general charge of her construction. Her mastic timbers are bound together with iron bars, interlaced one with another in such forms as to give greater strength to her frame, than has ever been attained before. Every sick put into her and every bar is of the very best quality;—indeed it seems with every thing on board that the question was not whether this and that will answer, but whether it is the most substantial and excellent of its kind. Her dimensions are—length 220 feet,—35 feet beam—13½ feet hold—extreme width 65 feet on deck. The engine occupies the centre of the boat, and the machinery passes up through the decks breaking the continuity of the long upper saloon, which but for this extends nearly the whole length of the boat.—On its sides are the state rooms, about the middle of the boat in a double row on each side, the berths arranged at starboard, and doors opening at each end of the state rooms, which stand in single row. Twenty-five stern rooms in the after saloon are furnished in the perfection of neatness and good taste as quite spacious bed rooms, with bedsteads instead of berths. The whole number of state rooms on the upper deck is 85;—all are provided with hydrants for draining water and escape pipes for conveying it off, a convenience we have not seen in other boats. On the main deck is a smaller saloon aft with six spacious elegantly furnished chambers, called bridal chambers, on each side. We had not the felicity of occupying one of these. Under this is another cabin with 150 berths, and aft of this a sort of nursery room, furnished with baby jumpers, cradles and such things, with which we do not profess much acquaintance, and in fact from this being associated with sundry disagreeable sounds, we think good judgment has been shown in locating the repository of these babies no doubt the same good judgment has provided thick double walls between this room and the 150 berths of the lower cabin. Nor have the accommodations for the steerage passengers forward been neglected. Their cabin is spacious and well provided with beds, well lighted and well ventilated. Rooms for a variety of purposes are found along the main deck, each department, whether of cooking, of baggage, of lamp, of porters, having its separate quarters. There is even a room for the carpenters, one or more being attached to the boat, and constantly employed on her trip.

The engine was built at the West Point Foundry, and was put up by Messrs. Hogg & Delamater, of New York. The steam cylinder is 72 inches diameter—length of stroke 11 feet. The wheel is 36 feet diameter, and its buckets 11 feet long. There are 3 boilers 9½ feet diameter and 30 feet long, weighing over 65 tons. This heavy machinery works with great smoothness and power, propelling the boat with greater speed than any other boat on the lake. In a late trip she made the distance

from Buffalo to Long Point, 75 miles, in 3 hours and 27 minutes, which is at the rate of 22 per hour.

All her equipments, like those described, are of the best that could be had; "rich but not gaudy" seems to have been the rule in furnishing the boat; and a delicate taste moreover is seen in the fresh flowers, placed here and there, pleasing the sight and the smell even in the midst of the rich vivands that bountifully set forth the table. In the engine room even they were seen around the engineer as he reclined on a luxurious sofa, and one of the brakes of the engine carried a beautiful nosegay up and down, till it drooped and faded. But who will attempt a description of the luxuries of the table, of the perfect cooking and the variety of excellent things? Such provision is altogether new on steamboats, and at hotels is only to be found at Warren's. The desert even he might not have disowned. If this fare be continued, we should not be surprised at its giving a kind of popularity new to steamboats, and adding not a little to their patronage.

The boat, we suppose, was named for the May Flower of 1620—not certainly for their resemblance in convenience and comforts—perhaps because each is employed in transporting emigrants to a western shore. A painting hangs in the saloon representing the landing of the Pilgrims, on what poets and painters will persist was "a rock-bound shore;" but which all who have seen it know was a sandy beach with a few scattered boulders, on one of which our Pilgrim Fathers stepped from their boat. To one who grew up in sight of the rock, these representations, though often firm and fanciful, seem like caricatures of the fair harbor and smooth shores of Plymouth.

Such is the beautiful boat it was our good fortune to meet in these western waters. May she long grace them; and if the May Flower be ever surpassed, as she has surpassed others, her rival certainly will be a May Queen of wonderful perfections.

It was our intention to have added some account of the depot of the Michigan Central railroad, that has sprung up along the bank of the river at Detroit, covering a length of the sixth of a mile with its spacious and well planned buildings. The freight depot, a fine brick building, has a front of 800 feet along the dock. All these improvements have quietly gone on under the management of Mr. Brooks, and reflect great credit upon his judgment and skill as well as upon the company for their enterprise.—But these remarks have already extended over too much space; and we reserve an account of the road until we pass over it, as we may on our return from the upper lakes. H.

Mechanics.

No. 2.

One hundred years since, had any one predicted the improvements which have been made in mechanics within that period, he would have been considered insane; and even scientific men at that time, would have treated the notion as the dreamy offspring of a visionary brain. It is true that the power of steam had been discovered prior to that period, and even the steam engines of Savery and Newcomen had been invented; but it was not till the year 1769, that Watt finished his invention of the steam engine as it now is in all its essential principles, and thus presented to the world the noblest and most valuable machine ever produced by human genius. The scientific world had speculated for centuries on the subject of steam, and, while apparently amusing themselves with unimportant experiments with it, seemed to entertain a notion that it might be applied to some useful purpose. But they

advanced not a step towards the discovery, till Savery, and then Newcomen, took up the subject, and produced their imperfect machines. It was left to Watt, a practical mechanic, and a self-made man, to perfect the discovery; and almost every subsequent improvement on it, up to this time, owes its origin to a like source.

It is only one hundred and eleven years since the first patent was enrolled in Great Britain, for spinning cotton by machinery. This machinery was extremely defective, and soon laid aside; and it was not till 1767, that Arkwright's mode of spinning which still continues in operation, with some modifications, was brought into use. Arkwright was a barber, and owed little to scientific training. The cylinder card, an approach to that now used, was invented at about the same period, and the mule about the year 1775. The first successful attempt at the introduction of the power loom, after repeated failures, was made in 1803, the dresser having been previously invented, though in an imperfect state.

Now contemplate the enormous extent and importance of the cotton manufactures in Europe and the United States. Think of the millions of wealth annually created, the multitudes of persons employed, the great and innumerable public improvements which have sprung from their introduction. All these are the growth of less than a century, produced by that all prolific agent, mechanical science, aided by genius and industry. Since the introduction of the above inventions, the work of improvement has constantly advanced. There is at the present day, scarcely a machine in use in the cotton factory, which dates back to the period alluded to, but has undergone so many changes to the better, that it scarcely resembles its original self, while many new and important ones have been introduced. The results have been, much saving in labor, increase of product, improvement in the quality of the manufactured fabric, and great reduction in prices. On these subjects, however, we shall speak more particularly, and at large, in another place.

Reader, if you are fond of the mechanic arts, and if your recollection can carry you back some thirty or thirty-five years, just make a pilgrimage among the workshops of our modern mechanics, and observe and compare the present with the past. You have seen men working for days, perhaps weeks, with hammers, chisels and files, to produce a smooth surface, imperfect at last, on a piece of cast iron. Who ever then thought of planing such a body? See, now, the workman, with arms folded, looking on, watching the movements of the modern machine, which, in a comparatively short space of time, and without the aid of human hands, performs the work in a manner that hands, hammers, chisels, and files, could never equal. There are the turning engine, the screw cutting engine, the engine for cutting gearing, the power punch, the machine for planing boards and planks, the machine for turning shoe lasts and gun stocks; in short, there is an indefinite, we had almost said infinite, host of machines of modern invention, most of them not yet thirty years in use which seems almost to have sprung up by magic of which former generations never dreamed, and which have effected the most astonishing changes in almost every mechanical operation. For all these things—for the vast improvements that have resulted from them in the productions of the mechanic arts, the relief they afford to the physical powers of the operative, the reduction they make in the cost of almost every necessary or useful manufactured article, and for the vast wealth

thereby created, the world is indebted, almost entirely to mechanical genius or the practical mechanic, who, by constant practice and observation, learns the defects of one machine, and the want of another, and sets about the work of improving the defective, and creating a new one to supply a deficiency. It is in this way that most, if not all, the really important mechanical inventions of the present generation have sprung into being. I propose to speak more of this hereafter. C. T. J.

Mississippi Floods.

MR. EDITOR:—The ground I take in considering the question of the Mississippi floods is this: Firstly, that the two measures proposed to effect the drainage are, as shown in last week's letter, the one a mere of temporary result, the other a preventative of impossible application, and both either mediately or immediately destructive to the very interests they pretend to serve: Secondly, that the health and prosperity of the Southern States of the Union demand at any cost a bold comprehensive measure for the permanent prevention of these pestilential and ruinous inundations.

The Red river, watering an area that forms a very considerable item in the whole basin is a tributary to the Mississippi. At the point of junction the latter, laboring to rid itself of the accession, begins to throw out on each side of its course auxiliary channels of discharge. The incapacity to pass off the additional volume is further seen in the fact that the Red river pent up by the back-water of the Mississippi endeavors to discharge itself into the sea by other outlets, Bayou Roberts, Bayou Bocuf, &c. At the south of the Red the Atchafalaya jets from the extreme point of a very remarkable bend in the Mississippi, and following a course that, in the same straight line with the Red, forms a tangent to his bend flows into Atchafalaya Bay. The physical features of this junction of these three rivers, so far as these features can be learned from a map, make it probable that the Red river has not been always tributary to the Mississippi, and this probability is said by a man of high scientific attainments in this city to be still farther sustained by geological evidence. The Red river is the key of the drainage of the Mississippi.

Bayou La Fourche taps the Mississippi at a point a little above Donaldsonville. This has been very much reduced in its discharge in consequence of works by which its issue from the Mississippi had been stopped by the American Army in 1814. The legislature of Louisiana, whatever may have been their ground of objection, have rejected more than one application to clear this Bayou. The Ibberville river, or as it is sometimes called the Bayou Manchac, which emptied itself into the sea through Lake Pontchartrain, had also tapped the river at a point some ten miles below Baton Rouge until the military operations previous to the battle of New Orleans obliged General Jackson to cut off the communication. The Ibberville river has in consequence ceased since that time to be a channel of discharge from the Mississippi. In connection with the damming of these two taps, the Ibberville river on the one side and the Bayou La Fourche on the other, though I am not in a position to state any other particular bearing on the result, it may, however, help our views in the case to remark that the highest flood ever known in the Mississippi valley occurred in about eighteen months after the construction of the dams—in the summer of 1816.

The cause of floods is of course a disproportion at periods of maximum supply between the capacity of a river and the area of its basin. The preven-

tion of them lies consequently in reducing these conditions to their proper relation, and this may be effected in some cases by lessening the area of supply, in others by increasing the capacity of discharge.

The measure I propose for effecting the drainage of the lower valley of the Mississippi is this: First, in order to lessen the rain-basin I would direct the Red river to its ancient bed, if an engineering examination of the ground should not lead to some strong practical objection. Secondly, with the view of increasing the capacity of discharge, I would remove all obstructions along Bayou La Fourche, and carry out such other works as may be necessary within the proper limits of outlay, to make the channel draw off the greatest possible quantity from the volume of the Mississippi; I would open up and improve in the same way the Ibberville river, now useless, and if all these measures should be found, on careful survey, either injudicious or insufficient, I would make a new cut of the necessary section from a point above New Orleans into Lake Ponchartrain.

The diverting of the Red river will I think prevent of itself any floods in the Mississippi. This may be effected without placing any obstacle whatever to navigation as it exists, and at the same time be made the means of improving the drainage of the country along its course from the junction with the Mississippi to Atchafalaya Bay. Turning the Red river will lower the level of the Mississippi four miles above the present junction, and draining the whole valley of that river from the latter point to the sea, the good effects will extend over a greater space, and consequently by increasing the area of benefit diminish the pressure of cost.

The improvements proposed to be made in Bayou La Fourche while giving greater facilities to navigation may be made to effect a proper drainage of its own district, and the same may be said of the Ibberville river which will be raised by the works recommended to the condition of a navigable water-course. The introduction of this outlet from the Mississippi is no innovation on Lake Ponchartrain, seeing that at present the course of nature in the case is merely suspended. But the new channel from the Mississippi to the lake is the part of the scheme most likely to meet objection, and I had, therefore better consider here two objections urged against it by an advocate of levees: First, in reference to the Mississippi, that lowering the flood-level will lead to the formation of shoals and bars. Second, in reference to Lake Ponchartrain, that connecting it with the Mississippi will flood the surrounding country, and by accumulations of deposit destroy its navigation.

In the first place let us enquire whether the waste course I have suggested will cause the Mississippi to shoal up. The Bayou La Fourche has continued to stand for centuries in precisely the same relation to the Mississippi without causing any such consequence. The whole surplus waters of the Nile were impounded year after year for centuries in Lake Meoris, and yet the feeder that supplied the lake, tho' drawing off this immense quantity 4 or 5 months produced no injurious effect on the condition of the river. The Leak, which discharges a large proportion of the waters of the Rhine into the River Meuse is the identical Fossa Corbulonis of the Romans, an artificial channel cut for military purposes by Corbulon, and yet though it has been tapping that river for centuries, we find no shoaling up of the Rhine placed to its account. These, therefore, prove that within certain limits the waters of a river may be diverted without injury to the

principal channel. The waste-course I propose is addressed solely to an extraordinary freshet, and is the mere prevention of an extraordinary freshet interfering in no wise with the general conditions under which the river has maintained itself since creation. To say that drawing off any of the water will effect the bed of the river were to say these things: that if the river overflow it will shoal up; that therefore higher levees are necessary to prevent shoaling-up; and that the great agent of progressive geography, namely high floods, is after all the best conservator of existing geography.

A water-course is the result of a certain combination of natural causes, the general relation between these causes or in other words the general conditions of the water-course, establishing what engineers call its regime. Now I should be very slow to suggest an alteration of this balance, fixed by nature, but in speaking of the surplus waters of the Mississippi, I regard extraordinary freshets not as the rule, but as the exception. The preservation of the established regime is necessary to the maintenance of the channel, and therefore unusual floods often altering materially the depth and width, the direction, are disturbing causes and so far I say in preventing the recurrence of these floods we rather avert than incur a danger.—Again, the maxim of all experience in hydraulic engineering is simply this: Follow nature. Now we have seen the superabundant water of the Mississippi leaping upon the levees, threatening to overflow the flats, and calling out plainly enough that if an outlet were not selected for it would take the matter into its own hands. Has it not carried out its threat to the letter? Therefore I say it is perfectly clear that in giving the surplus waters of the Mississippi vent through such a cut as I propose we merely give physical expression (if I may speak so) to the wants and wishes of nature. I may add to this argument the evidence of my own experience. Years of my life have been spent in the closest professional observation of rivers, and I feel therefore that to the mind of any engineer who has of course been taught by his practice to look closely at nature—to feel what is in keeping with her will, these brief arguments support my suggestion fully, so far as it effects the navigation of the Mississippi.

2d. Will the cut I have suggested injure the navigation or the drainage of Lake Ponchartrain? In the first place will Lake Ponchartrain shoal up? It is necessary only to refer this question to the countless instances in which rivers charged with all their deposit have emptied themselves into lakes since the beginning of time. All lakes have a tendency to fill up with disintegrated matter, whether they do or do not receive rivers, and indeed the introduction of a water-course into a lake would seem a preventative to this, seeing that the moving volume by what is called the lateral communication or motion in fluids, sets the whole body of the otherwise dull lake moving more or less briskly with its deposit through the outlet. The lateral communication—the rush occasioned in a body of still water by the introduction of a running stream through it, is so very great that M. Venturi has applied it with success in draining, as Dr. Brewster says, "by means of a fall of water without the help of machine a piece of ground, even though the ground should lie on a lower level than the established current below the fall." Besides the cut I propose will bring into Ponchartrain at the most but some few feet vertically of the surface water of the Mississippi, and every one knows that while fluid motion pushes deposit forward gravi-

ty draws it downwards, the large and heavy matter rolling along the bottom while the particles moving along the top are small and light. Therefore the cut I propose does not admit into Ponchartrain water from the Mississippi charged with deposit, but admits it in pretty much the same condition as if this deposit had been strained off.—Further, if it should be found necessary or judicious, the mechanical arrangement of the cut may be made to prevent any deposit whatever from passing over even the first regulating weir.

In the next place the effect of my cut—a channel of entrance—on the level of Lake Ponchartrain is regulated by of course the relation of that channel to the channel of issue. But I am not in a position to state dimensions for this cut, seeing that these depend on the capabilities of the Bayou La Fourche, the Ibberville river and all the other outlets tapping the Mississippi; besides, in the event of the turning of the Red river being found practicable, this cut into Ponchartrain will most likely be found unnecessary. This objection, therefore, cannot be decided either way without further particulars. The maximum height of the water, the declivity of the borders, the plan-line of the maximum flood, the section and grade of the debouching channel, the high-tide level of Lake Borgne, are all still necessary to show whether Lake Ponchartrain will admit of an increase of head. If injury to property should follow from raising the level of Lake Ponchartrain, the question will become, as in morals, one of choice between a certain amount of evil and a certain amount of good.

In stating my views on the Mississippi I have been obliged, in the absence of any engineering particulars of its channel or district, to speak more loosely than could have been wished; and as this has deprived my remarks of the point and force of things defined, I beg leave to urge here the advantages to the Southern and Western States of a careful topographical survey throughout all its ramifications of the River Mississippi. Hoping that I may have done something in my first letter towards forming correct views as to the question of 'levees' and 'cut-offs,' and that in this I may have succeeded as I believe, I have, in pointing out the true measure of the prevention of a great draw-back on the progress of the Mississippi valley.

I have the honor to be,
your very obedient servant
M. BUTT HEWSON, Civil Engineer.

Milwaukie--Progress.

In the fall of 1835, a passenger on board a schooner, freighted with lumber, was landed at Milwaukie. It was a beautiful spot of earth, but its name was then "unwritten" upon maps. With the exception of Indians, Solomon Juneau was the only permanent resident of the place. He was an Indian trader, an enterprising, benevolent and most hospitable man, and has since been Mayor and Postmaster of the city which he planned.

There were two or three log cabins, the country round wild yet lovely, and in company with sixteen others, we slept upon some loose boards in the first (then unfinished) frame building in Milwaukie.

This spot, then far beyond the borders of civilization, is now a flourishing city of some 16,000 people; the territory of Wisconsin, then of recent geographical existence, is now a State with its Senators and Representatives in Congress. This personal reminiscence was suggested by the notice of the erection of a splendid Hotel in that young city, the dimensions of which will be 120 feet square, five stories high, the dining room to 65 by 35 feet; to contain 157 apartments, every one of which will be provided with one or more ventilation flues, and in this respect will be superior to any public house in the United States.—*Cincinnati Gazette.*

AMERICAN RAILROAD JOURNAL.

Saturday, June 23, 1849.

American Railroad Journal
AND
MINING JOURNAL
UNITED.

An arrangement has been completed by which the American Railroad Journal and the Mining Journal and American Railroad Gazette have been united, and the subscription and advertising list of the Mining Journal has been transferred to the Railroad Journal. The Railroad Journal will be forwarded to all the subscribers to the Mining Journal, unless they signify their desire to have the paper discontinued, in which case they are requested to return to us the numbers forwarded. Those gentlemen who have paid in advance to the Mining Journal, will be entitled to receive the Railroad Journal up to the time of such payment. Advertisements in the Mining Journal that have been paid for in advance will be inserted in the Railroad Journal until the account is balanced. All persons in arrears to the Mining Journal will please at once forward the amount due to this office.

TO THE FORMER PATRONS OF THE
MINING JOURNAL

AND
AMERICAN RAILROAD GAZETTE.

The proprietors of the Mining Journal, in announcing the foregoing transfer, are happy to be able to congratulate its subscribers on the change. Both Journals were devoted to the promotion of the same object, and their union, by giving greater strength, cannot fail to make one Journal more valuable to the public than either could have been without such union. The Railroad Journal is an old and well established paper, and enjoys an extensive circulation. In the hands of its present proprietors, ample arrangements have been made for the discussion and promotion of every interest to which the Mining Journal was devoted. It is the only organ of the railway interests in this country, and is conducted with a spirit and ability that the magnitude of these interests demand; and we need only to refer the attention of our readers to its pages for confirmation of what we have said, and we earnestly recommend them to transfer their support to this Journal in which ours is now merged.

In taking leave of those who have favored us with their patronage in the conduct of the "Mining Journal," we cannot omit the opportunity to thank them for the good will they have thus manifested, and the encouragement they have extended.

Those in arrears to us, either in account of subscription or advertising we would urge to make an immediate settlement with the proprietors of this paper, who alone are authorized to receipt for any dues.

PROPRIETORS OF THE
"MINING JOURNAL AND RAILROAD GAZETTE."

With this number we increase the size of the Journal from 16 to 24 pages. This enables us for a time to dispense with the cover, which was resorted to principally to make room for our advertisements.—A large portion of this increase we devote to reading matter, and we hope to make our Journal more useful to its readers by the wider range and greater fullness allowed in the discussion of the various matters to which our Journal is devoted. The rapid expansion of the railway and mining interests of this country requires much more room than we have hitherto been able to devote to them.

Important Invention.

A few days since we had the pleasure of visiting the Iron Foundry of Mr. Thomas J. Lovegrove, of Baltimore, and there witnessed the operation of a mould, embracing the application of a well known principle in nature, to the casting of iron pipe. The invention is one of those which originate in the simplest and most familiar principles, and is well calculated to excite universal surprise that it has not been resorted to before. The pipes we saw cast were of the kind used by the gas or water company, and were turned out with a degree of celerity and excellence that afforded the most convincing assurance of the entire success of the invention. By the ordinary mode of casting pipe, it is necessary to make a sand mould for every separate piece of pipe and a "core," which is formed by wrapping bar around a rod, this again being coated carefully with clay to preserve the tubular or hollow form of the pipe. The time thus occupied may be easily imagined, and the consequent gain that must necessarily attend any plan by which all this is dispensed with.

The invention of Mr. Lovegrove consists of an iron mould, suspended horizontally, and arranged for the introduction of the melted metal by means of a trough at one end. As the metal is introduced a slight depression at one end is effected by means of suitable tackle, and the revolution of the mould immediately commences; by the time all the metal is introduced the mould is elevated to its true position, the gravitation having carried the fused metal to the end of the mould, and it suddenly revolves for about half a minute with considerable velocity, distributing the metal equally to the surface throughout the entire length of the mould from the centrifugal force of the revolution. The vacancy in the centre is of course regulated by the amount of metal—the pipe being made of any degree of thickness required.

The effect within the mould is quite singular, and very distinctly perceived during the operation. As the revolution commences, nothing is to be seen within but a confused mass of molten metal, apparently occupying the whole of the interior; suddenly, but noiselessly, with a discharge of flame, the metal has taken its place at the surface of the mould, is revolving truly with it, and in the twinkling of an eye, the perfect tube is seen within.

In a few seconds the revolution ceases, the mould is separated, the upper half being hoisted off, and the pipe removed. There is no adhesion, the pipe in the instant of cooling undergoing contraction sufficient to obviate this, were there no artificial protection against it. The time occupied from the tapping of the furnace to the lifting the perfect pipe from the mould, was precisely two minutes. And it is obvious that with a range of two or three moulds in operation pipe could be turned out as rapidly as the metal could be drawn from the furnace. That this is a beautiful and very valuable application of centrifugal power, must be manifest, even from this first and yet imperfect series of experiments. The full success of it is beyond dispute, and as Mr. Lovegrove has secured a patent for the mould, it is to be hoped, that unlike too many of those whose genius has contributed to the arts and sciences, he may obtain a commensurate reward.

But the invention will not be confined to the mere casting of iron pipe. It is evidently applicable in various departments throughout the whole range of the mechanic arts. It is not limited in its effect either, as we understand it, to a mere smooth surface, but while retaining its circular form it will

adapt itself to every variety of external shape and ornament. It is impossible to foresee the wide range of service to which the principle may be adapted; or susceptible as it is of application to the casting of iron pipe thin as sheet iron, and adapted for stove pipe; on the other hand it may be applied to the most colossal cylindrical work that art and science may require, multiplying it to any extent and immensely reducing the cost. Of the general pecuniary effect upon hollow cast iron, there is ground to anticipate from the use of this principle, an ultimate great depreciation of cost.

The mould and machinery we have seen in operation, are those of the original experiment, and of course are susceptible of great improvement. The invention is yet indeed in its first stage of development; but it requires only a familiarity of the principle, and a glance at the result of the operation, to convince the observer that success is already achieved.

Working of Railways by Contract.

The present depressed state of railway property in England is turning the attention of their companies to devising the most economical mode by which their lines can now be managed and sustained. The railway system of this country, from the small cost of our roads, and their better management, have not suffered the reverses that have overwhelmed this kind of property in England; but it is at the same time undeniable that the great and increasing expense of running our roads is creating a general distrust of this species of property which, only a year or two since was considered as offering the very best inducements for investment.

The plan that several leading lines of English railways are adopting to economise in this great item of expenditure, is to work them by contract.—In this way they confidently count upon making a saving of from 25 to 50 per cent. upon the present mode of working them by companies. We can see no reason why they are not correct in their conclusions—and we think that the objections to this plan which suggest themselves in the outset, arise rather from its novelty and from the prejudice we always feel for what we have been long accustomed to, than from any difficulty in the plan proposed.

The arguments in favor of this plan are so obvious and well understood, that we can add no force to them by any thing we can say. In almost every department of industry the great object is to make each laborer or producer directly interested in the result of the united labor of all. This secures a hearty co-operation of all employed, and ensures a degree of fidelity reaching to the most minute ramifications. This principle, so important and so universally acted upon the construction of a road, is abandoned the moment a road is completed, and the work then is intrusted to agents whose great object is their pay, and not the manner in which their services are rendered.

In this number we merely call the attention of companies to this subject. As we said in the commencement, several leading lines of English railway are adopting this mode of working their roads, with full confidence of its success. In another number we shall discuss this matter more at length.

Cotton Manufacture at Reading.

The citizens of Reading are now actively engaged in getting up a cotton factory in that city, which is to have a capital stock of \$200,000. A meeting was held in this place on the 14th instant to take measures to secure this object, at which Dr. D. Luther, President, and H. H. Mullenburgh acted as

Secretary. The meeting was addressed by Gen. C. T. James, who is attached to the editorial department of this paper, and who superintended the erection of the cotton factories recently put up in Lancaster, who is engaged in putting into operation works of a similar kind in various parts of the country. Committees were appointed to procure subscriptions to the stock, and the spirit manifested at the meeting is a sure pledge of the success of the undertaking. The value of a few such establishments to towns of the size of Lancaster and Reading can scarcely be over estimated, as they give employment to a great amount of labor which otherwise would have been unoccupied, and open an additional market to the agricultural products of the section in which they are situated; while the condition of the operatives in the factories situated in towns where they compose but a fraction of the population, is superior in every point of view to that of towns composed entirely of this class.

✎ We desire to call the attention of our readers to the article in our Journal on the "Floods of the Mississippi," prepared by M. Butt Hewson, Esq., an English Engineer of high character and standing both in his profession and as a gentleman. To us, they seem to point out the only mode by which a recurrence of the terrible disasters we are now witnessing can be prevented, as the remedy proposed is but seconding the efforts that rivers always make to throw off the surplus of water, when swollen to a high pitch. Mr. Hewson, we are happy to say, comes to this country with the highest testimonials as a skillful and practical Engineer, and we can cheerfully recommend his services to such companies as may be in want of such a gentleman.

Pennsylvania.

Erie and North-East Railroad Company.

We have just received from the Secretary of this company, G. Sandford, Esq., the report of Mr. Courtwright, the Engineer, of a survey of this road, from Erie, Penn., to the New York state line. Three lines were surveyed having the same general direction, all of which are remarkably favorable for a railroad:

The total distance by the first line is eighteen miles and 1,548 feet, of which will be straight seventeen miles and 4,878 feet, and 1,950 feet of curvature of twelve thousand feet radius, with no grades in passing either way, exceeding fifteen feet to the mile, and no undulating grade at all. The summit is about fifteen and three fourth mile from, and 144 feet above the starting point, and 36 feet above the termination at the New York State Line, making the aggregate grade one hundred and eighty feet.

The total distance by the second line surveyed is eighteen miles and 1,543 feet. Seventeen miles and 4,733 feet of which is straight, and the balance, 1,590 feet, is a curve of twelve thousand feet radius. The difference in distance between these two lines, it will be observed, is but five feet, and the grade and radii of curvature the same in each. A straight line from their starting point at Erie to their termination at the State Line, would be but forty-three feet shorter than the longest of these lines.

The third line is but a continuation of the second line from its point of intersection with the first, (sixteen miles and 1,520 feet from Erie,) straight through to the State Line, making an *entirely straight line from Erie to the New York State Line*. This line crosses the Twenty Mile Creek about 100 feet south of the other lines, and at an elevation of about 100 feet above the surface of the water by 700 feet across the Gulf, and intersects the State Line 840 feet south of the other lines. It is eighteen miles and 1,120 feet long, being 426 feet shorter than the first or longest line; 411 feet of which is gained by its being straight, and the balance 383 feet from the difference of its bearing with the State Line,

which it approaches us diagonally than the other lines.

The grades and radii of curvature of the first two lines are the same, with but one hundred feet in length of curve in favor of the second line — (The expense of construction will also be much the same for each; so that any preference which should be given to one line over the other, would probably be covered by the difference in damage which would be due to private property in the construction of the two lines.

The damage which would be done to private property by the third or straight line would be much the same as that done by the second as it follows that line for more than sixteen miles of the distance from Erie. The expense of grading this straight line will probably exceed either of the other lines about fifteen thousand dollars, owing principally to the difference in expense in crossing the Twenty Mile Creek. As an offset to this additional expense, however, this line possesses the important advantage of having but nine feet of elevation to overcome in coming west, which can be distributed over a distance of two miles, whilst the other two lines have to overcome an elevation in that direction of thirty-six feet, a portion of which is at the rate of fifteen feet to the mile. This is an important consideration, particularly should it be found upon examination, which will probably soon be made, from this place to the Ohio State Line, that that the maximum grade there will be less than fifteen feet to the mile, and from an examination east of our State Line, that the upper crossing of the Twenty Mile Creek will suit equally well a connection with the Buffalo road.

The grading for either of the lines mentioned, will be very light, and will not for a single track, with the necessary turnouts, exclusive of preparing the foundations and bridging the crossings of Mill-creek, Four Mile Creek, Six Mile Creek, Twelve Miles Creek, Sixteen Mile Creek and Twenty Mile Creek, exceed in items the following amounts, viz:

Clearing	18 Acres.
Grubbing,	6 Acres.
Excavation,	220,000 Yards.
Embankment,	250,000 Yards.

Much of the material over which the road passes is loose ground gravel and sand, very easily excavated and forming when finished a dry and most capital road bed. There will probably be no rock excavation on the line except in preparing foundations in the creek bottoms. There are many single sections on the New York and Erie railroad between Port Jervis and Lanesboro' which cost more to grade than the whole grading of this road will cost, exclusive of bridging the streams mentioned.

This road is to form one of the links in the great line of railway from Buffalo west, and its route being identical with the great line of travel between those sections of our country, and from the conformation of the country over which it is to pass, being a road of remarkably easy construction, we cannot for a moment doubt that when constructed it will be one of the best paying roads we shall have. The line of roads on the south shore of Lake Erie will exert a very important influence over the New York and Erie road, which will be brought into connection by railway with the far west as soon as it strikes Lake Erie.

Philadelphia Car Manufactory.

The attention of our readers is invited to this establishment, situated at the corner of Schuylkill Second and Hamilton streets, Spring Garden, Philadelphia, where all the various kinds of railroad furniture are manufactured at the shortest notice. — Its central position gives it great facilities in supplying the wants of roads in this particular, at the most favorable rates; and the attention of purchasers is invited to the various articles offered for sale.

Gen. S. F. Belknap, the great railroad contractor, died on the 19th inst. at his residence, Windsor, Vt.

Georgia Railroad and Banking Company.

We are in receipt of the report of the doings of his company for the year ending March 1, 1849. — The following is the exhibit of the income, expenses, and net profits of the road for that period:

	Year end'g March 31, 1848.	Year end'g March 31, 1849.	Increase.
RECEIPTS.			
Passengers...	\$157,694 67	\$166,484 04	\$8 7-9 37
Freight.....	280,486 27	376,957 07	96,470 80
U.S.M. & rents	38,871 74	38,573 48	*298 26
Totals.....	\$477,052 68	\$582,014 59	104,961 91
EXPENSES.			
Conduc. transp.	\$44,318 25	\$49,895 90	\$5 577 65
M. Power....	50,538 72	65,531 14	14 992 42
Maint. of way..	67,256 55	16 054 99	*1,201 56
" cars.....	13,439 32	14,300 65	861 53
Total.....	\$175,552 84	\$195 782 68	\$20,230 04
Net profits....	\$301,499 84	\$386,231 71	\$84,731 67

This statement exhibits a gratifying increase in the income of the road for the last year, of \$104,961 91, (22 per cent.) and in the net profits, of \$84,731 67, (28 per cent.) with an increase in the expenses of working the road, of only \$20,230 04, (11 1/2 per cent.) The increased income has been, from passengers \$8,789 37, and from freight \$96,170 80. Thirty-eight thousand six hundred and twenty-eight passengers have been carried in the cars, making an average of 106 per day, both ways, the same as during the previous year. The average number of "through passengers" per day, between Montgomery and Charleston, has been 18, against 16 for the preceding year.

The expense account has been charged with the cost of 25 new freight cars, and one new engine, built in the shops of the company.

The motive power, notwithstanding the unusual requisitions which have been made upon it, is in good condition. The trains have run during the year with regularity, and entire freedom from serious accident.

To accommodate the increasing business of the road, orders have been given for four new freight engines, to be delivered during the ensuing summer, and for the building of 75 new freight cars. — Arrangements have also been made for erecting a car factory machine shop at Augusta, which will greatly increase the facility and economy of manufacturing cars, and a new engine machine shop at Atlanta. The estimated expenses of these are as follows, viz:

Four new freight engines.....	\$30,100
Fifty new rail cars.....	30,000
Twenty two new platform cars...	12,500
Car factory, machine shops, &c....	6,000
Engine house and machine shop....	9,000
	\$87,500

The expenditures in the engineering department during the past year have been as follows:

Iron, spikes and clamps to relay the road between Augusta & Union Point.	\$93,290 77
Less by flat bar iron sold to Memphis branch railroad company.....	34,078 80
Right of way balances.....	552 93
Total.....	\$59,764 90

The estimated expenditures for the ensuing current year are as follows:

1000 tons of Ω rail, (now arriving)....	\$50,000 00
2300 " " " ordered from Davis Brooks & Co.....	124,200 00
272 " " " " Cooper & Wiley.....	19,040 00
Spikes, chairs, &c.....	20,200 00
Filling truss and trestle bridges.....	8,000 00
Total.....	\$221,440 00

The relaying of the flat bar road with a heavy rail, has been continued during the past year, and at this date, extends 34 miles from Augusta. The same form of rail (except 3 miles of Ω rail, purcha-

* Decrease.

sed in Philadelphia,) and plan of superstructure has been continued, as described in the report of 1845. The iron now on hand, arriving, and ordered, will relay the remaining 41 miles of flat bar road between Augusta and Union Point, except that portion contained between the switches and stations.— The Π pattern now on hand, and arriving, will extend the present plan of track, to a point about 2 miles west of Camak. Thence to Union Point, the plan will be a rail of the \perp form, weighing 58 lbs per lineal yard, laid on cross-ties, placed an average distance of 2 feet 3 inches apart, from centre to centre.

The cost of repairs is a trifle over 310 dollars per mile of track; and 21 5-10 cents per mile of trains run. The same for a series of years have been as follows:

Repairs per mile of track.	Of trains run.
1844. 1845. 1846. 1847. 1848. 1849.	
\$260 \$291 \$275 \$370 \$315 \$310	
25cts. 23cts. 23-10 22-10 24-10 21-5-110	

The road-bed throughout is represented to be in an excellent and improving condition.

Only three accidents to trains of any description, have occurred from defective track during the current year. This is good evidence that the superiors and their subordinates have been diligent and watchful in the discharge of their duties.

The cost of "maintenance of way" for the year ending April 1st, 1850, it is expected will exceed the same for the past year about 15 per cent, owing to the large force engaged in the renewal of iron and extensive repairs needed on the Extension track.

The following is the

STATEMENT

Of the condition of the

Georgia Railroad and Banking Company, on Monday morning, April 2, 1849.

ASSETS.

The road and its outfit..	\$3,356,796 81
Iron and spikes for relaying road below U.P.	118,452 68
F. C Arms, General Superintendent.....	8,189 63
Materials for road on hand.....	30,751 40
	<u>\$3,514,193 52</u>
Salaries, incidentals, premiums and protests.....	13,234 47
Interest paid.....	73,273 20
Road expenses.....	183,399 89
	<u>274,907 56</u>
Banking house and lot.	32,555 26
Real estate for road and Bank.....	46,025 92
Negroes.....	30,700 00
	<u>109,281 18</u>
	<u>3,898,382 26</u>
Balance due by agents..	22,369 52
Stocks in other corporations.....	89,354 31
Advances on cotton...	18,777 91
Bonds of the city of Augusta.....	6,500 00
Bonds of the State of Georgia.....	17,000 00
	<u>144,021 74</u>
Bills receivable.....	1,247 69
Discounted notes.....	174,024 65
Discounted bills.....	105,820 33
	<u>281,092 67</u>
Notes of banks in other States.....	4,140 00
Specie and Specie Funds.	
Due by banks in New York, Charleston, Savannah & Athens	51,234 52
Notes of specie-paying banks in Georgia...	25,659 06
Gold and silver coin in the vaults of bank..	92,602 36
	<u>169,495 94</u>
	<u>598,750 35</u>
Total assets.....	\$4,497,132 61

LIABILITIES	
Capital stock.....	\$2,262,497 16
Collections on personal account.....	\$6123 19
Collections on acct of Newton co. stockholders.....	542 48
	<u>\$1,160 67</u>
Income from railroad and mail transportation.....	543,029 64
Interest, discount and rent received.....	26,115 89
Profit and loss.....	481,530 36
	<u>1,050,675 89</u>
Deposits on interest... Company's bonds.... Dividends unpaid....	1,124 68 720,900 00 9,038 56
	<u>731,063 24</u>
Due to corporations... Due to depositors..... Due an agent.....	623 31 62,762 78 19 11
	<u>63,405 20</u>
Bank notes issued....	1,170,120 00
	<u>1,846,305 00</u>
Railroad receipts issued	11,755 50
	<u>1,181,875 50</u>
Bank notes on hand... Railroad receipts on hand.....	793,210 00 335 05
	<u>793,545 05</u>
Bank notes and R. R. receipts in circulation.....	388,330 45
	<u>388,330 45</u>
Total liabilities....	\$4,497,132 61

The total income of the company from all sources, appears from the statement above referred to, to be as follows:

Gross income from road as above.....	\$582,014 59
" " from bank.....	26,115 89
	<u>608,130 48</u>
Charged with road expenses.....	195,762 88
Expenses of bank, taxes &c	13,234 47
Interest paid.....	73,273 20
	<u>282,290 55</u>

Leaving net balance of income..... \$325,839 93 After payment of interest on funded debt and all expenses of the road and bank.

These results show a net profit on the entire cost of the road and outfit, now charged to that account, of about 10 per cent., and over 14 per cent upon the present reduced capital stock on which dividends are paid. This report would have shown a more favorable result but for the large increase in the interest account, arising from the fact, that a large amount of certificates held back for several years with accumulated interest, were paid during the past year.

A change of policy by the board, on the subject of relaying the road with heavy iron to Union Point, has prevented as large a reduction of the funded debt as heretofore contemplated. The low price of iron, and the great importance to the company of a heavy rail upon the entire line, to accommodate the increasing business of the road, induced the board to authorize an expenditure at once, which it had previously intended to extend over several years. This, together with the outfit necessary to meet the expected increase of business from the approaching completion of the State Road, may render necessary a small increase of the present debt, to raise the sums needed, unless some other mode of providing for these wants shall be recommended by the stockholders. In no event, however, do the Directors apprehend any difficulty in providing the small amount that will be needed, without any interruption of semi-annual dividends from the net profits of the company.

Though the speedy payment of the funded debt by the surplus profits, be very desirable, the Directors considered the completion of the road with heavy iron still more so. The flat bar, though a good one of the kind, is unsuited to our heavy business, and the small portion of it now remaining, lessens very much the advantages of the heavy bar on the great

er part of it. The improved character of the road, and its increased capacity for business outweigh any objection to an immediate appropriation for the object in question.

Since the last meeting of the stockholders, the Memphis branch railroad, leading from Kingsion to Rome, has been completed, and is now in full operation. Though a short road, it will be a very important feeder to the improvements east of it.— The boating on the Coosa is now upon an excellent footing, and well conducted by the enterprising proprietors. The State Road and the Nashville and Chattanooga road are both making satisfactory progress, and strong assurances are given, that the latter will be completed before the close of the present year. The Montgomery and West Point road is also under contract to West Point, and it is believed will be finished with all convenient dispatch.

In addition to the above connections, which will be important feeders to this road, the contemplated road from Atlanta to Lagrange, fills up the last link unprovided for of the great line of internal steam communication from Maine to Mobile. Means have been provided, however, for the completion of the part of this road, extending from Atlanta to Newnan, and we cannot doubt that when the importance of this road to those already constructed in that state, and as well as to the commercial interests of the whole country is properly appreciated, it will lead to its speedy construction.

The Georgia Railroad, without the aid of those important feeders, which are now in rapid progress of construction, from which may be expected a vast increase of business, is one of the best paying roads in the country, and is almost the only road running through a section entirely agricultural, whose stock is at a premium in the market; and those gentlemen intrusted with its construction and management have the double satisfaction of giving to their fellow citizens the advantage of railway communication and making the stock of the road a safe and profitable investment of their money.

Railway Progress at the South.

The following letter, written by one of the leading minds of Virginia, now devoted to railway improvement, must attract the attention of the people of that state, and stimulate to action the citizens of Norfolk, who are just opening their eyes to the innobled advantages of her position, to secure the trade of the west. We find this letter in the *Norfolk Beacon*, the Editor of which commends it strongly to the consideration of the people of that ancient city.

LYNCHBURG, 7th May, 1849.

Dear Sir,—I have great pleasure in announcing to you the fact, that the citizens of my town have subscribed five hundred thousand dollars to the stock of the Virginia and Tennessee Railroad Company.— Besides this, considerable sums have been subscribed in the counties of Pulaski, Montgomery, Wythe, Smyth, and Washington, and the amount daily increasing. All doubt is now at an end, as to the willingness and ability of our people to subscribe the seven hundred and fifty thousand dollars, required by law to be taken by individuals "solvent and able to pay," before the Board of Public Works are authorized to subscribe on the part of the state, for three-fifths, or \$50,000, of the capital stock of our company.

This state of things renders it certain that to the citizens of Lynchburg belongs the credit of being the first to commence the construction of a great line of railw, which will connect, by the shortest and best route, the valley of the Mississippi with the Chesapeake Bay. I now feel more solicitude than ever for the success of the efforts making to reconstruct the Portsmouth and Roanoke railroad. If that road was once rebuilt, even to the point where the line crosses Nottoway river, you would find no difficulty in showing to capitalists, that a line, diverging from the Portsmouth road, at a point about midway between the Nottoway and Meherrin riv-

ers, to pass through Southampton into Greenville county, north of the Meherrin; thence along the highland dividing the waters of that river from those of the Notoway, through Brunswick, Lunenburg, and along the northern part of Charlotte, near the head of Little Roanoke into the valley of James river at Lynchburg, would present a route so superior—considered either with reference to distance, or the physical features of the country—so as to defy all competition for the vast amount of tonnage, which the Virginia and Tennessee road will conduct across the Blue ridge and Alleghany Mountains into the Atlantic slope of our state. If this connection were formed with Lynchburg, Norfolk would have, within the limits of Virginia, a back country, larger, and having more fertile lands than any three of the United States. I refer not only to that portion of Virginia through which our railroad will pass, but also to the counties west of Lynchburg, from which the tonnage is now drawn by the James River Canal, a work now in progress of construction to Buchanan, (a point 50 miles above us,) and which, doubtless, will be ultimately extended to the eastern base of the Alleghany Mountains, in Alleghany county, if not to the valley of the Kanawha itself.

But this is not the whole extent of back country which, in a few years, will seek an outlet for its products through Norfolk. Tennessee will soon extend the railway which Virginia is conducting to her borders, through her entire length to the Mississippi at Memphis. When these things shall have been done, who can compute the benefits which will result to the whole Union from such a line of inter-communication? For proof that Tennessee rightly understands her true interests, and that she fully appreciates the advantages of her true position I give you the following extract from a letter received by me a few days since from Charles Irving, Esq., of Memphis.

"Knowing the interest taken by you in every thing connected with Internal Improvements, it has suggested itself to me, that an account of the action of our people out here on a similar subject, would be acceptable. In my last letter—or the one before last—I mentioned a rumor that Governor Jones had turned his attention to the subject of Internal Improvement. Since that time, he has been engaged most zealously in arousing the dormant spirit of our people. He has agreed to make several speeches on this vital subject, and has, to use his own language, "left the heathenism of political worship, for the purer religion of social and physical development, and dedicated the remainder of his days to the subject." He spoke at Germantown to-day, and I think from the indications I observed, he produced considerable impression on the public mind. His speech was of a general character, embodying strong arguments in favor of the absolute necessity of Internal Improvements to the wealth and prosperity of Tennessee, contending that the neglect of this was the cause of southern decline in population and wealth, and that to the wise internal improvements of the north, was to be traced her political ascendancy. He spoke in the happiest manner, and with much more zeal and earnestness than I expected so dry a theme could elicit in one accustomed to the combustible and inflammatory topics of political contention. He is evidently deeply interested in the subject, and infuses into it a life and attractiveness not generally imparted to its discussion.

"Mr. Stanton, our representative in Congress, also spoke. He is an excellent speaker, though of a different order from Jones. He made an elegant and appropriate speech, and is strongly in favor of Internal Improvements. The effect of the proceedings and the continued advocacy of Gov. Jones, who carries enthusiasm into every thing, will soon produce a feeling, which would fully respond to your own views of this matter, I should not omit to state, that both Gov. Jones and Mr. Stanton alluded to the Virginia and Tennessee railroad, and urged upon the people its continuation to Memphis."

"There is no mistaking the "signs of the times." Memphis and Norfolk are soon to be connected by railways, and thus the centre of agricultural production will be brought into close connection with the principal marts of commerce on our Atlantic confines. Once accomplish this great end, and the people, in perfect security, will point with scorn and derision at the fanatical politician, whether he

be found north or south of Mason and Dixon's line, who is mad enough to talk of valuing our great confederacy of states.

With high respect,
Your obedient servant, *

Improved Buffers and Breaks.

Mr. John Lane, of Liverpool, has just completed an ingenious arrangement of breaks and buffers for railway carriages, of his invention—some experiments on which have been highly satisfactory. The first operation was to show the powerful and immediate effect of the new breaks, or stoppers, which by a mere pull at a lever handle, so effectually locked a pair of wheels in each carriage, that from a high speed they came to an almost instantaneous pause. In the absence of diagrams, we can but state that this break locks simultaneously the wheels of all the carriages that may follow the first, by means of an ingenious continuation of arrangement of piston rods, springs, and other machinery—all simple in construction, and, consequently, not liable to be thrown out of order. The break itself, when in operation, clips round a drum in the middle of the axle-tree of the two wheels of each carriage to be stopped. All is placed under the carriage bodies, and the single operation of pulling the break handle in front effects the individual stoppage, in like manner, of every carriage in the train, so that there is no over-straining of any one pair of the wheels. The buffer consists of a cylinder and piston working through a stuffing-box, the piston-rod carrying at its terminus the buffer-head. The cylinder is filled with water, and is connected by a small tube with another cylinder containing air, and above it; on the buffer striking any object, the water is forced up into the cylinder, and, by the elasticity of the air acted on by the water, the engine and train are arrested without injury, and the ease and absence of the shock on the rebound was truly surprising. A strong balk of timber was fixed in the angle of the wall which formed the terminus of the temporary railway, and the mounted passengers, after being whirled along as if to be dashed against the wall, received only a gentle shake, without being unseated, and receded gently backwards with the machines. Both inventions appear of considerable utility.—*London Mining Jour.*

New Coupling Clamps—Important to Railway Companies.

An invention of considerable importance has been brought out by Messrs. Crawford & Grew, the former gentleman being the superintendent of the locomotive department, and the latter the station master at Rugby. The object of the invention is to supersede the present system of attaching and detaching railway carriages, and is called the "double ratchet clamp." The utility of such an invention will be obvious to every one in the habit of travelling by railway, when they contrast it with the present crude mode. The links by which the carriages are fastened together are so constructed as to prevent any play or freedom between them, further than that allowed by the buffer-springs, so that the unpleasant jolting and frequent collision of passengers' heads, upon a sudden check taking place, to which they are at present subjected, is completely avoided, whilst the delay caused by uncoupling or coupling carriages at different stations is lessened in a very material degree; besides which the risk of accidents and danger to human life is altogether avoided, the process being carried out without the necessity of going between the carriages—a duty that has frequently led to the loss of a finger, a hand, and sometimes even loss of life, the carriages being forced together before the porter could get from between them, and he has, consequently, been crushed between the buffers. Experiments have been made with the clamp on the London and North-Western line in presence of Mr. McConnell and several other engineers, when those gentlemen expressed their high approbation of the invention, and their perfect satisfaction at the manner in which it worked, Mr. McConnell intimating that he should recommend its immediate adoption to the directors of the London and North-Western railway; in addition to which Mr. McConnell, as well as the other gentlemen, highly complimented Messrs. Crawford and Grew upon the ingenuity they had displayed in carrying out so useful and

important an invention. The clamp consists of nothing more than two trucks or hoops, connected by what is termed a right and left-handed screw, the peculiarity of which is, that, by turning it in one direction the links are drawn closer together, and by turning it in the other, they are extended. It is worked by an ingeniously constructed toothed wheel, fixed to the middle of the screw, about which a lever is provided, with a click and spring, for the purpose of taking hold of the wheel, in which it is allowed to traverse. All the room required for the action of the clamp will be about 7 inches for the traversing of the lever. The clamp, when being used, is hooked to the side chains of the carriage, and, by its action, the buffers are compressed, the carriages drawn nearer together, and the connecting link is removed or attached with remarkable ease and considerable saving of time. Messrs. Crawford and Grew have taken out a patent for the invention, and we have no doubt that, from the ease and simplicity with which it may be worked, and the important advantages attending its use, every railway company will avail themselves of it, and apply it to their carriages as quickly as they can get supplied with it; the saving in the wear and tear of carriages, as compared with the present system, being very material.—*Birmingham Journal.*

Depreciation of Railway Property in England.

The English papers received by the last steamer state that the depreciation of railway property in England during the last three months cannot be less than from 50 to \$60,000,000.

This is in consequence of the disclosures in relation to the fraudulent conduct of the directors of their roads. All confidence in this kind of property seems utterly lost.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys on works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.
Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:
Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. ly25

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloerdale* and *Catawba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hiles* in *Delaware*, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.*
Baltimore, June 14, 1849. 6 mo

Contract for building an Electric Telegraph from Halifax and onwards, in the Province of Nova Scotia.

Sealed Tenders will be received until the 30th day of June next, for building a Line of Electric Telegraph, starting from the city of Halifax—following the public road on the western side of Bedford Basin, thence from the head of the Basin to the Eastern Post Road from Halifax to Truro, and from Truro to the north-west boundary of Nova Scotia, passing through the village of Amherst—following generally the line of the post road, or such other line near thereto, as may be hereafter directed by the commissioners.

The line will be built forty posts to the mile—said posts to be Haematac or Cedar, 25 feet in length, 6 inches in diameter at the top, stripped of bark, as nearly straight as the natural growth will permit, and each post to be set five feet in the ground, either in firm earth or sand or gravel, and strongly embedded. Where rock occurs, they are to be firmly secured by means of foot bands and braces, or by a wall of stone well laid, not less than five feet in height, wedging towards the poles; and where soil, or wet earth or clay is found, the hole shall be enlarged sufficiently, and the earth replaced with stone, so as to prevent equally the poles from being disturbed or driven from the perpendicular by the action of violent winds, or their upheaving in soil and wet soil by the frost.

Where the Line passes through forests, dead trees and all other trees, which, by falling, may touch the wires, to be cut down at the expense of the Contractor—the object being to prevent the working of the line being affected by wind falls.

The line is to be constructed with a single line of wire, of the best quality, number nine, and weighing not less than 330 lbs. to the mile—each wire to be firmly connected with, and yet insulated from, the top of the posts, by the Patent Insulator—of which a pattern may be seen by applying at the office of the Provincial Secretary. It consists of a cast iron shaft, with teeth cup and cover, glass ball, with bolt and shoulders, and nuts and screws at each end to secure the wire firmly to the glass ball. The glass ball to be cemented in the cast iron cup, with a non-conducting cement, by a lining of some non-conducting substance between the bolthead and the cover, so as to secure a perfect insulation, and to protect the glass from fracture and other damage.

The party contracting will be required to furnish the necessary Registers, Batteries, and magnets, of the latest and best quality, of Morse's Patent, for not less than three stations—their different sites to be hereafter appointed by the commissioners.

The whole line will be required to be completed in good working order, and ready to be delivered to the commissioners or their agents, fit for immediate use, on or before the first day of October next.

The Tenders will not include the cost of the poles—the commissioners having already arranged by contract for a sufficient number of these to build the whole line; and these will be laid down in such quantities and sites as may be required.

Ample and satisfactory security will be required for the due and faithful performance of the work, as above stipulated.

JOSEPH HOWE,
GEORGE R. YOUNG,
W. MURDOCK
A. G. ARCHIBALD,
THOMAS LOGAN, } Commissioners.

Halifax, May, 1849.

3125

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

New York and Harlem Railroad Extension,
Lithgow, Dutchess Co., N. Y.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best American Iron. Address
E. S. NORRIS.
May 16, 1849.

Manning & Lee,

GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works,
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

J. T. Hodge,

EAGLE RIVER P. O., LAKE SUPERIOR.

IRON.

L A P — W E L D E D
WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,
FROM 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.

28 Platt street, New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at the following prices, of
Erastus Corning & Co Albany; Merrill & Co., New
York; E. Pratt & Br 10 Eastment Md

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, war-
ranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best fagotted axle, fur-
nished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, R Card, Reed, Cotton-flver, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by **ICHABOD WASHBURN.** Worcester, Mass., May 25, 1849.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country
 1/2 Round and square, to 6 inches.
 1/4 Flat
 Ovals, half-ovals and half-round.
 Hoop, band and scroll iron.
 Nail plates, superior charcoal Horse shoe, Iron, sheet and Boiler iron.
 Tire iron for locomotives.
 Railroad spikes.
 Pig iron of superior quality for chilling.
 do. for foundry purposes.
 For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street, Sole agent for the New Jersey Iron Co, June 9, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL

The subscribers have on hand, and are constantly receiving from their manufactory, **PARK WORKS, SHEFFIELD,** Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps. Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc., etc. All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York. Also by their Agents—Curtus & Hand, 47 Commerce street, Philadelphia. Alex'r Fullerton & Co., 119 Milk street, Boston. Stickney & Beatty, South Charles street, Baltimore. May 6, 1848.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by **DAVIS, BROOKS, & CO.,** 68 Broad street. New York, June 1, 1849. The above will favorably compare with any other rails.

Railroad Iron.

100 Tons 2 1/2 x 1/2, **30** Tons Railroad. All fit to re-lay. For sale cheap by **PETTEE & MANN,** 223 South St., New York. May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa. These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Ships, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

American Cast Steel.

THE **ADIRONDAC STEEL MANUFACTURING CO.** is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention. May 20, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York. February 3, 1849.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N.Y. **ERASTUS CORNING,** Albany. **WARREN DELANO, Jr.,** N.Y. **JOHN M. FORBES,** Boston. **ENOCH PRATT,** Baltimore, Md. November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 1/2 by 1/2 Flat Bars.
25 Tons of 2 1/2 by 9-16 Flat Bars.
100 Tons No. 1 Gartsberrie.
100 Tons Welsh Forge Pigs.
 For Sale by **A. & G. RALSTON & CO.,** No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality. **REEVES, BUCK & CO.,** 45 North Water St., Philadelphia. March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street. March 29, 1849. 3m.13

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N.J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to **COOPER & HEWITT, Agents,** 17 Burling Slip, New York. October 30, 1848.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to **J. F. MACKIE,** Nos. 85 and 87 Broad St. New York, June 8, 1849.

American and Foreign Iron.

FOR SALE,
 300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesharre " "
 100 " "Rouring Run" Foundry Iron.
 300 " Fort " "
 50 " Catocctin " "
 250 " Chikiswalungo " "
 50 " "Columbia" "chilling" iron, a very superior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x 1/2 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Pndled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order. **GOODHUE & CO.,** 64 South street New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mial & Co., and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Text Book of Mechanical Drawing,

FOR the use of **SCHOOLS** and **SELF-INSTRUCTION,** containing,
 1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.
 2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.
 3d. An introduction to *Isometrical drawing*, with 4 plates of examples.
 4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.
 5th. Examples for the projection of shadows. The whole illustrated with 50 **STEEL PLATES.** Published by **WM. MINIFIE & CO.,** 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,** 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,** Reading, Pa.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

**P. S. DEVLAN & CO'S
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

45 N. E. cor. 12th and Market sts., Philad., Pa.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Colton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J., or 60 Wall St., New York.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in diameter, and 13 inches stroke of piston. Tenders on 4 wheels. Address

JAMES ROWLAND,
Pres't. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—*Hose* from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

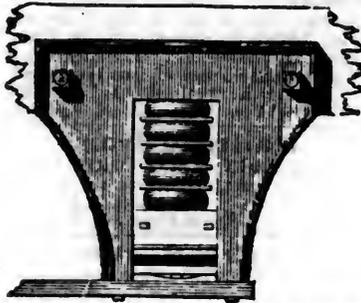
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

6w20

Patent India-rubber Springs.

FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the acts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

To Contractors.**OHIO AND PENNSYLVANIA RAILROAD.**

Proposals will be received at the office of the Ohio and Pennsylvania Railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburgh, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and is easy of access at all points.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburgh, May 21, 1849.

Extension of the Baltimore & Ohio Railroad.**TO CONTRACTORS FOR GRADUATION AND MASONRY.**

PROPOSALS are invited for the graduation and masonry of about 25 miles more of this road, beginning at a point some 64 miles west of Cumberland, and ending at a point about 13 miles west of Cheat river, embracing all the sections from No. 64 to No. 88, both inclusive. The graduation on nearly all of these sections will be heavy, and will include one Tunnel of considerable length and three short ones. There will be also two Viaducts of medium size.

Specifications and plans of the work will be ready for distribution to proposers by the 13th of June, prox., at the Company's office in Cumberland. The proposals will be addressed to the undersigned, and will be received up to Saturday, July 7th, inclusive, at the same place. Proposers are earnestly requested to examine the line closely before bidding, and to avail themselves of the ample means of information of the value of the work, which will be furnished them, as contractors from a distance, accustomed to more difficult excavations than those to be met with on this line, will otherwise be likely to make their estimates too high. The best testimonials will be required, and an energetic prosecution of the work will be necessary. The payments will be cash, with the usual reservation of one-fifth till the completion of the contract. By order of the President and Directors.

BENJ. H. LATROBE,

Baltimore, May 31, 1849. Chief Engineer.

**C. W. Bently & Co.,
PORTABLE Steam Engine and Boiler Manufacturers,
East Falls Avenue, near Pratt St. Bridge,
BALTIMORE, MARYLAND.**

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

BLAKE'S PATENT FIRE & WEATHER-PROOF PAINT, OR ARTIFICIAL SLATE.

This extraordinary substance is found in a stratum of rock in Sharon, near Akron, Ohio; when taken from the mine it has all the appearance of the finest Indigo, and is no harder than cold tallow; but exposure a few days to the atmosphere turns it to hard slate or stone; it is reduced to a fine powder, mixed with Linseed Oil to the consistency of thick paint, and applied with a brush, and after an exposure a few months to the atmosphere, this coating becomes a perfect slate, protecting whatever covered, from the action of the weather and from fire. It has been found upon analization by Dr. CHILTON, of the city of New York, to consist of large proportions of Silica, Alumina, and Black Oxide of Iron and Magnesia, with lesser of Lime and Carbon; the transition therefore [according to the opinion of Drs. Chilton and Locke] from the liquid paint to the



hard slate is accounted for according to nature's own laws, as the oil absorbs and evaporates by the action of the atmosphere, the powerful adhesive attraction incident to the Black Oxide of Iron, binds and attracts not only the particles together, but too the substance covered, so that the longer on, the more powerful the attraction, consequently the harder the slate, and the closer it will adhere to the substance applied; and as it contains a large amount of Alumina and Magnesia, two of the best non-conductors of heat that we have, consequently the coating [after it turns to slate] is indestructible by fire, therefore it protects the wood from the air, and where there is no air there is no blaze or combustion, the wood therefore will char before the coating will give way. It is being used extensively for covering roofs of either shingles, matched boards, tin, zinc,

sheet iron, or tuck paper; if your shingles have been on for years you have only to sweep off the moss and lint with a stiff broom and cover with two or three good coats and in a few months you have a perfect slate roof impervious to the action of weather and fire.— There is nothing equal to it for Steamboat and Car decks, for all kinds of iron, as it forms a coating nearly as hard as the iron itself and never cleaves off. It is used upon brick walls both as a paint and cement, it forms a perfect stone coating, through which not a particle of moisture can pass; in fact, it is used

upon anything you wish to protect from fire or weather. The Government has granted a patent to me for the discovery of its application as a fire and weather-proof composition, or artificial slate. The Fair of the American Institute, held last fall awarded me a Medal, and the Fair of the State of New York a Diploma. The examining committee of the American Institute, of whom Dr. J. R. Chilton was chairman, and had some three years previous analysed it, states in the report, that it was an article superior to anything that had been presented as a weather and fire

proof covering. I would call the attention of the public to a discovery I made about three years since of an article similar to my black pigment, but instead of its being colored with the black oxide of iron, it is colored with the red, giving to the substance a beautiful Chocolate, the fashionable color of the day, for sides of buildings. It does not come quite as hard as the black, consequently is not quite so good for roofs, but is preferred on account of color for sides. I have a large quantity of this now prepared for market and can supply all demands.

LOOK-OUT FOR FRAUD.

For the last few months there have been scores of individuals engaged in digging, grinding and sending to a distance all kinds of stuff, much of it no better than dirt from the street or clay from any bank, calling it all good fire and weather proof paint, like mine they say, but of a different color. Now it is impossible for them to know anything of the weather proof qualities of this article, as it has not yet been a year since they first commenced digging it, and according to the opinion of Dr. Chilton, of New York, and Dr. Locke, of Cincinnati, this stuff is entirely worthless, as an outside coating, as it has neither the red or the black oxide of iron in it, consequently there can be no cohesive attraction; therefore, as the action of the atmosphere destroys the oil with which it is applied, it will wash or rub off like chalk or whitening. Others are mixing enough of mine to give it the color, and selling it as mine. Others are engaged in digging, grinding and offering for sale precisely the same article I have patented, contending that they have a right to sell it in its powdered state, and that those who buy and mix with the oil to make the compound, must take the responsibility of the infringement of the patent. I therefore will give notice to all, that I have instruct-

ed my agents throughout the country, to take the name and residence of every individual who shall buy and mix with oil and use this compound [except from me or my authorised agents] that I shall hold them to a strict accountability, and shall call upon all such to settle with and pay me for thus infringing upon my patent, and in case they refuse I shall commence suits at law against them. Some of those engaged in this nefarious traffic in order to push their article into market, contend that my patent will not stand; that the substance was known and used for years previous; and a statement to that effect was got up and published by Thomas Caldwell, and signed by several individuals, every one of whom [so far as I know them] was either in the business or preparing to go into it. Now I will not bandy words with a set of men who have not moral honesty sufficient to deter them from stealing, and appropriating to their own use the inventions and discoveries of others, but will insert a statement of all the officers of the township of Sharon, who have no interest further than to state the truth; the which statement, coming as it does from such a source, must be sufficient to convince any unprejudiced mind of the falsity of their position.

We, the officers of the township of Sharon, will state that we do not believe there ever was a Patent more honestly or laboriously earned, or more deservedly granted than the one granted to Mr. Blake for a weather and fire-proof composition or artificial slate, as he pursued his experiments with the most indomitable perseverance, under very discouraging circumstances, as the public had not the least confidence that there could be anything valuable made from the substance. He therefore had to encounter, for years, the jeers and scoffs and ridicule of nearly the whole community; and we do not believe that there is one man in a thousand who would have persevered under all the difficulties. But he has at last triumphed over all obstacles; and we believe there is now but one opinion in awarding to him the merit of this valuable discovery. GEO. W. CRANE, HORACE GIBBS, JUSTICES OF PEACE. JNO. EVERHARD, LEWIS C. CHATFIELD, TRUSTEES. R. W. MILLS, OF BFNJ. JONES, TOWNSHIP. WM. F. EVERETT, TOWNSHIP CLERK. ALLEN HOWFS, TREASURER.

How is it possible to know anything of the lasting qualities of this Counterfeit stuff? as it is not a year since the first was tried. The Public therefore to be safe should purchase from my Agents, and see that every Barrel is marked "Blake's Patent Fire-proof Paint."

This may certify that we have been acquainted with Blake's Patent Fire-proof Paint for some years, and are well assured that it is really what its name indicates—fire-proof. And we will here state to the public that buildings well covered with this paint will be taken at our several offices at lower rates of insurance than those covered with tin or zinc, as we consider it a better fire proof.

H. K. SMITH, Sec. Summit Mutual Fire Ins. Co.
DAN'L S. LEE, Agt. Medina Co. Mutual Ins. Co.
D. B. HADLEY, Agt. Stark Mutual Insurance Co.
Akron, March 5, 1849.

MR. BLAKE—Dear Sir: From the nature of my business, I have had my attention turned for several years to your "Patent Fire-proof Paint," and as a protection against fire to those buildings to which it is thoroughly applied I consider it preferable to tin or zinc.

R. F. CODDING, Agt. Portage & Farmer's Insurance Co.
Copley, April 12, 1849.

We, the undersigned, in our statement to Caldwell, had reference only the grinding or fineness of the different paints, and we will further state that [aside from BLAKE'S PATENT] we feel it a duty we owe to Mr. Blake to purchase of him, as no others had anything to do with Fire-proof Paint, until after Mr. B. by years of

experiments, had discovered its value and introduced it to the public. R. A. STINEHOUR, L. C. NOTT, S. J. MILLER, Painters.
Akron, April 9, 1849.

MR. BLAKE—Dear Sir: I had a building adjoining the wall of my Stone Cotton Factory, the roof of which was covered with your Fire-proof Paint, or Artificial Slate. The factory took fire, and during the progress of its destruction, large numbers of burning shingles and other combustible materials fell upon this roof, so covered, and I expected every moment to see it burst into flames, but after the factory burned down I examined said roof and found it literally covered with coals and cinders, but the fire had not made the least impression upon it. After this test, there certainly can be no doubt as to its fire-proof qualities. SETH C. JONES.
Rochester, N. Y., Sept. 1848.

AMERICAN HOTEL, }
Broadway, New York, Oct. 4, 1848.

MR. BLAKE—Dear Sir: We last Spring covered the roof of the American with your Fire-proof Paint. We now find that it has become as hard as slate, and the almost constant tread of the servants [who use the top of the house for drying clothes] does not affect it in the

least, and it proves all that it was recommended. TABER & BAGLEY.

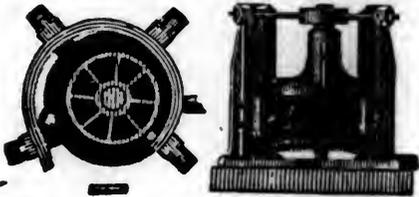
We, the undersigned, inhabitants of Sharon, have for the last three years watched with much interest the trial of Blake's Metallic Fire-proof Paint found in this town, we have covered our houses with this fire-proof paint, and can now with confidence state to the public that it is an article of great value; that the sun, rain or frost has no other effect than to turn it to stone, so that we now have to all intents a perfect Slate roof, and so perfectly does it protect the roof from moisture that frequently several gallons of dew runs from the eaves in the morning; and where there is no moisture there is no decay, and the rain that falls from the roof is as pure and clear as the purest Spring water, and from the nature of the article it must be an excellent FIRE PROOF; we therefore can unite in recommending it to the public, and believe that no good building where shingles are used ought to be left unslated. Wm. Chatfield, Joseph W. Crane, Wm. Ingham, Adam Kooder, Thomas Rhodes.
Shanon, June 1, 1847.

All Letters and Communications addressed to the Patentee, at No. 3 Broad street, near Wall, New York, or at Akron, Ohio, will meet with prompt attention. WM. BLAKE, Patentee of Fire-proof Paint.

DIRECTIONS. Mix the Powder with Linseed Oil to the consistency of Thick Pain, and apply two or three good coats with a common paint brush, being careful to keep the paint well stirred in the pot while putting on. 100 lbs. will cover the roof of a building 33 feet square, or 1,000 superficial feet.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, the exclusive owner of all Henry Burden's Patent Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1849. }

A. T.

ENGINE AND CAR
WORKS.

DAVENPORT & BRIDGES,

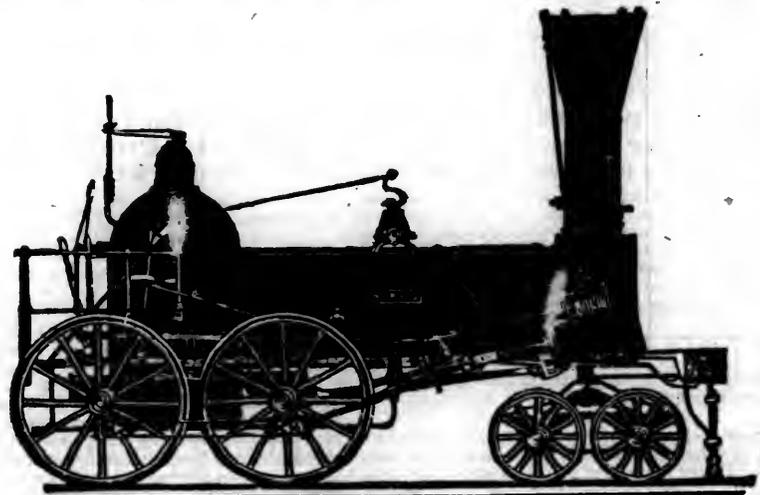
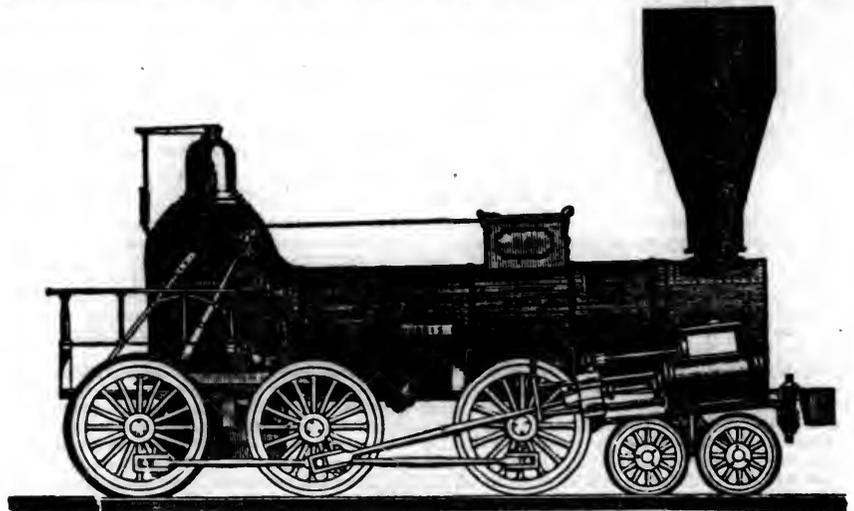
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Rollers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|-------------------------|-------------------------------|
| Charles Cook, | } Canal Commissioners |
| Nelson J. Beach, | |
| Jacob Hinds, | } State of New York. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Engineer of the Bridges for |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Railroad Bridge Builders, |
| | |
| | } Springfield, Mass. |
| | |
| | } Engineer & Bridge Builder, |
| | |
| | } Utica, N. Y. |
| | |

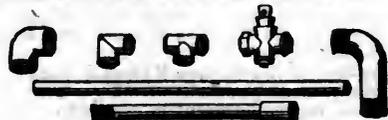
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

PATENT MACHINE MADE HORSE-SHOES.

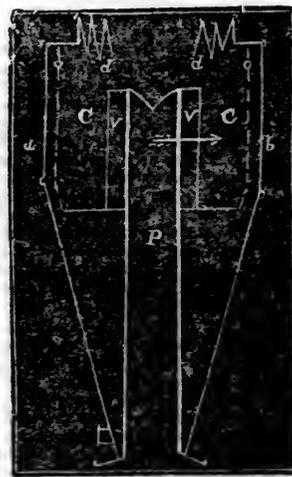


The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

FRENCH & BAIRD'S Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS.

Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't

N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterna, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

FRENCH & BAIRD.
Philadelphia, Pa., April 6, 1844.
The letters in the figures refer to the article given in the Journal of June, 1844.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

- 1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.
- 2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.
- 3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.
- 4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

J. ELNATHAN SMITH, Esq.,

Dear Sir: In relaying the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3 1/2 by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,
Eng. New Orleans and Carrollton Railroad,
New Orleans, March 14, 1849.
Orders received and full information by
J. ELNATHAN SMITH, Patentee,
22 John street,
New York, May 26, 1849.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 39 Broadway, New York.
Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

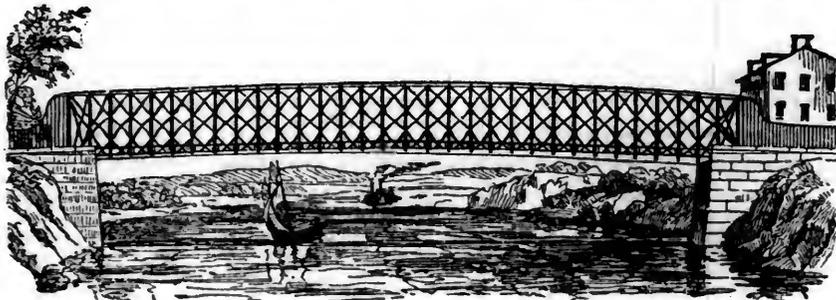
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIVER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

M. M. WHITE, Agent for the Company.

November 25, 1848.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1½ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by IRVING VAN WART, 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufacturer under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 93 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
141f Philadelphia Pa.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by H. B. TEBBETTS,

No. 54 Pine St., New York.
1m19

May 12, 1849.

RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 5 a.m., and 5 p.m.
Leave Worcester at 10 1/4 a.m., and 4 1/4 p.m., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 p.m.—At New York from pier No. 13, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/4 a.m., from Norwich at 9 a.m.

S. H. P. LEE, JR., Sup't.

May 20, 1849.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, '49,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10, a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Salem, 7, 10, a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Manchester, 10, a.m., 3, 5 1/2 p.m.
Gloucester, 10, a.m., 3, 5 1/2 p.m.
Newburyport, 7, a.m., 2 1/2, 4 1/2, 7, p.m.
Portsmouth, 7, a.m., 2 1/2, 4 1/2, p.m.
Portland, Me., 7, a.m., 2 1/2, p.m.

And for Boston,

From Portland, 7 1/2, a.m., 3, p.m.
Portsmouth, 7, 9 1/2, a.m., 5 1/2, p.m.
Newburyport, 6, 7 1/2, 10 1/2, a.m., 6, p.m.
Gloucester, 7, a.m., 2, 5 1/2 p.m.
Manchester, 7 1/2, a.m., 2 1/2, 5 1/2 p.m.,
Salem, 7, 8, 9, 10 1/2, 11-40, a.m., 2 1/2, 6, 7* p.m.
Lynn, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11-55, a.m., 3, 6 1/2, 7 1/2, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 6 1/2, 8 1/2, 10 1/2, 11-25, a.m., 2 1/2, 4 1/2, 5 1/2, p.m.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2, a.m., 12 1/2, 3, 5 1/2, 6 1/2, p.m.

GLOUCESTER BRANCH.

Trains leave Salem for Gloucester at 10 1/2, a.m., 3 1/2, 6 1/2 p.m.
Salem for Gloucester at 10 1/2, a.m., 3 1/2, 6 1/2, p.m.
Trains leave Gloucester for Salem at 7, a.m., 2, 5 1/2 p.m.
Manchester for Salem at 7 1/2, a.m., 2 1/2, 5 1/2, p.m.
Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6 1/2 a.m. and 2 1/2 p.m.
For Rochester at 6 1/2 a.m., 2 1/2 p.m.
For Great Falls at 6 1/2 a.m., 2 1/2, 4 1/2 p.m.
For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2 6 p.m.
For Lawrence at 6 1/2, 9, a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 p.m.
For Reading 6 1/2, 9 a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2* p.m.

Inward trains for Boston

From Portland at 7 1/2 a.m., 3 p.m.
From Rochester at 9 a.m., 4 1/2 p.m.
From Great Falls at 6 1/2, 9 1/2 a.m., 4 1/2 p.m.
From Haverhill at 7, 8 1/2 11 a.m., 3, 6 1/2 p.m.
From Lawrence at 6, 7 1/2, 8 1/2, 11, a.m., 1 1/2, 3 1/2, 7 p.m.
From Reading at 6 1/2, 7 1/2, 9, a.m., 12 m., 2, 3 1/2, 6, 7 1/2 p.m.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2* p.m.
Leave Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 5 1/2, 6 1/2, p.m.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.
Leave Boston at 7 1/2 a.m., 12 m. and 5 p.m.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.
Leave Boston at 7 5 and 9 1/2 a.m., 2 1/2, 4 1/2 & 6 1/2 p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.
Leave Woburn Centre at 6, 7, 9, 10 a.m., 1 1/2 and 4 1/2 p.m.

Leave Boston at 8, 11 1/2 a.m., 3, 5 1/2 and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7 1/2 a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,
Agent Boston and Lowell Railroad Cor.
Boston March 5, 1849. 221f.

ESSEX RAILROAD—SALEM to LAWRENCE,

through Danvers, New Mills, North Danvers, Middleton, and North Andover.

On and after Thursday, March 15,

trains leave daily (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 8 a.m., 12.45, 3.45, 6.30, pm.

Salem for North Danvers at 8 a.m., 12.45, 3.45, 6.30, pm.

Salem for Lawrence, 8 a.m., 3.45, pm.

North Andover 8 a.m., 3.45, pm.

Middleton 8 a.m., 3.45, pm.

South Danvers for Salem at 6.45, 10.15, a.m., 2.15, 5.45, pm.

North Danvers " 10, a.m., 2, 5.40, pm.

Middleton " 9.45, a.m., 5.15, pm.

North Andover " 9.20, a.m., 5.05, pm.

Lawrence " 9.15, a.m., 5, pm.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, APRIL 2d, the

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m., and 4 pm. Leave Providence at 8 1/2 a.m., and 4 pm.

Dedham Trains—Leave Boston at 8 1/2 am, 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7, 9 1/2, am., 2 1/2, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 am., and 5 1/2 pm. Leave Stoughton at 11 1/2 am., and 3 1/2 pm.

Freight Trains—Leave Boston at 11 am., and 6 pm. Leave Providence at 4 am., and 7.40 am.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, am., 1 1/2, 4 1/2, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.—

On and after Monday, April 23d, 1849, Trains will run as follows:

Express Train.
Leaves Boston at 7 1/2 a.m.; Fitchburg at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains.
For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.

Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.

Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.
West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains.
From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.
Groton, 8 20 a.m., 12 30 and 5 15 p.m.

Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.
Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 pm. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 221f

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and sold by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

NEW YORK ANDERLE RAILROAD. EXTENDED TO OWEGO.

On and after the 1st June, the trains will run as follows, daily, excepting Sundays: For Passengers—Through trains will leave New York for Owego by steamboat, from the Duane-st. pier, at 7½ o'clock, A.M. and 5 o'clock, P.M. stopping at Ramapo Station, Chester, Goshen, Middletown, Otisville, Port Jervis and all the way stations west of the last-named place; and will leave Owego on and after the 4th June, at 6 A.M. and 7 P.M.; and Binghamton, on and after the 1st June, at 7 A.M. and 8 P.M. arriving in New York at 7½ P.M. and 8½ A.M. stopping at all the way stations between Owego and Port Jervis; and east of Port Jervis, at Otisville, Middletown, Goshen, Chester, Ramapo Station and Spring Valley. Way Trains for Port Jervis and all the intermediate stations, will leave New York, by steamboat Thomas Powell, from Duane-st. pier, at 7½ A.M. and 4 P.M.; and will leave Port Jervis at 6 A.M. and 4 P.M. Milk Trains—A train leaves Otisville at 5½ A.M. arriving in New York about 11. The afternoon milk is taken by the train leaving Port Jervis at 4 o'clock P.M. and arriving in New York about midnight. Freight—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Owego every morning at 6 o'clock; and another will leave Port Jervis, as usual, every morning at 8 o'clock, with market freight, &c. JAS. P. KIRKWOOD, Superintendent. May 30, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.
Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.
Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.
Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.
Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Morrisiana and Harlem at 7.20, 8.50, 10 am., 12 m., 1.35, 3.45, 5.55, 5.35 pm.
Fordham and Williams' Bridge at 7.30, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.
Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.08 pm.
Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.
Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2.4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8.10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinth, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at	- - -	7 am.
" " " "	- - -	3 pm.
Leaving Montreal at	- - -	10 am.
" " " "	- - -	6 pm.

THOMAS STEERS, Secretary.
May 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at	- - -	9 am. and 3½ pm.
Arrive at	- - -	9 am. and 6½ pm.
Leave York at	- - -	5 am. and 3 pm.
Arrive at	- - -	12½ pm. & 8 pm.
Leave York for Columbia at	- - -	1½ pm. & 8 am.
Leave Columbia for York at	- - -	8 am. & 2 pm.

Fare to York	- - -	\$1 50
" Wrightsville	- - -	2 00
" Columbia	- - -	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
Or via Lancaster by railroad - 10
Through tickets to Harrisburg or Gettysburg in connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - 5½ pm.
Returning, leaves Owing's Mills at - 7 am.
D. C. H. BORDLEY, Sup't.
Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarn, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 60
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.
F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours: On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
Returning, leave Springfield, at 2½ o'clock, and 9½ o'clock, am.
Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:
A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½ pm., Train from Cincinnati, and 2½ am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	- - -	\$1 90
Do do Springfield	- - -	2 50
Do do Sandusky City	- - -	6 50
Do do Buffalo	- - -	10 00
Do do Columbus	- - -	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.
Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1.60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8½ am., and 10 pm.
Leave Baltimore 9 am., and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.
Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.
Through ticket, Philadelphia to Pittsburg, \$12.
" " Wheeling, 13.

Through tickets sold at Philadelphia office only.
Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7 am., 4½ and 7 pm.

Newcastle Line.
Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm.
Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.
I. R. TRIMBLE, Gen. Supt.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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[WHOLE No. 688, VOL. XXII.]

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, June 30, 1849.

Copper Ores of Lake Superior.

Lake Superior.—In a paper by Henry R. Schoolcraft, Esq., to the West, on the Native Copper of Lake Superior, dated December 6, 1820, and published in the third volume of Silliman's Journal, we find the following account of the earliest investigations made in this region.

"The existence of copper in the region of Lake Superior appears to have been known to the earliest travellers and voyageurs. As early as 1689 the Baron La Hontan, in concluding a description of that lake, adds, 'that upon it we also find copper mines, the metal of which is so fine and plentiful, that there is not a seventh part loss from the ore.'* In 1721, Charlevoix passed through the lakes on his way to the Gulf of Mexico, and did not allow the mineralogy of the country to escape his observation. 'Large pieces of copper,' he says, in speaking of Lake Superior, 'are found in some places on its

banks and around some of the islands, which are still the objects of a superstitious worship among the Indians. They look upon them with reverence, as if they were the presents of those gods who dwell under the waters; they collect their smallest fragments, which they carefully preserve, without however making any use of them. They say that formerly a huge rock of this metal was to be seen elevated a considerable height above the surface of the water, and as it has now disappeared, they pretend that the gods have carried it elsewhere—but there is great reason to believe that in process of time the waves of the lake have covered it entirely with sand and slime; and it is certain that in several places pretty large quantities of this metal have been discovered without being obliged to dig very deep. During the course of my first voyage to this country, I was acquainted with one of our order (Jesuits) who had been formerly a goldsmith, and who, while he was at the mission of Sault de Ste. Marie, used to search for this metal, and make candlesticks, crosses, and censers of it, for this copper is often to be met with almost entirely pure.†

In 1766 Capt. Carver procured several pieces of native copper upon the shores of Lake Superior, and about the sources of the Chippeway and St. Croix rivers, and published an account of these discoveries in his book of travels, which has served to give notoriety to the existence of that metal in the region alluded to, without, however, furnishing any very precise information as to its locality, or abundance. He did not, from his own account, traverse the southern shore of the lake, but states that virgin copper is found in great plenty on the Ontonagon, or Copper Mine river, and about other parts of Lake Superior, and adds, 'that he observed many of the small islands, particularly those on the eastern shores, were covered with copper ore, which appeared like beds of copperas (sulphate of iron) of which many tons lay in a small space.‡

Five years after Carver's visit (A.D. 1771) a considerable body of native copper was dug out of the alluvial earth on the banks of the Ontonagon river, by two adventurers of the name of Henry and Bostwick, and together with a lump of silver ore of eight pounds weight of a blue color and semi-transparent, transported to Montreal, and from thence

shipped to England, where the latter was deposited in the British Museum after an analysis of a portion of it, by which it was determined to contain 60 per cent. of silver.§ These individuals were connected with a company, which had been formed in England for the purpose of working the copper mines of Lake Superior, among whom were the Duke of Gloucester, Sir William Johnstone, and several other gentlemen of rank. They built a small vessel at Point aux Pins, six miles above the Sault de Ste. Marie, to facilitate their operations upon the lake, and a considerable sum of money was expended, first, in exploring the northern shore of the lake and the island of Maripeaux, and afterwards in the mining speculations which were authorised upon the banks of the Ontonagon. These transactions will be best illustrated by a quotation from the narration account which Henry has himself published. After returning from the Canadian shore of the lake, and passing Point Iroquois, where the silver ore was found, he observes—'Hence we coasted westward, but found nothing till we reached the Ontonagon, where, besides the detached masses of copper formerly mentioned, we saw much of the same metal imbedded in stone. Proposing to ourselves to make a trial on the hill, till we were better able to go to work upon the solid rock, we built a house and sent to Sault de Ste. Marie for provisions. At the spot pitched upon for the commencement of our preparations, a green colored water, which tinges iron of a copper color, issued from the hill, and this the miners called a *leader*. In digging they found frequent masses of copper, some of which were of three pounds weight. Having arranged everything for the accommodation of the miners during the winter we returned to the Sault.

Early in the spring of 1772 we sent a boat load of provisions, but it came back on the 20th day of June, bringing with it to our surprise the whole establishment of miners. They reported that in the course of the winter they had penetrated forty feet into the face of the hill, but on the arrival of the thaw, the clay on which, on account of its stiffness, they had relied, and neglected to secure it by supporters, had fallen in; that from the detached masses of metal, which to the last had daily presented themselves, they supposed there might be ultimately reached a body of the same, but could form no conjecture as to its distance, except that it was probably so far off as not to be pursued without sinking an air shaft; Henry's Travels, p. 30.

† Charlevoix's Journal of a Voyage to North America, vol. ii., p. 45.

‡ Carver's Travels, p. 67.

* La Hontan's Voyages to Canada, p. 214.

and lastly that the work would require the hands of more men than could be fed in the actual situation of the country. Here our operations in this quarter ended. The metal was probably within our reach, but if we had found it, the expense of carrying it to Montreal must have exceeded its marketable value. It was never for the transportation of copper that our company was formed, but always with a view to the silver which it was hoped the ores, whether of copper or lead, might in sufficient quantity contain.

Eighteen years after the failure of this attempt, (1789) McKenzie passed through Lake Superior on his first voyage of discovery into the northwest, and in his description of Lake Superior says— On the same side (the south) at the river Tennagon is found a quantity of virgin copper. The Americans, soon after they got possession of that country, sent an agent thither, and I should not be surprised to hear of their employing people to work the mine. Indeed it might be well worthy the attention of the British subjects to work the mines on the north coast, though they are not supposed to be so rich as those on the south."

The attention of the United States Government appears first to have been turned toward the subject during the administration of President Adams, when the sudden augmentation of the navy rendered the employment of domestic copper in the equipment of ships, an object of political as well as pecuniary moment; and a mission was authorised to proceed to Lake Superior. Of the success of this mission, as it has not been communicated to the public, nothing can with certainty be stated, but from the inquiries which have been instituted during the recent expedition, it is rendered probable that the actual state of our Indian relations at that period, arrested the advance of the commissioners into the regions where the most valuable beds of copper were supposed to lie, and that the specimens transmitted to government were procured through the instrumentality of some friendly Indians employed for that purpose."

Improvement in Diving Bells.

The principle of the diving-bell is illustrated familiarly by holding the mouth of a glass tumbler evenly on the surface of water, and then immersing it without allowing the air included within it to escape. A paper placed on the inside of the tumbler will be found after the immersion perfectly dry.

Air, owing to the repulsive property of its molecules, has always a tendency to enlarge its volume. This tendency is called its *tension* or *elasticity*; and differs from the elasticity of solids and fluids, inasmuch as, continuing to act in every degree of density, it appears to have no limit. The Law of Mariotte shows that the tension of air is in the inverse ratio of its volume: it is therefore measured by the force that, increasing the density, compresses the volume. At the level of the sea the compression is such as to give a tension or expansive force of about 14.76 lbs. avordupois to the square inch: this is taken as the standard pressure of what is called *one atmosphere*. If atmospheric air under the piston of a cylinder be taken at a pressure of 15 lbs. on the sq. inch, the density by pushing the piston half-way into the cylinder is doubled; and the pressure of the air is therefore raised by that means to 30 lbs. on the square inch. Again: the higher the temperature of air the greater is its expansive force; and this increase of force, rising in equal proportions along every degree between the freezing and the

boiling point, amounts under the latter heat to a force higher than that under the former by about 37 per cent.

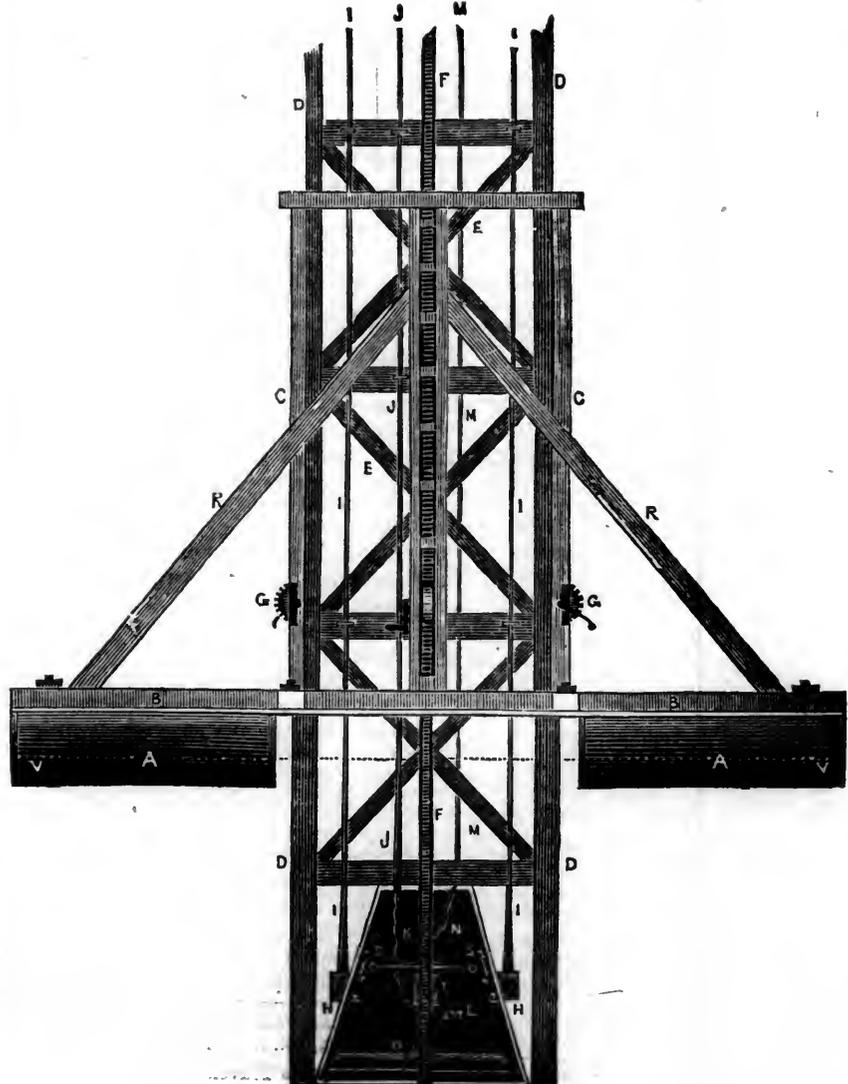
Now if a chest of air be lowered with the mouth downward to a depth of 33 feet in water the air within the chest will sustain besides its original one-atmosphere pressure an additional pressure equal to a column of water 33 feet high. But a water-column 33 feet high is, as illustrated by the common sucking-pump, equal to one-atmosphere; and consequently the pressure on the air within the chest being equal at 33 feet deep to *two atmospheres*, the density and tension are double that under ordinary circumstances, or about 30 lbs. to the square inch. But the pressure is still further increased by an increase of temperature as seen above; and therefore the diving bell may be either dangerous or fatal under the pressure resulting from certain depths of immersion coupled with the increase of this pressure occasioned by the lights sometimes used in the bell, insufficiency or irregularity in the supply of air, or any other circumstance leading to an increase of temperature within.

The supply of air must be adapted to the depth of the water and the consumption of the workmen.—The pump must be able to throw in at every stroke the volume consumed by the men during the period of the stroke, and a further supply equal to the production of a volume to fill the bell under the pres-

sure of the head above it. This may of course be done by lessening or decreasing the number of strokes within a given time. When the water rises inconveniently within the bell the men signal for an increased supply; and no other inconvenience than that of tension results from a super-abundant supply, seeing that the excess will pass off under the edges of the bell, and break in bubbles on the surface. Smeaton's bell has undergone such improvements from time to time that it is now quite safe and highly useful in hydraulic works. The bell used by Alexander Nimo at Wellsley Bridge on the Shannon in Ireland, and that used on the other works of that river were very fine examples of the diving bell. The bell at the government dock yard, Plymouth, England, is cast iron, weighing some four tons. It is 6 feet by 4 at the mouth, and 5 feet high. Mr. Frazer has published some ingenious improvements in the diving bell in the Transactions of the Institute of Civil Engineers of Ireland for 1846.

A series of convex lenses on the top admit sufficient light into the bell to enable the men to work in very considerable depths. The air is passed into the bell from a forcing pump through a leather hose; relays of men working the pump in regular strokes during the period of immersion. A plate of leather on the inside is secured over the air-holes; the spaces between the screws admitting the passage of the air

Fig. 1.



into the bell, but not admitting its return into the hose. This leather covering prevents accident; for even if it burst under the pump the hose will still keep the water from entering the bell. The bell used at Ramsgate Harbor, in England, was slung from a traversing crane, and by that means the men were enabled to place the stones in any required position.

We are led to these general remarks upon the principle of the diving bell and the contrivances, by which it has become one of great practical importance, by an examination of Dr. J. R. Worster's model of an improved bell now exhibiting at the Exchange in this city. The great drawback upon the value of the bell as formerly used has been the difficulty in subjecting it to the control of those using it. As it was carried down and kept in proper position by its own gravity, this was required to be increased in proportion to the size of the bell. From the want of any contrivance to keep the bell stationary, it could not be used in rivers having a strong current, and its use under the most favorable circumstances involved such expense, that it was only resorted to in extreme cases. All these difficulties Dr. Worster professes to obviate. By the machinery he has invented, the bell is perfectly subject to his control. It can be raised or lowered at pleasure to any practicable depth, and used as well in rapid streams as in perfectly quiet water. All his contrivances for maintaining communication between the persons in the bell and those on the outside, as well as for lighting it and supplying it with air, are very ingenious, and appear well adapted to this end, but the great excellence of his contrivance appears to us to be the perfect control secured by his apparatus over the bell and the trifling force required for working it.

When we consider how very desirable it often becomes to examine the bottom of our rivers and bays, the value of such improvements are at once apparent. But its great value at the present time is in its adaptedness to gold digging in California.—The richest deposits of gold must from the force of natural laws be in the bottom of her rivers. These have not, from the want of suitable apparatus, yet been touched. We understand that Dr. Worster proposes to make this the first field for illustrating the value of his new invention. We have seen letters from California saying that a good diving bell would reveal riches far greater than she has yet yielded.

Dr. Worster brings to this city the highest testimonials from the leading citizens of Baltimore, as to his character both as a skilful professional man and a gentleman, and we hope that he will reap all the reward that his very ingenious invention entitles him to receive.

Fig. 2.

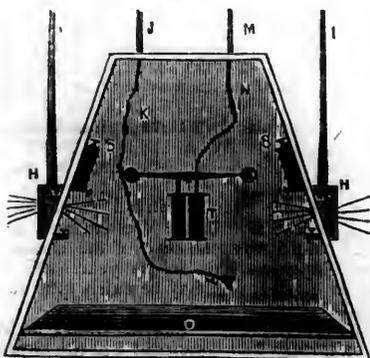
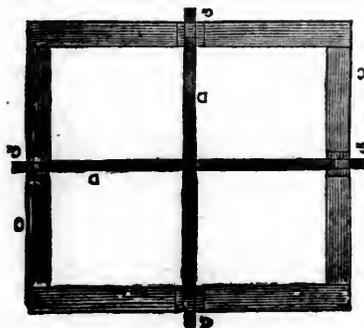


Fig. 1 is a front elevation, fig. 2 is a vertical section of the bell showing its interior, and fig. 3 is a top view, looking down upon the frame and scaffold.

The same letters indicate like parts. AA, are the floats. BB, transverse beams of the scaffold, and DD, are uprights of the moveable frame made secure by diagonal braces EE. The uprights DD, move in guide grooves formed by two or four upright posts connected by ties. On the edges of DD, are racks indicated in front by F. G, are pinions on the scaffold, which are operated by cranks, and by biting into the racks elevate and lower the bell and moveable platform. RR, are two diagonal

Fig. 3.



braces of the scaffold. II, are tubes to carry off the smoke from the lamps HH. These lamps have oil reservoirs SS, which regulate the supply by two cocks, and the air to the lamp can be regulated by another cock below. J, is the speaking tubes with a mouth piece L. M, is the air tube, and T, the air pump. These tubes are made of metal above the bell, but connected with flexible tubes KN, inside. O, is the bell platform. VV, the water line. This apparatus is all made in sections, and can be taken to pieces and packed in a very small compass.

Improved Railway Chairs and Switches.

It will be remembered that this subject was introduced at the last meeting, and excited considerable interest. Mr. Baines, the inventor, was present on this evening, and gave a further explanation of his invention. The peculiarity of the chairs consists in an arrangement whereby the joints are prevented from rising or getting out of line, and the rails from driving forward. To effect these objects the outer jaw of the chair fits close up to the under side of the head of the rails, but the inner jaw is only of sufficient height to clip the bottom flanch, and the rail is not fixed by a key, but by a square wrought-iron dowel pin, which passed through a hole in the outer jaw of the chair, and a corresponding notch in the end of each rail. This pin has a large flat head and under the head is placed a wrought-iron plate, 9 in. long, which fits close up to the head of the rail, on the inner side, and rests on the chair. A square cotter is then driven vertically through the outer end of the dowel pin, which draws the whole firmly up to the outer jaw of the chair. The wrought-iron plate is 1/4 inch thick in the middle, tapered to the ends, and slightly cambered, and is sprung flat by driving the cotter, which is made long enough to drive through the bottom of the chair into the sleeper, and serve as the spike on the outer side of the chair. A slot is made in the upper part of the cotter to allow the cotter being drawn out when required. The pressure of the wheels has no tendency to loosen the fixing of the rails in the chair, as the outer jaw fits close to the head of the rails, while the bottom flanch is firmly clipped by the inner jaw.—The dowel pin does not receive any of the pressure of the wheels, but holds the rails against the outer jaw. It also prevents the rails from rising at the joint, and from driving forwards. The effect of the long plate under the head of the dowel pin is to connect the two rails stiffly together, so as to prevent the working of the joint. This improvement was shown by two models of five lengths of rail, one set connected in the ordinary mode, the other by the method under notice. Another part of the invention relates to an intermediate chair, the jaws of which are alike, but set obliquely instead of opposite each other. It is slipped endways on the rail, and then

twisted at right angles to the rail, which makes it grip it firmly between the jaws. It is held by means of spikes. The last part of the invention is an improvement in switches which consists principally in making the tongue about half an inch deeper than the rail, so that it may work under it. The object sought is to secure steadiness, and a provision is made for causing the switch to clean itself.

In the course of the discussion, in which the President, Mr. Woodhouse, Mr. M'Connell, and Mr. Slate took part, it was stated that an experiment had been tried with the chairs on the Norfolk line for nearly a year, and the result was quite satisfactory. The whole of the ballast was taken away from the joint sleeper, and the train allowed to pass over it and there was only a slight deflection. At the termination of the discussion, the President, who took considerable interest in the subject, said he would be glad to know the result of a trial on a main line.—*London Min. Jour.*

An Express Locomotive.

The Secretary then read a paper by Mr. Wealens, of Newcastle, which was accompanied by drawings. The engine was manufactured by Messrs. R. Stevenson & Co., for the York, Newcastle and Berwick railway. It had an inside cylinder with a crank axle and six wheels, with inside bearings for the crank axle and outside bearings for the leading and trailing axles, and the valves were placed on the outer side of the cylinders, instead of inner side as usual.

The President, Mr. M'Connell and others made a few remarks, observing that there was some advantage in detail in the arrangement of the engine.—*Id.*

Railway Wheels.

The Chairman then called upon Mr. Henry Smith, of West Bromwich, to explain the principle of his new solid wrought-iron wheel, one of which was exhibited to the meeting, together with numerous drawings. The paper was contributed at the request of the Council of the Institution, and the explanation of his invention was accompanied by tables of the results of experiments made to ascertain the resistance of the atmosphere to spoke and disc wheels, and an appendix of accidents resulting from defective wheels. Mr. Smith introduced the subject of his paper by referring to the present mode of making spoke wheels, in order to contrast it with his invention, and then proceeded to explain the *modus operandi* of the improved manufacture.—Briefly the method employed is this:—In the first place, a straight bar of hammered or rolled iron is taken, about four inches wide, and sufficiently long to form a hoop of such a diameter as is most suitable to form the intended wheel. Other pieces of bar iron, laid flat and close together, and cut in lengths to the same circle as the hoop, are then taken to form the base of a "pile." The hoop is then placed upon this foundation and filled with scrap iron. The whole is then put into a reverberatory, or heating furnace, and when at a proper heat, is hammered to form a mould: the face of the hammer is recessed in such a shape as to form an approximation to the shape of one side of the finished wheel, but of a smaller diameter; the anvil face is flat. Two of these moulds are then put together, back to back, heated in a similar way, and hammered between tools of the same form and size as the finished wheel; but these tools embrace only a segment of about one-fifth part of the entire wheel, and the mould is turned round during the process, and is thus hammered out to the form and size of the required wheel. The wheel is then put into an annealing furnace, and planished between similar tools to the form of the finished wheel. The wheel then only requires turning in a lathe and the centre boring out. By this mode Low Moor, or any other description of iron or steel, can be used for the tyre of the wheel, and thus in all cases ensure a clean wearing surface and a compound character of fibrous and granulated iron, which it is believed no other present system of making wheels affords.—The paper having been read, the Chairman said he thought that the thanks of the meeting were due to Mr. Smith for his very interesting paper, and he therefore moved that they should be voted to him.—The motion was carried by acclamation. In answer to a question by the chairman as to the cost of the wheel, Mr. Smith remarked that he would be

happy to put himself in competition with other parties. He had already made 200 of these wheels and the one before the meeting had been made that day. When struck with a hammer, the sound given out was like that of a bell, showing the perfect soundness of the wheel, and the closeness and unity of the material. The hammer used in the manufacture was 9 tons; the weight of the wheel, 4½ cwt. Some of the wheels are at present at work on the Bromsgrove line. The Chairman remarked that it occurred to him, as the body of the wheel was not so soon worn out as the tyre, and when it required renewal, a secondary process, so to speak, would have to be gone through, it was both troublesome and expensive to forge the tyre on. Why not make it a disc, without this expense and trouble?—Mr. Smith remarked that it was no more trouble or expense to make it with the tyre than without it.—It was easily done. To those who had to tyre the wheel again it would certainly be a little more troublesome, but he considered that the iron, forged as his was, was more durable than any rolled tyre, and the friction of breaks would affect it less.—Some conversation then arose as to the merits and defects of cast-iron disc wheels, Mr. Beyer inclining favorably to cast-iron; but in answer to a question by the chairman, he said he should not prefer cast-iron, only he could never understand why such wheels were not used.—The Chairman remarked, that in rapid railway travelling, they must all admit, as a body of engineers, that wrought-iron was better than cast iron for such purposes. He thought that in Mr. Smith's wheel it would be preferable if the tyre was left out of the question, the disc being forged, and the tyre put on afterwards.—Mr. Smith urged that the cost of making the wheel would be less if the tyre was forged solid with it. The tyre would then wear longer than the ordinary tyre, and it was a matter for deliberate consideration whether the additional safety it gave was not with a little extra expense in first re-tyring.—Mr. Allen, of Crewe, remarked that the disc part of the wheel would be almost everlasting; it would last 100 years.—The Chairman said that he was of opinion that the invention was a very excellent one, leaving the question of tyre out altogether. He considered that the railway world was very likely to be greatly indebted to Mr. Smith, for his excellent wrought-iron disc wheel, and he saw no reason why it should not come into extensive use. He had some doubt whether it was desirable or essential, for the sake of a small amount of additional safety for two or three years, to incur the expense of forging the tyre on the wheel. He did think the mode of manufacturing the wheel was highly interesting and it was a triumph in forging that he was not prepared for.—*Ib.*

Explosion of Steam Boilers Prevented by Electricity.

On Thursday last, Mr. Arthur Dunn delivered a lecture on this interesting subject, at the City of London Literary and Scientific Institution, Aldersgate street. The lecturer commenced, after alluding to the general importance of the subject, by observing that all were aware of the frequent occurrence of these fatal steam-boiler explosions; the evils of them were not merely confined to the destruction of life and property, which were unavoidably its concomitants; but, unfortunately, they were attended by a subsequent loss, which, though not so fatal in its effects, was productive of great injury to the working classes, as but few cases occurred which were not followed by numbers of operatives being thrown out of employment, and, in some instances weeks elapsed previous to the injury being so repaired that they could again resume their avocations.—Mr. Dunn gave here an account of the several explosions that had recently occurred, particularly referring to the late one in Whitechapel. A few days after the explosion, with the permission of Mr. Keys, he had inspected the remains of the boiler; he had been told by several men on the establishment that not ten minutes previous they had passed the boiler, and to them it appeared to be sound, and no danger to be apprehended; he had minutely examined the boiler-plates, which were of the usual thickness, so that in that case there could be no ground to imagine that the boiler was unsound, or out of repair, being ¼ths of an inch in every place where the plates were torn.

Steam boiler explosions were caused either by over pressure, want of the proper quantity of water, and over temperature; the two first resolved themselves into the latter, which was the sole cause of the explosions. It was a singular fact, that boiling water when placed on red hot iron ceased to boil.—The celebrated chemist, Klapproth, had read a paper on this to the French Academy of Sciences about 1802, though this discovery had taken place some time previously. [Mr. Dunn here successfully illustrated the experiment by pouring boiling water from a vessel into a round iron sancer, made red hot by means of a spirit lamp.] Mr. Grove had decomposed water by heat alone; but it required for that purpose intense white heat. Freed from atmospheric air, it could be heated above its ordinary boiling point without generating steam; Donny had made several experiments which had proved this. If covered with a stratum of oil, this would occur. A practical proof of this he had experienced but a short time since. He had a small quantity of water in a common Florence flask; this was covered with a slight stratum of oil. A spirit lamp was placed underneath it; but before any steam was generated, or the least warning given that it was at boiling point, it exploded—the water being thrown to some considerable distance. Inventions have at various times been brought before the public—such as whistles, and various indicators attached to pressure gauges, also self-acting valves. All are dependent upon steam pressure, and not temperature, and as liable to get out of order as the valve generally used. He had first thought of this invention some years since when in America. He was engaged in experiments to dissolve silica in close boilers under the action of caustic soda lye; this caused such an incrustation on the valve, that it was firmly cemented into its seat, and, consequently rendered useless. To obviate this difficulty he had recourse to the use of a common thermometer, plunged into a mercury chamber; this led him to the idea of constructing a thermometer which should indicate any given temperature by audible signals.

Mr. Dunn here exhibited a handsome model of a boiler with the tubes; to these were attached copper wires, which communicated with bells placed at different parts of the lecture room. On the rising of the mercury by an increased temperature, the elastic circuit was completed and signals were immediately given, proving that the boiler was getting beyond its proper working temperature. Diagrams of different sections of the boiler were likewise shown, and fully explained. If this invention was generally in use explosions could invariably be avoided, as the moment there was too high a temperature the boiler would signalise, and it would then be the place of the engineer to discover where the fault lay. He could not believe that any man would be so foolhardy as to neglect a boiler, after it had plainly told him there was something the matter with it.

The principal points in the invention were its unerring action, trifling cost, and its dependence entirely upon temperature. The signals could be made at any number of places at once; a bell could be fixed in the engine room and the office; it was applicable to all boilers; the captain in his cabin, or the manufacturer in his counting house, could rest satisfied his boiler was working safely. From the simplicity of the invention it is not liable to get out of order; signals such as pistols, detonating caps, &c., may be used; but as damp might affect these he had preferred the simple action of the bell. It could be applied to the steam gauges now in common use; but these could not be recommended, as they were dependent upon pressure instead of temperature, which is the only secure criterion of safety. There was no difficulty in keeping the batteries in action. He had a boiler in use with this apparatus for five months, and on two occasions he proved the practicability and utility of his invention.

The result of his practical experience had convinced him that the sole cause of explosions was a carelessness with regard to the temperature—no one ever knew a boiler to explode without a fire under it; he trusted that his simple invention might be a small means of preventing these dreadful accidents, his invention was now before the public to stand on its own merits and demerits, and all that he demanded for it was a "clear stage and no favor." Mr. Dunn likewise exhibited a gauge, to control by e-

lectricity a required amount of pressure, so that if 10 lbs. were required, and 15 lbs. were shown on the gauge, the signal was made so that the engineer might reduce it to the required amount. An explanation was given of the method of obtaining motive power to ring the bells by the large magnet which is well known by those who are aware of the system by which the electric telegraph is worked.—We regret our limits have not allowed us to follow Mr. Dunn more fully, but we trust at an early opportunity to see his boiler in action, when we shall give a more detailed description of its merits.—*Ib.*

Railroads in Georgia.

We are happy in being able to present the following connected view of the railway system of this state, copied from the Savannah Republican, which is a sufficient voucher for its accuracy. When the lines proposed shall be completed, no state in the Union will have made such ample provision for its people in the shape of railway accommodations, and in no state has the experiment of railway construction met with more triumphant success.

The enterprise of the people of Georgia, unostentatiously displayed in constructing the splendid lines of railway now in operation, has astonished our brethren of the northern and south-western portions of the Union. In railroad reports, in the public journals, in the letters of intelligent travellers, every where, do we find evidence of the high estimation in which our state is held. We would not boast at this state of things; rather would we seek to show what yet is wanting to perfect the system of internal communication, so that the people of every quarter of our dominion could have the same advantages which the railways now in use afford.

We propose in a few brief articles to give a succinct account of the roads now in operation—now built, and at what cost—to show what lines are projected and being constructed, and what will probably be their influence—and then to exhibit a plan by which the state can, at a very trifling expense, complete a system of so general benefit that, for a generation yet to come, no further outlay of capital will be necessary.

The Macon and Western railroad, the phoenix of the old Monroe road, first claims our notice. The Monroe road was projected to run from Macon to Forsyth, and afterwards the project was extended to Atlanta, Georgia. It was a bold movement in its inception, but hazardous in the extreme, for when its authors started, there was no prospect of a road below Macon or above Forsyth. When it was determined to build the Western and Atlantic and Central roads, the Monroe Company was to form the connecting link between them, and thus was a way looked for from the Tennessee river to the city of Savannah. After many struggles & the establishment of the present flourishing town of Griffin, the company failed—its affairs went into chancery and the road was sold. It is now in new hands—has been completed and in operation for near three years, and is doing a splendid business. A million of dollars was lost to the people by the old company but the new company has finished a road worth over a million of dollars—on an outlay of not much over half a million. We shall consider the cost of the road, 101 miles in length, at \$1,500,000.

The Georgia railroad, from Augusta to Atlanta, 171 miles, was finished about three years ago. It has a branch of 40 miles in length to Athens. It has cost, in round numbers with all its equipments, \$3,500,000.

The Central road from Savannah to Macon, 191½ miles, was finished five years ago. Its cost, from first to last, with its equipments, may be placed at \$3,000,000.

The Memphis Branch railroad, seventeen miles long, from Kingston, on the Western and Atlantic railroad to Rome, at the head of the Coosa river, has been finished within the last year. We do not know its cost, but it may be fairly put down at \$130,000.

These four roads, together 520 miles in length, were built entirely by individual and city corporation subscriptions. Not a dollar was ever advanced to either of the corporations of the state.

The Western and Atlantic road, 140 miles in length, from Atlanta to Chattanooga, on the Ten-

nessee river, in the state of Tennessee, was opened to Dalton, 100 miles, about two years ago, and will be opened to Chattanooga on or about the first day of November next. Then will Georgia have a line of railroad from Savannah to the Tennessee river, of 432 miles—and a line from Augusta to Atlanta of 171 miles, besides the branches to Athens and Rome. These lines will, in a brief period, be extended through the Nashville and Chattanooga roads to Nashville.

The Western and Atlantic road has been built by the state out of the public treasury. All the citizens of the state, therefore, have contributed in equal proportion to the erection of this great road—an everlasting monument of the wisdom and liberality of the State Legislature. Its cost, with equipments, when completed, may be placed at the sum of \$4,000,000.

Thus have six hundred and sixty miles of railroad been constructed and equipped within the last fifteen years at a cost of about \$12,000,000, two-thirds of which amount have been furnished by individual enterprise and exertion, and one-third by the state.

Of the skill and perseverance displayed in these truly great works, or of the effects of the roads on the prosperity of the people, we need not say a word. *The roads shall speak for themselves.*

The South-Western railroad is the chief road of those projected and under way. It is to run from Macon across Flint river, near Traveler's Rest, to Fort Gaines, on the Chattahoochee—distance about one hundred and fifty miles—estimated costs, one and a half millions of dollars. The object of this work is to develop the beautiful and fertile portion of the state commonly known as *South-Western Georgia*—the finest region for the cultivation of cotton in all the south, and to bring the products of it to an Atlantic market at Savannah. The road is destined, in our opinion, to be part of a great line which will terminate at Pensacola, and thus to be part of the greatest contemplated line in the Union—a line of ocean steam ships and railroad from New York to New Orleans, which can convey passengers between these important cities in ninety-five hours. The subscriptions to this magnificent work have reached \$650,000, over five hundred hands are at work, about twenty-five miles of the road are graded, and the whole work to the western bank of Flint river, is progressing in so spirited a manner as to leave no doubt of the crossing of the Flint by the first day of August, 1850.

The influence of this road will be felt throughout the length and breadth of Georgia. There is no portion of the state which is not directly interested in it—it is destined to improve the condition of the whole state and all the railroads now in use. Its advantages may be thus briefly stated:—1st. It will develop the best cotton region of the south. 2d. It will afford in Georgia a market for the cotton grown in the state. 3d. It will be an avenue for the introduction into Georgia of West India produce, and various articles of Western production coming from New Orleans. 4th. It will be an avenue for the productions of the Cherokee Country and Tennessee to the planting lands at Georgia and Florida. 5th. It will be part of a great line of travel from Tennessee and parts further west to the Gulf of Mexico. 6th. It will be on the great thoroughfare of the Union from north to south, whether that great thoroughfare shall be by railroad alone or by railroad and steamships—and it will be of incalculable value to the government and people of the United States, as it will connect the most south-western Atlantic port, of ample depth of water, with the very best harbor on the Gulf of Mexico.

The next road in process of construction is the Muscogee road, from Columbus to Barnesville—distance seventy-five miles—estimated cost, about \$800,000. The Muscogee Company is at work with considerable force, and has made arrangements, we understand, by which its road will soon be placed under contract—already some twenty-five miles have been let. This road will connect the important city of Columbus with every other important point in the state, and with the great improvements north and west, giving to its citizens an outlet to the Atlantic for their products and an inlet for the iron and grain of the mountain region.

The Milledgeville road, from Gordon on the Central road to the seat of Government of the state

—distance 16 miles—estimated cost, about \$135,000. The object of this road is to render permanent the present seat of government by opening to it railroad communication from all points, and to give to the planters of Central Georgia a way for their products to the sea. As Milledgeville is near the centre of the state and a convenient and healthy position, the object seems to be one of general and great importance. Several miles of this road are graded, and with a little aid, beyond the present subscriptions, the work could be finished within a year.

These three roads are only ones now being actually constructed.

Of the projected roads, the first is the road from Atlanta, Georgia, to West Point, thence to unite with the Montgomery and West Point railroad.—The object of this work is to connect the Charleston and Georgia railroads with the Alabama and Western improvements. The road is destined to be part of a great thoroughfare of travel, and it will open to Atlantic markets the north-western part of the state. The distance is about 90 miles—the cost will be about a million of dollars.

Then there is the road from Augusta to the Central road, at or near the 80 Mile Station. Distance about 53 miles—estimated cost, \$530,000. We view this road as one of vital importance. It will connect Augusta with Savannah by a shorter and less expensive road than that from Augusta to Charleston—it will bind the upper and lower country in the closest bonds; it will build up the two first cities of Georgia, and will do more to throw the advantages of Georgia roads into Georgia's sea-ports than any other work which has been or can be devised.

The five roads indicated in this article, when finished, would add 385 to the number of miles of railroad now in operation, and run the amount of iron way to over 1,000 miles! The cost of these additional 385 miles will not exceed \$4,000,000—and the enterprising citizens of Georgia can and will pay the half, or even more than half that amount, if the State of Georgia, which hitherto has not given a dollar in aid of individual capital, will, now that individual capital and liberality have placed the state on ground so high, and made the outlets for the state's own road, pay the residue.

We are compelled to brevity; in our next we will endeavor to show how the great work of internal improvement in Georgia can be speedily carried out to full success.

Since writing the preceding, we have heard that the Muscogee Company has not yet made the arrangement to go to Barnesville to which we alluded. That Company, however, can go to Fort Valley, and there connect with the South-Western road at much less cost than to go to Barnesville, and in our opinion by a better route for the city of Columbus.

It will, we think, be readily conceded that with the 1,045 miles of railway which we have in our preceding articles, pointed out, shall be finished, the State of Georgia will present a system of iron roads unsurpassed by any state in the Union—a system which will answer the exigencies of all parts of the state, not only for the present population, but for more than a generation to come. The commanding position and power of Georgia, in this regard, are the fruits of the enterprise of individual citizens, as we have seen. The state, as a body politic, owes a debt of gratitude to those who have toiled so hard and spent so much money in opening the outlets to the State Road. Unless the avenues from Atlanta, eastwardly, had been opened with the diligence which has marked their progress, notwithstanding great pressure in the times, the Western and Atlantic road would never have passed beyond the town of Dalton. The people of the Cherokee region also owe to their fellow-citizens of all other portions of the state a great debt. Their country has been developed by the enterprise, the talent, and the money of those who do not inhabit their beautiful and interesting section. Every thing has been done for them which can be done for their improvement, their happiness, and their rapid advancement.

South-Western Georgia, an area as large, if not greater, than the Cherokee Georgia, now appeals to them, and says that they, at a remote and isolated quarrel, have cheerfully submitted to taxation that the great work which now pours its riches and its blessings over the mountain tops and through the

valleys of the north-west, might be finished—that by their votes in the Legislature, and their good word at home and abroad, they have aided in giving wealth and power to the newest territorial acquisition of the state. This appeal of the south-west is irresistible. He will be more than a bold man, who, coming from the mountains, shall stand up to the Legislative Halls and raise his voice against the effort which will be made to do, in small part at least, for the lower country what has been done for the upper. All this is plain enough; already in all quarters intelligent citizens declare that something must be done by the state for those who have hitherto received nothing from the common fund. And we are happy to add, the people who have themselves, without assistance from the state, been successful in carrying through the great lines which give value to the State Road, join with the south-west in their appeal, and tender to them their political aid.

If the South-Western road was the only one wanting to complete the general system, not a day would be lost by the next Legislature in granting all the aid necessary to finish it without delay. The whole debt of the State of Georgia does not amount to two millions of dollars, and the Western and Atlantic road is worth nearly twice that sum. The state therefore is virtually out of debt. No valid objection, on the score of debt, can be made.

But we know it will be said that if aid be granted to the South-Western road, there are other roads in progress and projected which will ask aid, and that a system of *tax-ravelling* will be introduced into the Legislature, and in the end the state will be saddled with an enormous debt. It has been our aim to show that the position of Georgia is better than that of any other state. We hold it to be clear that with 6 per cent. Bonds of the State to the amount of one and a half million of dollars, not only the South-Western but every other road of general character, projected as well as in progress, can be finished within five years from this day.

We would then respectfully recommend to the next Legislature the grant of aid to the South-Western, the Muscogee, the Atlanta, the Milledgeville and Waynesboro' railroad companies. Let \$500,000 be given to the South-Western company, on condition that a like sum be subscribed by individuals in cash or work, and that road will speedily reach the Chattahoochee. In the same proportion—say one-third of the cost of the roads—let the other companies receive aid, and their roads will be built beyond doubt. In the case of the Milledgeville road, we would recommend a greater proportion of aid say \$100,000, because the whole state is directly interested in that work. We repeat that every work can be completed by the grant of the small sum of one and a half millions of dollars.

The state cannot lose anything, for it is obvious enough that the stock of either of the roads would pay 6 per cent. dividends. But to avoid all chance of loss to the state, the grant of aid may be coupled with the further condition, that the state shall, within a defined period, receive from the respective companies six per cent. of its advances.

We fear to be considered prolix on this interesting subject. We profess to give only an outline of what we believe to be the true policy of the state.—When it is recollected that the ability which the state now has, with so small an outlay to finish a perfect system of roads, is mainly owing to the great labors and the very great sacrifices of comparatively a few of her inhabitants—when those who have borne the heat and burden of the day, ask nothing for themselves, but even plead for those who have come in at the eleventh hour, it does not seem to us, a voice so loud can be sent up to the halls of legislation, that nothing can resist it. We trust that our own people will think of and study this matter, and that they will make at once the only effort now wanting to place our state in a condition of unexampled prosperity.—*Savannah Republican.*

Large Award.

We learn that Judge Williams and Judge White, arbitrators in the important case of M. C. Story and others, railroad contractors, against the Norwich and Worcester railroad company, have just finished their sittings in this city and made their award.—They find about \$15,000 due from the company to the contractors.—*Hartford Courant.*

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Capital stock paid in.	Debts more than surplus.	Rating grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Atlantic and St. Lawrence	146	...	36	In progress	s. ....	.....	.....	..	.....	.....	.....	.....	78 a 81	
Androscoggin & Kenneb.	55	...	6	In progress	s. ....	.....	.....	..	.....	.....	.....	.....	70	
Albany and Schenectady.	16 ¹ / ₂	...	16 ¹ / ₂	\$1,606,196	100,000	.....	.....	..	.....	.....	.....	1 5-9	89	
Auburn and Rochester...	78	...	78	2,644,520	34,000	.....	.....	..	175,922	.....	.....	8	86a87	
Auburn and Syracuse...	26	...	26	1,125,886	43,300	.....	.....	..	454,721	.....	.....	2 9-10	80a81	
Attica and Buffalo.....	31 ¹ / ₂	...	31 ¹ / ₂	821,313	26,000	.....	.....	..	172,185	.....	.....	4 ¹ / ₂	.....
Alleghany Portage.....	36	...	36	.....	.....	.....	.....	..	150,959	.....	.....	.....	.....	Leas'd to Western railroad.
Albany and W. Stockb...	38 ¹ / ₂	...	38 ¹ / ₂	1,924,701	50,000	.....	.....	..	.....	.....	.....	.....	.....
Annapolis and Elkridge..	21	...	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Bangor and Oldtown.....	11 ¹ / ₂	...	11 ¹ / ₂	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Boston and Lowell.....	25 ¹ / ₂	1 ¹ / ₂	27 ¹ / ₂	2,013,687	73,200	1,800,000	.....	10 up, 30 down.	461,339	268,707	192,631	8	118 ¹ / ₂	
Boston and Maine.....	74 ¹ / ₂	5	79 ¹ / ₂	3,571,832	45,000	3,249,804	249,715	47 ¹ / ₂	511,627	264,534	247,893	8 ¹ / ₂	101a102	
Boston and Worcester...	41 ¹ / ₂	22	66 ¹ / ₂	4,960,000	74,700	4,500,000	460,000	40	716,284	406,303	310,080	8 ¹ / ₂	101 ¹ / ₂	
Boston and Providence...	41	6 ¹ / ₂	47 ¹ / ₂	3,031,106	63,800	2,893,300	26,878	37 ¹ / ₂	354,375	183,361	170,013	6 ¹ / ₂	93 ¹ / ₂	
Bost., Concord and Mont.	90	...	38	In progress	s. ....	.....	.....	..	.....	.....	.....	.....	82a85	
Berkshire.....	21	...	21	600,000	28,500	.....	.....	..	.....	.....	.....	7	.....
Buffalo and Niagara.....	22	...	22	250,396	11,500	.....	.....	..	60,014	.....	.....	6 1-3	.....
Buffalo and Black Rock.	3	...	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Susqueh'a.	36	...	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Beaver Meadow.....	26	...	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Buck Mountain.....	.....	.....	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Ohio... } Washington Branch. } Frederick Branch... }	.....	.....	178 } 31 } 3 }	13,136,940	61,900	.....	.....	..	1,468,828	805,530	663,198	.....	43 ¹ / ₂ a44	
Calais and Baring.....	3	...	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Concord.....	34	...	34	.....	.....	1,350,000	.....	..	311,326	180,699	130,639	.....	121	
Cheshire.....	54	...	54	2,584,143	48,000	1,453,379	1,140,764	60	.....	.....	.....	.....	67a67 ¹ / ₂	
Connecticut and Passump.	115	...	40	.....	.....	.....	.....	..	.....	.....	.....	.....	85	
Connecticut River.....	50	2	52	1,589,184	30,500	1,234,970	426,013	32	165,242	95,658	69,583	8	96 ¹ / ₂	
Cape Cod Branch.....	28	...	28	587,116	20,900	343,000	217,395	40	.....	.....	.....	.....	62	
Corning and Blossburgh..	.....	.....	40	.....	.....	.....	.....	..	18,069	.....	.....	.....	.....
Cayuga and Susquehanna	29	...	29	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Amboy... } Trenton Branch... } New Brunswick Br.. }	61 } 6 ¹ / ₂ } 29 }	..... } ..... } ..... }	96 ¹ / ₂	3,200,000	33,000	.....	.....	..	.....	.....	.....	.....	140 a 142	
Columbia.....	82	...	82	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Woodbury..	9	...	9	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Cumberland Valley.....	.....	.....	52	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Carbondale & Honesdale.	26	...	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Chesterfield.....	12	...	12	150,000	13,500	.....	.....	..	.....	.....	.....	.....	.....
City Point.....	9 ¹ / ₂	...	9 ¹ / ₂	195,867	15,919	.....	.....	..	.....	.....	.....	.....	.....
Central of Georgia.....	191	...	191	3,222,289	16,800	.....	.....	30	516,252	266,450	250,226	.....	80	
Central of New Jersey...	63	...	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Dorchester and Milton...	3 ¹ / ₂	...	3 ¹ / ₂	114,224	35,100	72,990	41,234	39	.....	.....	.....	.....	74	
Detroit and Pontiac.....	25	...	25	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Eastern.....	54	19 ¹ / ₂	73 ¹ / ₂	.....	.....	.....	.....	40	.....	.....	.....	8	103	
Essex (Salem to Law.)...	22 ¹ / ₂	...	22 ¹ / ₂	421,574	18,700	263,746	160,958	55	.....	.....	.....	.....	.....
Erie and Kalamazoo.....	33	...	33	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Fall River.....	42	...	42	1,145,982	27,300	1,050,000	83,177	45	184,344	109,390	74,953	7 ¹ / ₂	85 ¹ / ₂	
Fitchburgh.....	49 ¹ / ₂	6 ¹ / ₂	56	2,945,630	52,300	2,735,910	67,504	..	486,265	286,046	200,219	8 ¹ / ₂	110 ¹ / ₂	
Franklin.....	.....	.....	22	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Greenville and Roanoke.	21	...	21	283,917	13,500	.....	.....	..	.....	.....	.....	.....	88 a 90	
Germantown Branch.....	6	...	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Gaston and Raleigh.....	96	...	96	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Georgia (Augusta to At'a)	171	...	.....	.....	.....	.....	.....	40	477,052	267,173	209,879	.....	121	
Atlanta Branch.....	39	210	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Harrisburg and Lancaster	37	...	37	1,183,257	31,979	609,550	573,707	49	121,350	37,386	83,963	6	96 a 97	
Hartford and New Haven	62	...	62	.....	.....	.....	.....	17	.....	.....	.....	.....	104 a 105	
Housatonic.....	74	...	74	.....	.....	.....	.....	..	.....	.....	.....	.....	87	
Hudson and Berkshire...	31 ¹ / ₂	...	31 ¹ / ₂	818,983	26,500	.....	.....	..	.....	.....	.....	.....	.....
Hazleton and Lehigh.....	10	...	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Jackson and Brandon.....	13	...	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Lexington and W. Camb.	6 ¹ / ₂	...	6 ¹ / ₂	252,680	38,900	.....	.....	55	.....	.....	.....	.....	.....
Lowell and Lawrence.....	12 ¹ / ₂	...	12 ¹ / ₂	283,248	22,650	.....	.....	45	.....	.....	.....	.....	85	
Long Island.....	98 ¹ / ₂	...	98 ¹ / ₂	2,173,646	22,100	.....	.....	..	.....	.....	.....	.....	23 ¹ / ₂	
Lockport and Niagara...	23	...	23	221,000	9,700	.....	.....	..	.....	.....	.....	.....	.....
Lewiston.....	3 ¹ / ₂	...	3 ¹ / ₂	33,673	10,300	.....	.....	..	.....	.....	.....	.....	.....
Lykens Valley.....	16	...	16	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Little Schuylkill.....	23	...	23	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Louisa.....	50	...	50	474,137	9,482	.....	.....	..	.....	.....	.....	.....	.....
Lexington and Frankfort.	29	...	29	450,000	15,600	300,000	.....	61	50,000	30,000	10,000	.....	82a85	
Little Miami.....	81	...	81	1,513,402	18,000	.....	.....	..	.....	.....	.....	.....	.....
Machiasport.....	8	...	8	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Morris and Essex.....	45	...	45	.....	.....	.....	.....	80	.....	.....	.....	.....	100	
Mauch Chunk and R. Run	36	...	36	.....	.....	.....	.....	..	.....	.....	.....	.....	136	
Mine Hill & Sch. Haven.	25	...	25	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mount Carbon.....	7	...	7	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mt. Carbon & Pt. Carbon	2 ¹ / ₂	...	2 ¹ / ₂	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mill Creek.....	6	...	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Montgomery & W. Point	67	...	67	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

AMERICAN RAILROAD JOURNAL.

Saturday, June 30, 1849.

The Hewson-Pier for Bridges.

The stone bridge, with its piers, is an expedient that grew out of the difficulties presented to the progress of man by a Tiber;—the suspension bridge, with its towers, out of those presented to his progress by a Thames:—but both of these, admirably as they are adapted to the difficulties from which they took rise, fall far short of those which therefore call for a new expedient on the banks of an Ohio or a Mississippi. American engineers have felt this—and attempting to overcome it, have, like M. Wiebekin, of Bavaria, done miracles of construction in timber, but they have, unfortunately, confined their attention to the superstructure, overlooking the fact that an immense, and in some cases an insurmountable difficulty, lay in the question of foundations. Beyond a certain depth the construction of piers for the arch or towers for the chain may be considered impossible, and in widths exceeding some 5 or 6 hundred feet, bridging is consequently out of the question. The physical features of this country, in many places, present therefore to the social and commercial intercourse of the people an obstacle, which, notwithstanding the facilities of steam, cannot be completely surmounted without the introduction of a power to sustain the weight of a bridge.—We have been led into these remarks by an invention of Mr. M. Butt Hewson, which promises to make a valuable addition, especially in this country, to the resources of the Civil Engineer. Mr. Hewson has favored us with the following extract from the specification of his invention, and we have great pleasure in placing it under the consideration of our readers:

"A body, specifically lighter than water, being held under that fluid will exert through its centre of gravity a vertical upward pressure equal to the difference of weight between itself and a volume of water of the same bulk. Now suppose it to be held by iron rods attached to a weight fixed at the bottom of the water, the rods being so disposed that they resist not only the vertical force of the floatation, but also the horizontal force of currents and the like; it is very plain that under such conditions the body will maintain at all points a constant position with a rigidity in the vertical line equal to its buoyancy. Consequently, by attaching hollow caissons of iron or timber to corresponding caissons loaded with ballast and sunk at the necessary intervals across a river, these hollow caissons being held by chains, from the ballast at a fixed level below the lowest water-line, points of resistance for the roadway of a bridge can be established without any other limit to the rigidity of those points than the conditions of the water-way or the strength of the material."

The plan of this bridge embraces the principles of the pier and the floating bridge, with the advantages of being applicable to any depth of water, of presenting but a slight resistance to the current, and capable of being converted into a draw bridge at pleasure, by an hydraulic turn-table within the pier.

In England, where it becomes desirable to cross a water-course, over which, from its depth or width, a common bridge is not practicable, railroad trains are received on board steamboats of immense size and costly construction, and transported from one bank to the other. By the adoption of this plan, which is perfectly in harmony with natural laws, the tedious and expensive process adopted in Eng-

land might be entirely avoided, and bridges thrown over rivers that are now looked upon as presenting insurmountable obstacles to such works.

Mr. Hewson is a gentleman of high scientific attainments, and we think his plan will arrest the attention of those interested in these constructions.

Ohio.**Scioto and Hocking Valley Railroad.**

We have before us the address of J. V. Robinson, Chas. A. M. Damarin and B. F. Conway, Directors to the voters of Scioto County, in relation to the subscription by this county to the stock of this road. The corporation of Portsmouth has already subscribed \$100,000 to this object, and the county is now called upon to subscribe as much more.

If the road depended upon its subscription, the county might well increase the sum to \$500,000, because its construction would more than double its present valuation. Where capital is abundant, it is well to leave the construction of public works to associated individual effort, because the more direct the interest, the cheaper roads are built, and the better are they managed, and the less likely to be pushed beyond the wants of the business community.—Still, where a work like the above road is a public benefaction, the advantages of which all reap in proportion to the property they own, the cost should be shared in the same proportion. Where, too, the work is felt to be one of public necessity, and the want of private capital makes the resort to corporate bodies, such as towns and counties necessary; where the united strength of the whole community is essential to success, and sacrifices are required to secure the object in view, those who are more immediately intrusted with the care and superintendance of the work are generally actuated by the common sentiment that pervades the community, and this affords the best pledge for the faithful performance of their duties; and roads build under such circumstances are among some of the best managed and best paying roads in the country.

We hope the appeal of these gentlemen will be promptly met. There is certainly strength enough on the line of the proposed road if properly combined to build it without embarrassing in any degree those interested in its construction. We have no doubt of the road paying well as an investment, independent of the indirect advantages that will flow from it. We look upon the western roads that are well built and properly managed as most certain to be the best paying roads in the country. The great fertility of soil in that section, capable of sustaining a most dense population, the vast amount of their surplus of agricultural products, which, from their bulky nature, must pay a large freight, and the difficulty of transporting them over their common roads, all these causes combined, cannot fail to make their railroads profitable, more especially those like the one proposed, which run at right angles to the leading water courses.

Wrought-Iron Wheels for Railways.

Our readers will see on another page an interesting account of the manufacture of these wheels in England, where they are much used, as well as on the Continent from their superior safety, for reasons that must be apparent to all. The Hudson River Railroad, which proposes to run its cars at a high speed, has imported a quantity of these wheels for their road.

The only establishment in this country engaged in the manufacture of these wheels is that of E. S. Norris, at Schenectady, in this state, from which roads can be supplied cheaper, and probably with a better article than the imported wheel. We hope

to see them introduced for the purpose of fully testing their qualities, when compared with the cast iron wheels, as well as the relative expense of the two kinds.

Panama Railroad

The books of subscription to the capital stock of the Panama Railroad Co., were opened on Wednesday last in this city, and before three o'clock the whole amount was subscribed. The following is said to be the result of the surveys recently made of the route:

Whole length from sea to sea, not exceeding 46 m.
Summit level, under.....300 ft.
Curvatures, with no radius less than.....1,500 ft.
Grade for about 26 miles, from Atlantic to Chagres river, nowhere exceeding (per mile).....20 ft.
From summit level, for about 3 miles, nowhere exceeding (per mile).....50 ft.
And thence descending about 7 miles to the Pacific.

Materials of stone and timber abundant, and of good quality; and an excellent harbor at Navy Bay six miles distant from Chagres.

We have not yet seen a copy of the report. If the above estimates are correct the route is very favorable to the construction of the road.

Maine.

The Androscoggin and Kennebec Railroad.—The Androscoggin and Kennebec railroad holds its annual meeting at Winthrop on the third of July next, at which time the road is to be opened for travel from Lewiston Falls, a distance of 20 miles, and 53 miles from Portland. The laying of the rails to Waterville, 29 miles from Winthrop, will be completed the present autumn. This will give a continuous line of 82 miles from Portland in the direction of Bangor. Nothing is yet done toward extending the line beyond Waterville, except the obtaining a charter.

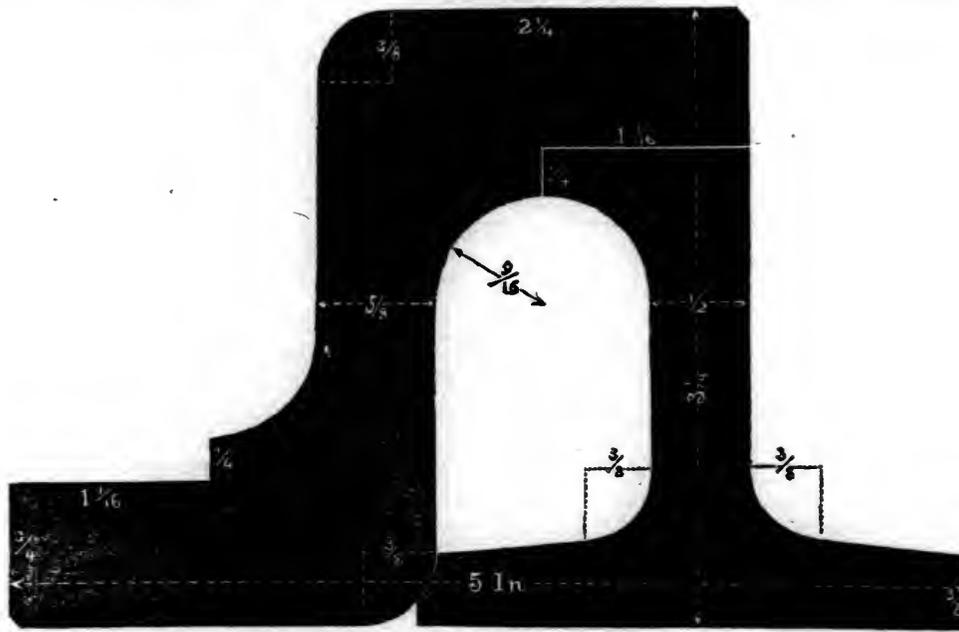
The Kennebec and Portland Railroad.—The Kennebec and Portland railroad will be opened from North Yarmouth to Bath during the present summer. The iron is laid and the engines already pass over the whole distance of 23 miles with iron and lumber trains. At North Yarmouth it connects with the Atlantic and St. Lawrence railroad, so that passengers can reach Brunswick or Bath from Portland.

The Atlantic and St. Lawrence Railroad.—The Atlantic and St. Lawrence railroad will be further opened to Paris during the present summer, probably in season for the annual meeting on the 7th of August next. This will complete 47 miles of the distance towards Montreal. One hundred miles more are required to carry it to the boundary of Canada. To aid this extension the city of Portland has loaned its credit to the amount of \$1,000,000.

The Buckfield Branch Railroad.—The Buckfield railroad embraces from the Montreal road, 36 miles from Portland. The grading is nearly completed for 13 miles. One cargo of iron is delivered, and the balance shipped to arrive in September.—The road is to be opened to Buckfield Village, 13 miles, the present autumn.

The York and Cumberland Railroad.—The York and Cumberland railroad is going forward with a good degree of energy, and the grading is far advanced towards completion as far as Gorham, 8 miles from Portland. This road is designed to connect with the Boston and Maine railroad at South Berwick, and form part of a second line from Portland to Boston, independent of the Portland, Saco and Portsmouth railroad.

Steele & Middleton's Compound Bridge Rail, February, 1849.



For the American Railroad Journal.

By your notice of the proceedings of the Institute of Civil Engineers on the 8th of May last, we perceive that the views taken by the profession in England on the subject of railroad superstructures, indicate the same defects in existing plans there, as have been observed in America, and that the same remedies are proposed. We therefore take the liberty of submitting to you, and through your Journal to the world, a new plan of rail which we have invented for the purpose of correcting these well known defects, and for which we made application for a patent on the first of March last.

It will be seen by the above sectional diagram,

that the rail is intended to be made in two parts so arranged as to break joints, and that the front or Z shaped part is to reverse and present alternately two surfaces to wear; and also that it has a much wider base than bridge rails of the usual form, by which its vertical strength is considerably increased. The centre space is intended to be filled with a core of wood against which the iron portions will be pressed by screw bolts or rivets as may be found the best, which will unite the several parts in a mass equal almost to a continuous rail.

J. DUTTON STEELE,
RICH'D H. MIDDLETON.

Pottstown, Pa., June 18, 1849.

The above appears to us to possess some decided improvements on the common rail. The hollow cylinder is the strongest form the rail can take with the same quantity of metal. These improvements, therefore, increase the strength of the rail, and by presenting a double surface to the wear, vastly adds to its durability. The two parts of the rail can be made to break joints so as to give the rail the effect of one continued bar. We have submitted the plan of this rail to several scientific gentlemen who have expressed themselves highly pleased with it. We shall be happy to call attention to it in another number, and we hope soon to see its value tested by its introduction upon a line of railway.

NORTH CAROLINA.

Wilmington and Manchester Railroad.

We learn from L. J. Fleming, Esq., resident engineer, that this important road is now under full headway. Its location was completed on the 25th of April last. Contracts have been made for grading nearly the whole line, and in the course of a month the timber for bridging and superstructure will also be contracted for.

The following is a list of the president, directors and engineers of this road:

President—Gen. W. W. Harlee, Marion C. H.

Directors—Gov. E. B. Dudley, J. A. Taylor, Esq., Henry Nutt, N. N. Nixon, of Wilmington, N. C.; Alfred Smith, of Columbus county, N. C.; J. Eli Gregg, of Marion, S. C.; J. S. Gibson, G. J. W. McCall, of Darlington, S. C.; Capt. R. B. Muldrow, Col. J. J. Moore, of Sumpter district, S. C.

Engineers—Maj. Walter Gwynn, of Richmond, Va., chief and consulting engineer.

L. J. Fleming, resident engineer.

Assistant Engineers—T. P. Cooper, Darlington, S. C.; S. S. Solomons, Marion, S. C.; J. D. Barnes, Manchester, S. C.; A. C. Dickinson, Wilmington, N. C.

Sub-assistant Engineers—R. H. Drane, Sumpter-ville, S. C.; W. H. Stith, Darlington, S. C.; J. H. Swift, Columbus, S. C.

General Agent—Rev. J. M. Timmons.

New York.

Buffalo and State Railroad.—The board of directors have chosen Geo. Palmer president of the company; A. P. Yaw, treasurer; and H. C. Frisbee, secretary. D. Richmond, A. P. Yaw, and G. W. Tift, were appointed executive committee. A resolution was passed that it was expedient to enter immediately upon a survey of the route for said road.

The Erie Railroad Company have just purchased 500 tons of iron rails in England, probably in their recent mortgage bonds. The rails will cost the company delivered in New York, less than \$42 50 per ton. This is the lowest price at which any railroad iron has been sold.

Ogdensburg Railroad.—The annual meeting of the stockholders of the Northern railroad company was held at Champlain on the 4th inst. Highly satisfactory reports were made by the president and treasurer, and the following persons were chosen directors for the year ensuing, with great unanimity: Robert G. Shaw, J. W. Edmands, B. T. Reed, T. P. Chandler, Boston; Isaac Spaulding, Nashua, N.H.; Charles Paine, Northfield, Vt.; Hiram Horton, Malone, N.Y.; G. V. Hoyte, Champlain; A. C. Brown, Ogdensburg; Geo. Redding, Waddington; Geo. N. Seymour, Ogdensburg; Henry Van Rensselaer, of Canton.

Abbott Lawrence and Geo. Parrish (late president) declined a re-election.

At a meeting of the directors, T. P. Chandler, Esq. was chosen president; W. T. Eustis, treasurer, and J. G. Hopkins, secretary. Votes of thanks were passed to Hon. Abbott Lawrence and Geo. Parrish, Esq. for their efficient and valuable services as former members of the board.

Louisville and Frankfort R. R. Office,
Louisville, Ky., June 15, 1849.

To the Editor of the American Railroad Journal:

DEAR SIR: Agreeably to your request in your paper of the 9th inst., I will give you the information desired. Our road was chartered in 1817, and the preliminary surveys made by myself in the fall of that year. In the fall of 1848, a section of 27 miles next to Louisville was let for grading, and is now nearly finished; 2700 tons of T rail, weighing 58 lbs to the yard, were purchased, and other materials necessary for the track. We commenced laying track about the 1st of May, and are now laying rapidly—intend to open for running the 27 miles to Lagrange by 1st December. On the 9th July we offer for letting the remaining section of the road to Frankfort, and intend to have it ready for use by 1st July, 1851. We here connect with the Lexington and Frankfort road, which is now being re-laid with a heavy rail, and will make a continuous line to Lexington. Having for nine years been engaged upon the Lexington and Frankfort road, I can give you the returns necessary to fill out your table:—Lexington and Frankfort, 29 miles—no branches—all nearly finished—cost \$450,000—per mile \$15,500 paid in \$300,000—debts not known—grade 61 feet—earnings, 1848, \$50,000—expenses 30,000—net earnings 20,000—price of shares per 100, 82 to 85.—Louisville and Frankfort railroad, 65 miles—no branches—in progress—ruling grade 52-8.

port, the descent is 239 feet, which is overcome by 31 locks. From Webbsport to Licking summit, the ascent is 166 feet, which is overcome by 20 locks, and from Licking summit to Portsmouth, where the canal empties into the Ohio, the descent is 419 feet which is overcome by 55 locks, making the total ascent and descent 1,320 feet and the number of locks 149.

The ascent of the Miami Canal, from Cincinnati to Dayton, is 297 feet—the number of locks 32.

The descent of the Warren County Canal, from Lebanon to Middletown, is 46 feet—the number of locks, 6.

The ascent of the Miami Extension Canal, from Dayton to its junction with the Wabash and Erie Canal, is 213 feet, requiring 27 locks—the descent is 235 feet, requiring 27 locks—making the ascent and descent 448 feet—the number of locks 53.

The Wabash and Erie Canal from Manattan to the Indiana state line, has an ascent of 176 feet, requiring 26 locks. The Toledo sidecut, a part of the same work, one mile in length, has a descent of 15 feet, requiring two locks—the Maumee sidecut 2 miles in length, has a descent of 63 feet, requiring 6 locks.

The Walbonding Canal, from Rochester to the Ohio Canal, at Roscoe, (25 miles in length) has a descent of 90 feet, overcome by 11 locks.

The Hocking Canal, from Carroll on the Ohio Canal to Athens, (56 miles) has a descent of 203 feet, which is overcome by 26 locks.

The Muskingum Improvement, from Marietta, on the Ohio river, to Dresden, on the Ohio Canal, (21 miles) has an ascent of 126 feet, overcome by 12 locks and 11 dams.

The average per centum paid by the Ohio Canal, on the cost of construction, since 1833, after deducting costs of collections, repairs, &c., is \$5 53 on the 100 dollars. The average per cent, on the cost of construction on the Miami Canal between Dayton and Cincinnati, is \$3 83 on the 100 dollars. That of the Miami Extension Canal, for three years past is \$1 27 on the 100 dollars. The Wabash and Erie Canal, for five years past, \$2 58 on the 100 dollars. These are the only improvements that have paid expenses.

During the five years ending with the last fiscal year, the Muskingum Improvement has sunk \$75,629 32 in repairs, cost of collection, &c., over the above receipts. The Hocking improvement in the same time, has sunk \$9,257 31, and the Walbonding Canal, within the past five years, has in like manner cost the state \$6,235 59 over and above its entire receipts.

Connecticut.

New Haven and New London Railroad.

We are indebted to Alexander C. Twining, Esq., Chief Engineer, for a copy of his survey of this road. We are happy to bear testimony to the clear, business-like manner in which the results of his survey, and of his own observations, are expressed evincing thorough professional skill, united with sound practical common sense. The whole length of the line, as surveyed, is 47,59-100 miles. The grading of many of the sections is expensive owing to the line running at right angles to the main water courses. The following are the estimates of the cost of the road in condition for running:

Entire Estimate.

Grading and			
fencing	47,590 miles at	\$14,924 86	\$714,274 00
Track laid,	47,268 " "	7,571 00	357,866 00
Equipments,	47,590 " "	4,708 97	224,100 00
Damages,	47,000 " "	2,000 00	94,000 00
Engineering and superintendance,	5,00	23,795 00	

Total cost at \$29,628 80, \$1,414,350 00

These estimates are evidently prepared with great care; but they are qualified with these very sensible observations, which we transfer to our pages:

The object of a preliminary survey and estimate like the one which, under your instructions, has been made, and the results of which are herein presented, is, simply, to demonstrate the physical and mechanical qualities and conditions of the route un-

der examination, and to deduce the expence of the same with a sufficient accuracy, to direct the judgment of capitalists and friends of the enterprise as to the feasible character of the undertaking. But it is to be presumed that improvements—and often considerable ones—may be made by a revival of the field work and a thoroughly studied and exact location. Again, there is a great variety of contingencies embodied in every such estimate, suggested by an engineer's experience, and estimated by his judgment, but incapable of exact definition, and embraced under no separate item of "contingencies," but under a general system of liberal allowance in prices and quantities. Still, again, it is plain that the constructions specifically contemplated in such an estimate can only be described in a very summary way, not sufficiently precise for the basis of a business like contract.

There are instances, however, in which railroad companies, or their Boards of Directors, have thought themselves safe in contracting for the execution of the entire work, at the amount of the preliminary estimates, without fixing an exact location and one not to be varied except under the condition of a rigorous computation and allowance for the change in expence—without an exact arrangement of gradients under the same condition; without precise plans and specifications of the dimensions, mode of construction and quality of work in the masonry, carpentry, &c. of the railroad; and, finally without any deduction from the originally estimated sum, to cover such contingencies as may properly be accounted matters of discretion, and be executed or not, as may be deemed expedient at the time. Now, in every such instance of loose transaction, investigation would doubtless make it appear either that the railroad company is met, at last, with a costly bill of extra work which the liberal allowances in price and quantities in the estimates were intended to cover; or that many items of useful work—although not perfectly essential—have been omitted in the execution, which belong to the same item of *implicit* contingencies; or that the quality of the work is inferior to that which the prices of the estimate were adequate to secure and cover. In either case it is obvious that, although the road is nominally made for the estimate, it really is not so; or, what comes to the same, that the railroad, as actually constructed, is inferior in excellence and value to that contemplated in the preliminary estimates, and for which the stockholders and Directors had expected and supposed the contract or contracts to be made. I trust that these brief observations will be recognized, in all the importance I give them, by the gentlemen for whom I have the honor to act. They, at least, can hardly be deemed superfluous, since they evince the principles of my own estimates, herewith presented, in which the amounts of "contingencies expressly named and given, are but partially the real amount of contingencies embodied in them.

As to the business prospects of the road we are somewhat doubtful, though we do not profess any critical knowledge of the country through which it passes. As it follows the line of sea coast, it must always encounter the competition of water communication, with which it cannot compete in the carriage of merchandise. At present there is but little business connection between New Haven and New London. When completed, it will form a shorter line of through road between New York and Boston than any other. But as an offset to this, the communication is interrupted by too wide ferriages. As to the inducements to the construction of the road, the report speaks as follows: -

The traveller who passes upon this route from New Haven to New London, will be certain to observe, that it is a well settled agricultural region, thickly set with thriving villages. From such a district your railroad—as is evinced by experience in analogous enterprises—would derive a great aggregate of local business. It is striking to observe, on our best thoroughfares, how large a portion of the receipts is the product of the way business; the proper contribution to commerce of the districts traversed by such works independant of the through freight and passage.

The villages, averaging two thousand inhabitants each, and filled with a population of the best competency, both as to enterprise and means, for prosecuting the various branches and occupations of industry, lie upon our track; besides that several back towns, answering to the same descriptions, are within its influence and operative distance. At one extremity is a city of twenty thousand inhabitants; and at the other, a second with its seven thousand; and destined, under the effect of the public works which are there to centre, and with the advantage of its noble harbor, to experience a rapid augmentation. The mutual intercourse of these cities—and yet more, that of the first mentioned with the country east of her as far as the Connecticut, which now is very limited, must, as a result of your construction, grow to much activity.

As a route to Boston, your work sustains a most favorable position, in point of directness and expedition. By means of its connections with other roads leading to the metropolis, it will be found to offer a passage as convenient and desirable, at least, as any other; and even the travellers who may pass from New York to that place on the more western thoroughfares will doubtless prefer, in a great number of instances, to return by this.

But a consideration, the most important of any, remains to be adduced. By your connections at New London, you became essentially an extension, and an integral part of both the Willimantic and the Norwich and Worcester railroads—thus spreading your arms to all that part of the state east of the Connecticut; whose outlet and inlet to and from New York, you necessarily become—and the same for a part of Massachusetts also. Indeed that a similar expectation may be entertained in relation to Rhode Island, in addition, a glance at any map which has upon it a tracing of the existing railroad lines, will go far to evince; for it can scarcely be doubted that an extension of the Stonington road to New London, will be immediately consequent upon the opening of yours.

Situation Wanted,

AS an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

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Buckfield Branch Railroad, Buckfield, Me.
- Bancks, C. W.,**
Engineer's Office, Southern Railroad, Jackson, Miss.
- Berrien, John M.,**
Michigan Central Railroad, Marshall, Mich.
- Clement, Wm. H.,**
Little Miami Railroad, Cincinnati, Ohio.
- Fisk, Charles B.,**
Cumberland and Ohio Canal, Washington, D. C.
- Felton, S. M.,**
Fitchburgh Railroad, Boston, Masa.
- Floyd-Jones, Charles,**
New York and Harlem Railroad Extension,
Lithgow, Dutchess Co., N. Y.
- Ford, James K.,**
New York.
- Gzowski, Mr.,**
St. Lawrence & Atlantic Railroad, Montreal, Canada.
- Gilbert, Wm. B.,**
Rutland and Burlington Railroad, Rutland, Vt.
- Grant, James H.,**
Nashville and Chattanooga R. R., Nashville, Tenn.
- Harry, P.,**
Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

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Williams, E. P.,

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Williams, Charles H.,

Milwaukie, Wisconsin.

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MR. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys on works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

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EAGLE RIVER P. O., LAKE SUPERIOR.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848.

6m*

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OF THE UNITED STATES NAVY YARD,

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Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

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J. F. MACKIE,
Nos. 85 and 87 Broad St.
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Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849, if
The above will favorably compare with any other rails.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

$\frac{1}{2}$ Round and square, to 6 inches.
 $\frac{1}{2}$ Flat " " "
Ovals, half-ovals and half-round.
Hoop, band and scroll iron.
Nail plates, superior charcoal Horse shoe,
Iron, sheet and Boiler iron,
Tire iron for locomotives,
Railroad spikes,
Pig iron of superior quality for chilling.

do, for foundry purposes.
For sale by JOHN F. MACKIE,
85 & 87 Broad Street,
Sole agent for the New Jersey Iron Co,
June 9, 1849.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

Railroad Iron.

100 Tons 2 $\frac{1}{2}$ x $\frac{1}{2}$, | 30 Tons Railroad.

All fit to re-lay. For sale cheap by
PETTEE & MANN,
223 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, *Civil Engineer,*
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at fact prices, of Erastus Corning & Co Albany; Merrill & Co., New York; E. Pratt & Br. 1st, Edinburg, Md

LAP—WELDED
WROUGHT IRON TUBES

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,
Patentee.

28 Platt street, New York.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York. *February 3, 1849.*

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N. Y. **ERASTUS CORNING,** Albany. **WARREN DELANO, Jr.,** N. Y. **JOHN M. FORBES,** Boston. **ENOCH PRAIT,** Baltimore, Md. *November 6, 1848.*

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsherrie.
100 Tons Welsh Forge Pigs.
For Sale by **A. & G. RALSTON & CO.** No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality. **REEVES, BUCK & CO.,** 45 North Water St., Philadelphia. *March 15, 1849.*

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street. *March 29, 1849.* 3m.13

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to **COOPER & HEWITT, Agents.** 17 Burling Slip, New York. *October 30, 1848.*

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-fiver, Annealed, Br om, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by **ICHABOD WASHBURN.** Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catocin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order. **GOODHUE & CO.,** 64 South street New York.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md., Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catocin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catarba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper. *American Pig Iron* of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.* Baltimore, June 14, 1849. 6 mos

Roman Cement,

OF the best quality, now landing from ship **Hendrick** Hudson, from London, made by **Billingsley, Mial & Co.**, and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for *Aqueducts, Locks, Bridges, Floods,* and all *Masonry* exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years. For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,** 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,** Reading, Pa.

PHILADELPHIA CAR MANUFACTORY, CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

Contract for building an Electric Telegraph from Halifax and onwards, in the Province of Nova Scotia.

Sealed Tenders will be received until the 30th day of June next, for building a Line of Electric Telegraph, starting from the city of Halifax—following the public road on the western side of Bedford Basin, thence from the head of the Basin to the Eastern Post Road from Halifax to Truro, and from Truro to the north-west boundary of Nova Scotia, passing through the village of Amherst—following generally the line of the post road, or such other line near thereto, as may be hereafter directed by the commissioners.

The line will be built forty posts to the mile—said posts to be *Hacmatac* or Cedar, 25 feet in length, 6 inches in diameter at the top, stripped of bark, as nearly straight as the natural growth will permit, and each post to be set five feet in the ground, either in firm earth of sand or gravel, and strongly embedded. Where rock occurs, they are to be firmly secured by means of foot bands and braces, or by a wall of stone well laid, not less than five feet in height, wedging towards the poles; and where soft, or wet earth or clay is found, the hole shall be enlarged sufficiently, and the earth replaced with stone, so as to prevent equally the poles from being disturbed or driven from the perpendicular by the action of violent winds, or their upheaving in soft and wet soil by the frost.

Where the Line passes through forests, dead trees and all other trees, which, by falling, may touch the wires, to be cut down at the expense of the Contractor—the object being to prevent the working of the line being affected by wind falls.

The line is to be constructed with a single line of wire, of the best quality, number nine, and weighing not less than 330 lbs. to the mile—each wire to be firmly connected with, and yet insulated from, the top of the posts, by the Patent Insulator—of which a pattern may be seen by applying at the office of the Provincial Secretary. It consists of a cast iron shaft, with teeth cup and cover, glass ball, with bolt and shoulders, and nuts and screws at each end to secure the wire firmly to the glass ball. The glass ball to be cemented in the cast iron cup, with a non-conducting cement, by a lining of some non-conducting substance between the bolthead and the cover, so as to secure a perfect insulation, and to protect the glass from fracture and other damage.

The party contracting will be required to furnish the necessary Registers, Batteries, and magnets, of the latest and best quality, of Morse's Patent, for not less than three stations—their different sites to be hereafter appointed by the commissioners.

The whole line will be required to be completed in good working order, and ready to be delivered to the commissioners or their agents, fit for immediate use, on or before the first day of October next.

The Tenders will not include the cost of the poles—the commissioners having already arranged by contract for a sufficient number of these to build the whole line; and these will be laid down in such quantities and sites as may be required.

Ample and satisfactory security will be required for the due and faithful performance of the work, as above stipulated.

JOSEPH HOWE,
GEORGE R. YOUNG,
W. MURDOCK,
A. G. ARCHIBALD,
THOMAS LOGAN, } Commissioners.
Halifax, May, 1849. 3i25

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

**P. S. DEVLAN & CO's
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. ly14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Prct. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849.

20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

**Text Book of Mechanical
Drawing,**

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.
Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

Large Pumps.

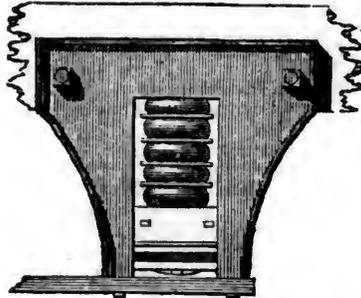
THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849.

6w20

Patent India-rubber Springs.

FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs: Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 33 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston.
May 26, 1849.

To Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
Proposals will be received at the office of the Ohio and Pennsylvania Railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburg, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and is easy of access at all points.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburgh, May 21, 1849.

**Extension of the Baltimore &
Ohio Railroad.****TO CONTRACTORS FOR GRADUATION
AND MASONRY.**

PROPOSALS are invited for the graduation and masonry of about 25 miles more of this road, beginning at a point some 64 miles west of Cumberland, and ending at a point about 13 miles west of Cheat river, embracing all the sections from No. 64 to No. 83, both inclusive. The graduation on nearly all of these sections will be heavy, and will include one Tunnel of considerable length and three short ones. There will be also two Viaducts of medium size.

Specifications and plans of the work will be ready for distribution to proposers by the 13th of June, prox., at the Company's office in Cumberland. The proposals will be addressed to the undersigned, and will be received up to Saturday, July 7th, inclusive, at the same place. Proposers are earnestly requested to examine the line closely before bidding, and to avail themselves of the ample means of information of the value of the work, which will be furnished them, as contractors from a distance, accustomed to more difficult excavations than those to be met with on this line, will otherwise be likely to make their estimates too high. The best testimonials will be required, and an energetic prosecution of the work will be necessary. The payments will be cash, with the usual reservation of one-fifth till the completion of the contract. By order of the President and Directors.

BENJ. H. LATROBE,

Baltimore, May 31, 1849. Chief Engineer.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

BLAKE'S PATENT FIRE & WEATHER-PROOF PAINT, OR ARTIFICIAL SLATE.

This extraordinary substance is found in a stratum of rock in Sharon, near Akron, Ohio; when taken from the mine it has all the appearance of the finest Indigo, and is no harder than cold tallow; but exposure a few days to the atmosphere turns it to hard slate or stone; it is reduced to a fine powder, mixed with Linseed Oil to the consistency of thick paint, and applied with a brush, and after an exposure a few months to the atmosphere, this coating becomes a perfect slate, protecting whatever covered, from the action of the weather and from fire. It has been found upon analysis by Dr. CHILTON, of the city of New York, to consist of larger proportions of Silica, Alumina, and Black Oxide of Iron and Magnesia, with lesser of Lime and Carbon; the transition therefore [according to the opinion of Drs. Chilton and Locke] from the liquid paint to the



hard slate is accounted for according to nature's own laws, as the oil absorbs and evaporates by the action of the atmosphere, the powerful adhesive attraction incident to the Black Oxide of Iron, binds and attracts not only the particles together, but too the substance covered, so that the longer on, the more powerful the attraction, consequently the harder the slate, and the closer it will adhere to the substance applied; and as it contains a large amount of Alumina and Magnesia, two of the best non-conductors of heat that we have, consequently the coating [after it turns to slate] is indestructible by fire, therefore it protects the wood from the air, and where there is no air there is no blaze or combustion, the wood therefore will char before the coating will give way. It is being used extensively for covering roofs of either shingles, matched boards, tin, zinc,

sheet iron, or thick paper; if your shingles have been on for years you have only to sweep off the moss and lint with a stiff broom and cover with two or three good coats and in a few months you have a perfect slate roof impervious to the action of weather and fire.— There is nothing equal to it for Steamboat and Car decks, for all kinds of iron, as it forms a coating nearly as hard as the iron itself and never cleaves off.

It is used upon brick walls both as a paint and cement, it forms a perfect stone coating, through which not a particle of moisture can pass; in fact, it is used

upon anything you wish to protect from fire or weather, proof covering.

The Government has granted a patent to me for the discovery of its application as a fire and weather-proof composition, or artificial slate.

The Fair of the American Institute, held last fall, awarded me a Medal, and the Fair of the State of New York a Diploma. The examining committee of the American Institute, of whom Dr. J. R. Chilton was chairman, and had some three years previous analysed it, states in the report, that it was an article superior to anything that had been presented as a weather and fire

I would call the attention of the public to a discovery I made about three years since of an article similar to my black pigment, but instead of its being colored with the black oxide of iron, it is colored with the red, giving to the substance a beautiful Chocolate, the fashionable color of the day, for sides of buildings. It does not become quite as hard as the black, consequently is not quite so good for roofs, but is preferred on account of color for sides. I have a large quantity of this now prepared for market and can supply all demands.

LOOK-OUT FOR FRAUD.

For the last few months there have been scores of individuals engaged in digging, grinding and sending to a distance all kinds of stuff, much of it no better than dirt from the street or clay from any bank, calling it all good fire and weather proof paint, like mine they say, but of a different color. Now it is impossible for them to know anything of the weather proof qualities of this article, as it has not yet been a year since they first commenced digging it, and according to the opinion of Dr. Chilton, of New York, and Dr. Locke, of Cincinnati, this stuff is entirely worthless, as an outside coating, as it has neither the red or the black oxide of iron in it, consequently there can be no cohesive attraction; therefore, as the action of the atmosphere destroys the oil with which it is applied, it will wash or rub off like chalk or whitening.

Others are mixing enough of mine to give it the color, and selling it as mine. Others are engaged in digging, grinding and offering for sale precisely the same article I have patented, contending that they have a right to sell it in its powdered state, and that those who buy and mix with the oil to make the compound, must take the responsibility of the infringement of the patent. I therefore will give notice to all, that I have instructed

my agents throughout the country, to take the name and residence of every individual who shall buy and mix with oil and use this compound [except from me or my authorized agents] that I shall hold them to a strict accountability, and shall call upon all such to settle with and pay me for thus infringing upon my patent, and in case they refuse I shall commence suits at law against them.

Some of those engaged in this nefarious traffic in order to push their article into market, contend that my patent will not stand; that the substance was known and used for years previous; and a statement to that effect was got up and published by Thomas Caldwell, and signed by several individuals, every one of whom [so far as I know them] was either in the business or preparing to go into it. Now I will not bandy words with a set of men who have not moral honesty sufficient to deter them from stealing, and appropriating to their own use the inventions and discoveries of others, but will insert a statement of all the officers of the township of Sharon, who have no interest further than to state the truth; the which statement, coming as it does from such a source, must be sufficient to convince any unprejudiced mind of the falsity of their position.

We, the officers of the township of Sharon, will state that we do not believe there ever was a Patent more honestly or laboriously earned, or more deservedly granted than the one granted to Mr. Blake for a weather and fire-proof composition or artificial slate, as he pursued his experiments with the most indomitable perseverance, under very discouraging circumstances, as the public had not the least confidence that there could be anything valuable made from the substance. He therefore had to encounter, for years, the jeers and scoffs and ridicule of nearly the whole community; and we do not believe that there is one man in a thousand who would have persevered under all the difficulties. But he has at last triumphed over all obstacles; and we believe there is now but one opinion in awarding to him the merit of this valuable discovery.

- GEO. W. CRANE, } Justices of Peace.
- HORACE GIBBS, }
- JNO. EVERHARD, }
- LEWIS C. CHATFIELD, } Trustees
- R. W. MILLS, } of
- BFNJ. JONES, } Township.
- WM. F. EVERETT, } Township Clerk.
- ALLEN HOWFS, } Treasurer.

How is it possible to know anything of the lasting qualities of this Counterfeit stuff? as it is not a year since the first was tried. The Public therefore to be safe should purchase from my Agents, and see that every Barrel is marked "Blake's Patent Fire-proof Paint."

This may certify that we have been acquainted with Blake's Patent Fire-proof Paint for some years, and are well assured that it is really what its name indicates—fire-proof. And we will here state to the public that buildings well covered with this paint will be taken at our several offices at lower rates of insurance than those covered with tin or zinc, as we consider it a better fire proof.

H. K. SMITH, Sec. Summit Mutual Fire Ins. Co.
DAN'L S. LEE, Agt. Medina Co. Mutual Ins. Co.
D. B. HADLEY, Agt. Stark Mutual Insurance Co.
Akron, March 5, 1849.

MR. BLAKE—Dear Sir: From the nature of my business, I have had my attention turned for several years to your "Patent Fire-proof Paint," and as a protection against fire to those buildings to which it is thoroughly applied I consider it preferable to tin or zinc.

R. F. CODDING, Agt. Portage & Farmer's Insurance Co.
Copley, April 12, 1849.

We, the undersigned, in our statement to Caldwell, had reference only the grinding or fineness of the different paints, and we will further state that [aside from BLAKE'S PATENT] we feel it a duty we owe to Mr. Blake to purchase of him, as no others had anything to do with Fire-proof Paint, until after Mr. B. by years of

DIRECTIONS. Mix the Powder with Linseed Oil to the consistency of Thick Pain, and apply two or three good coats with a common paint brush, being careful to keep the paint well stirred in the pot while putting on. 100 lbs. will cover the roof of a building 33 feet square, or 1,000 superficial feet.

experiments, had discovered its value and introduced it to the public.

- R. A. STINEHOURL, } Painters.
- L. C. NOTT, }
- S. J. MILLER, }

Akron, April 9, 1849.

MR. BLAKE—Dear Sir: I had a building adjoining the wall of my Stone Cotton Factory, the roof of which was covered with your Fire-proof Paint, or Artificial Slate. The factory took fire, and during the progress of its destruction, large numbers of burning shingles and other combustible materials fell upon this roof, so covered, and I expected every moment to see it burst into flames, but after the factory burned down I examined said roof and found it literally covered with coals and cinders, but the fire had not made the least impression upon it. After this test, there certainly can be no doubt as to its fire-proof qualities. SETH C. JONES.
Rochester, N.Y., Sept. 1848.

AMERICAN HOTEL, }
Broadway, New York, Oct. 4, 1848. }

MR. BLAKE—Dear Sir: We last Spring covered the roof of the American with your Fire-proof Paint. We now find that it has become as hard as slate, and the almost constant tread of the servants [who use the top of the house for drying clothes] does not affect it in the

least, and it proves all that it was recommended—

TABER & BAGLEY.

We, the undersigned, inhabitants of Sharon, have for the last three years watched with much interest the trial of Blake's Metallic Fire-proof Paint found in this town, and can now with confidence state to the public that it is an article of great value; that the sun, rain or frost has no other effect than to turn it to stone, so that we now have to all intents a perfect Slate roof, and so perfectly does it protect the roof from moisture that frequently several gallons of dew runs from the eaves in the morning; and where there is no moisture there is no decay, and the rain that falls from the roof is as pure and clear as the purest Spring water, and from the nature of the article it must be an excellent FIRE PROOF; we therefore can unite in recommending it to the public, and believe that no good building where shingles are used ought to be left unslated.

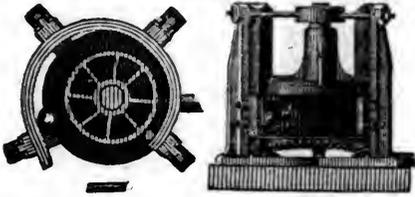
Wm. Chatfield, Joseph W. Crane, Wm. Ingham,
Adam Kooder, Thomas Rhodes.
Sharon, June 1, 1847.

All Letters and Communications addressed to the Patentee, at No. 3 Broad street, near Wall, New York, or at Akron, Ohio, will meet with prompt attention.

WM. BLAKE,
Patentee of Fire-proof Paint.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

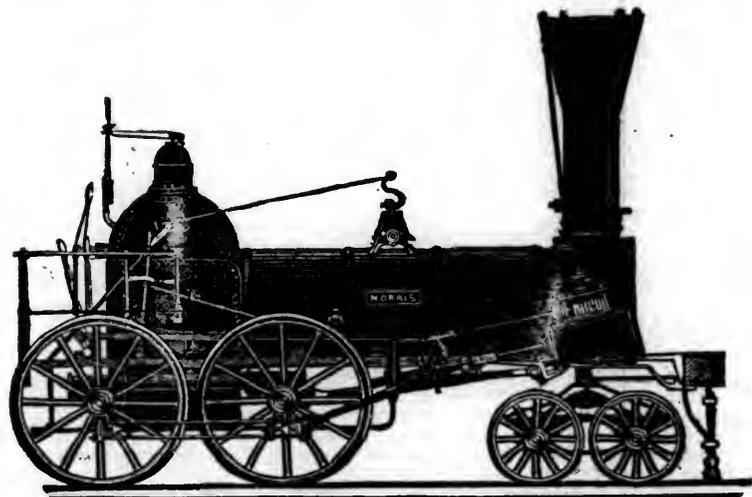
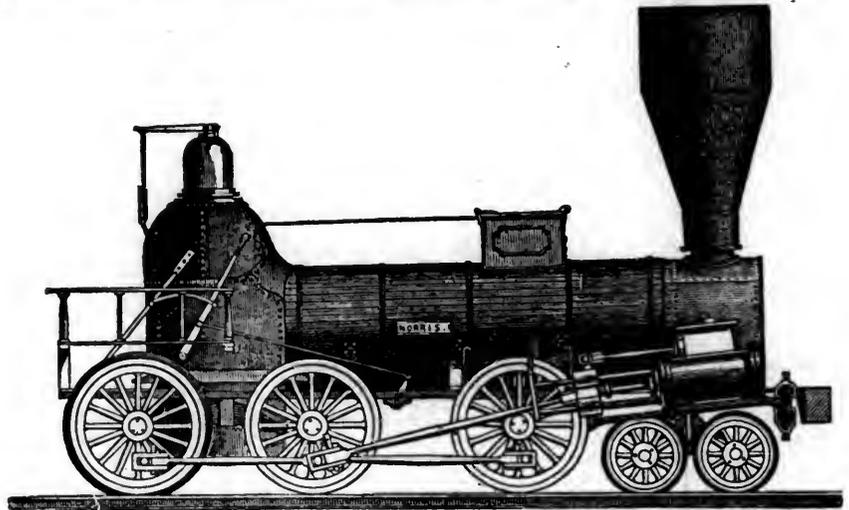
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, July 7, 1849.

Copper Ores of Lake Superior.

Continued from page 402.

The conclusions to which Mr. Schoolcraft was led by his explorations in 1819, and which may be found, with other interesting matter, in the report I have already quoted so largely from, are in amount that a mineralogical survey of the rock formations skirting the Ontonagon would result in the discovery of very valuable mines of copper ores; in the working of which the ordinary advantages of mining would be greatly enhanced by occasional masses of veins of native metal. But the remoteness of the country and the condition and temper of the Indian tribes inhabiting it, involving the necessity of a military to protect mining operations, rendered the expediency of any immediate attempts to develop its resources very questionable.

In 1831-2, Douglass Houghton, M. D., was employed by the government of the United States to accompany as surveyor the expeditions under Gen.

Cass to visit some Indian tribes living in the vicinity of the Lake. The scientific education Dr. Houghton had received at the Rensselaer Institute at Albany, had well prepared him for his geological investigations in this region, of which these excursions were the commencement. And as his name is so identified with the region, and the final development of its resources is mainly due to his extraordinary enterprise and perseverance, to which indeed his life fell a sacrifice, I shall perform but a just tribute to his memory and worth by tracing in detail his explorations.

In the year above named, he passed three times along the south coast of the lake, and ascended several of its tributaries. He also explored the wild country between Lake Superior and the Mississippi river, passing across by three different routes widely separated from each other. These examinations convinced him that the mass of former explorers, and even the natives themselves, had no knowledge of the true sources from which the transported masses of copper had their origin. He was at that time the first to notice, that the native copper occurred *in place* in the greenstone trap rocks, and that ruins of its ores existed in the conglomerates somewhat obscurely continued from the trap region—“while their examination was sufficient to enable me to draw the inference that the native copper came chiefly, if not wholly, from the trap, and more rarely from those sedimentary rocks resting immediately upon it, it was supposed that this occurrence would follow the general law, and that it together with the other ores of the metal would occur in greater abundance near the line of junction of this rock with the overlying sedimentary rocks.”—(State Reports, 1841, Senate Documents, No. 16, p. 52.)

In 1838 Dr. Houghton was appointed State Geologist, and in 1840 under this appointment, he extended his researches into the Lake Superior region. His first report, published in 1841, gives a general outline of the metalliferous district, and a description of the ores and their true repositories. In April 1841, he gave an oral account of the country at the meeting of the Association of American Geologists in Philadelphia. The report of this, published in the Transactions of the Association, is perhaps as correct and condensed an account of the geological structure of the country as could now be written with all the aid derived from the subsequent extended explorations.

“He began by remarking, that that portion of

Michigan lying between Lakes Huron and Michigan on the south, and Lake Superior on the north, is known as the upper and northern peninsula, while that portion of the state lying south of the Straits of Machanac is more usually known as the southern or lower peninsula.

The rocks of the earthy portion of the upper peninsula, for a distance of one hundred and fifty miles, consist of a series of fossiliferous limestones and shales, resting upon sandstones, the whole dipping a few degrees east of south. The limestones appear only on the southerly portion of the peninsula, while the underlying sand-rocks form the immediate coast of Lake Superior.

At a point very nearly one hundred and fifty miles west from the easterly extremity of the peninsula, and near to the immediate coast of Lake Superior, several low ranges of granitic hills make their appearance, which hills are flanked on the south, by quartz rock, alternating with mica, talcose and clay slates. These hills have a general easterly and westerly direction.

Northerly from these, other ranges of hills occur, having a similar direction, but in the several ranges as we proceed north, the granitic character becomes less and less perfectly defined, being first sienitic, after this altered sienite, and finally the outer or northern range is made up of well defined trap.—This range of trap hills continues very nearly unbroken for a distance of one hundred and thirty-five miles within the limits of Michigan. The trap rock, which chiefly appears as a compact greenstone, is nevertheless, quite uniformly bounded on the north by an amygdaloid, against or upon which rests a very coarse conglomerate, and upon this a series of alternating strata of conglomerate and sandstone, the whole being capped by an extensive formation of red sandstone.

The group of stratified rocks referred to, which have an entire thickness of several thousand feet, dip very regularly, and usually at a high angle, into the basin of Lake Superior; and since the same is the fact in regard to the rocks upon the north coast, that lake may be said to occupy a synclinal basin.

After some remarks upon the successive elevation of the several ranges of hills referred to, together with the long intervals of time that would appear to have elapsed between the several uplifts, Dr. H. proceeded to say, that with our present imperfect maps, it would be nearly impossible to convey a clear conception of its geographical geology, and that in fact he had made these references, only to render more intelligible what he wished to say upon the subject of metalliferous veins of the district.

It is a fact well known, that south from the district referred to, transported masses of native copper are occasionally met with, in the diluvial deposits which are so abundantly spread over the country; and these loose masses are distributed over an area of many thousand miles, including southern Michi-

gan, Wisconsin, Illinois and Indiana. In northern Michigan they are still more frequently met with.

The great transported mass of native copper on the Ontonagon river, so frequently alluded to by travellers, and which he, Dr. H., estimated to contain about four tons of native metal, was stated to have all the characters of the loose masses referred to.

The source of these transported masses has, heretofore, been somewhat obscure, although there has been good reason to believe, that most of them had their origin from the trap rocks, but whether from true veins or from the mass of the rock itself, was not known. He said that after examining the country with care, he was enabled to state, that without doubt a very considerable portion of them had their origin from what may be regarded as true veins.

Those which were regarded as true veins, were uniformly noticed to originate in the trap rock, but they were frequently traced across the superimposed sedimentary rocks, to and including the sandstone. The direction of the veins across the upper rocks most frequently corresponds to the dip of those rocks.

Dykes of trap, transverse the conglomerate and sandstone, were stated to be of frequent occurrence; but these dykes very rarely cut across the strata of the upper rocks, or in other words, they mostly occupy places corresponding to the lines of stratification, for which reason the veins referred to, cut across the dykes at very high angles.

So far as we were enabled to judge from the examinations which have been made, those veins originating in the outer range of trap hills are the only ones in the district deserving the name of metalliferous veins. Not only do the separate veins vary from a mere line of several feet in thickness, but those traversing the several rocks above, are usually very much expanded in their passage across the upper rocks.

By far the most important minerals contained in these veins are the several ores of copper. The metal occurs in a native form associated with the grey and red oxides, carbonate and silicate, together with several mixed compounds. Sulphuret of copper is exceedingly rare, and pyritous copper has been found in what was regarded as a true vein, though this last named mineral, associated with the sulphuret and carbonate of lead, was noticed in small ramifying veins, in what may perhaps be regarded as a distant portion of the range under consideration. Native silver was very rarely seen in the form of specks and strings associated with the native copper.

Most of the ores of copper occur in the greenstone, amygdaloid and lower portions of the conglomerate, or at points in near proximity to the dykes before referred to, and they are most abundant at, or near to the junction of the trap and conglomerate, or in the immediate vicinity of the dykes, thus following the general laws respecting the deposits of the metallic minerals.

As the veins recede from the trap, the place of the copper is frequently supplied by the silicious oxide and carbonate of zinc, together with calcareous spar, which latter usually fills the entire vein in its passage across the sandstone.

The veinstone in those portions of the vein most rich in the ores of copper is chiefly quartz, and this is frequently filled with minute specks and filaments of the native metal.

Dr. H. conceives these to be veins of sublimation, or in other words to be simple fissures filled from below by the metal in a vaporous state, and that all the compounds had their origin from copper in a native form. The conglomerate was stated to have been noticed where the cement consisted to a large extent of ores of copper, and even of copper in a native state. This was observed only in close proximity to considerable veins.

The veins, as well as different portions of the same vein, are very variable in their metalliferous character, portions being apparently rich, while others are completely barren. With the present knowledge upon the subject, we can scarcely arrive at safe conclusions as to the value of these veins for the purposes of mining, but upon a whole they may be looked upon favorably than otherwise.

In his earliest reports, Dr. Houghton appears to have detected the principal important peculiarities of the metalliferous deposits, such as have been

subsequently established by mining operations—as for instance, the favorable character of the Amygdaloid trap for the development of the metallic veins; their occurring most largely developed directly at or near to the line of junction of the trap and sedimentary rocks; the changes of the veinstone in the passage from one rock to another; and its unfavorable character in the red sandstone—and finally, that the only ores in their veins which can reasonably be hoped to be turned to practical account, are those of copper.” Fully impressed, as he was, with the importance this region would ultimately acquire from its copper mines, his opinions notwithstanding, were always expressed with the greatest caution, and the remarks concluding his description of them are characteristic of his good sense and foresight. “While I am fully satisfied that the mineral districts of our state will prove a source of eventual and steadily increasing wealth to our people, I cannot fail to have before me the fear, that it may prove the ruin of hundreds of adventurers, who will visit it with expectations never to be realised. The true resources have as yet been but little examined or developed, and even under the most favorable circumstances, we cannot expect to see this done but by the most judicious and economical expenditure of capital at those points, where the prospects of success are more favorable. It has been said of the Cornish district in respect to the supposed large aggregate of profits, that ‘a fair estimate of the expenditure, and the return from all the mines that have been working for the last twenty or thirty years, if the necessary documents could be obtained from those who are interested in withholding them, would dispel the delusion which prevails on this subject, as well as check that ruinous spirit of gambling adventure, which has been productive of so much misery.’—(Hawkins on the Tin of Cornwall.) And if these remarks will apply to a comparatively small district, which has been explored and extensively worked for centuries, with how much more force must they apply to the mineral districts of our own state. I would by no means desire to throw obstacles in the way of those who might wish to engage in the business of mining this ore at such time as our government may see fit to permit it; but I would simply caution those persons who would engage in this business in the hope of accumulating wealth suddenly, and without patient industry and capital, to look closely before the step is taken, which will most certainly end in disappointment and ruin.”

The great value of the territory being thus fully established, a treaty was effected in 1842 for its purchase, and Dr. Houghton, while still conducting the geological survey of the state, entered into a contract with the general government to perform the arduous task of accurately surveying the wide territory, and running out the township and section lines.—By thus doing both the geological and topographical work at the same time, and with great minuteness of detail in each, he was preparing perhaps the most perfect geological map ever published, when his labors were arrested by his untimely death. His extreme ardour and enthusiasm permitted him not the usual hours for rest. By night when no one could travel in the woods, he was traversing from point to point about the coast in his boat, venturing out in rough weather in the most dangerous navigation. Late one night, the same year he was lost, he and his men made their way into a little harbor, where I lay encamped, worn down by a hard struggle they had had to reach the land against a violent head wind; and yet before we were out of our tent

in the morning the Doctor and his party had disappeared. But in one of the autumnal storms, on the night of the 13th October, 1845, his boat, unable to withstand the violence of the waters, filled and capsized, and the Doctor and two of his men were drowned—the other two were washed ashore and succeeded in gaining a footing on the rocks. H.

AMERICAN PATENTS.

Rails.

Messrs. Steele & Middleton's compound bridge-rail, as described by those gentlemen in last week's number of this Journal, is an ingenious advance in principle towards a remedy for the faults of the rails generally used. The section combines some of the advantages in point of strength of the hollow cylinder, a form stronger than a solid of the same quantity of metal, by according to Eytalvein, one-fifth when the inner semi-diameters are to the outer as one to two; and, according to Tredgold, by seven-tenths when the semi-diameter is to each other as 15 to 25. The bearing on the timbers is also increased in this compound rail, and in consequence, so far as the base is concerned, sufficient steadiness may be obtained with these rails independently of any chairs. The inventors omit to say whether the rail is designed to dispense with chairs—but the form itself seems to imply such an intention. The base of this rail is five inches, and therefore half an inch wider than a rail which is found sufficiently steady without the help of chairs on the railway between London and Croydon, in England. The lengths on the inside and those on the outside are intended to break joint: this arrangement will give the rail the same evenness of surface as that of one continuous bar. These are the advantages of the compound rail.

The lateral strength given in this section is hardly sufficient for heavy engines, and with such the dimensions of the vertical joints must be somewhat increased to keep the rails in gauge, and prevent the injurious effects to the durability of the rail consequent on a change of form. This applies especially to the outside part, which, with a scantling of half an inch, will have to resist the force of the oscillations of carriages at the tyre of the wheels under the diminution of strength consequent on the simultaneous application of a heavy vertical strain. The heel and toe, but especially the toe, of the outside part are of rather light scantling, unless it is intended to bolt both heel and toe to the timber. The heel of the outer portion of the rail under consideration would perhaps be placed to more advantage in locking the parts together and distributing the pressure equally by projecting under and fitting tight up to the body of the inner portion. This may perhaps save the bolt, which must otherwise be used to fix this part. *Rigidity*, almost absolute rigidity, is according to all experience, necessary to the full service of a rail, and the degree of rigidity may be considered to regulate the degree in which other causes besides friction enter into the wear and tear. Four bolts will be necessary at each interval of this rail: one on the inside; one on the heel, and one on the toe of the outside; and one through the body.—By the suggestion made above for locking the parts, this may possibly be reduced to three bolts for each interval. The bolting may split the longitudinal bearers: in order to prevent this, and at the same time prevent spreading of the parts, it will probably be found necessary to counter-sink in the timbers and bolt down firmly between the rail and the bearers a small plate of wrought iron at every set of holes. It may, however, be found judicious to make the bolts alternate with each other, as this will probably

lessen the liability of splitting or weakening the bearers, and have the further effect of increasing the stability by increasing the number of fixed points. These suggestions are thrown out honestly as they occur, and with a view of turning to the best advantage of the inventors an ingenious attempt to meet one of the defects in the present system of permanent way. We must now in justice to all parties, and to our own professional character, state candidly what appears to us to be the faults in this rail.

The screw-bolt, intended to bind the parts together, is open to objection on the ground that the threads of such screws exposed to the action of the weather for a time, are apt to break when the nut is tightened. It will most likely be found very difficult, if not impossible, to fix the parts so close and true that the inner shall rest on the outer;—even a very trifling space between the two will lead to a springing that will, by producing percussion, weaken or destroy the rail. It would be almost impossible to guard against this, though the consequence would involve constant labor and attention refixing the rails. The form of the rail is so very irregular that the rolling must lead to an entirely new arrangement of the laminae of the metal, which, under heavy loads, will consequently become very rapidly destroyed in texture or 'upset.' The more uniform a bar is in its cross section the less injury does the rolling do to its surfaces, and consequently the greater will be the duration of the bar. These are our views on the subject of the compound bridge-rail, and we may sum them up briefly by saying that while these are serious objections to their invention, Messrs. Steele and Middleton have made what we regard an ingenious advance towards a very desirable end in railway economy. M. B. H.

The Electric Indicator for Boilers.

In last week's number we gave an account of an invention purporting to prevent boiler-explosions by an electric current made at an assumed limit of safety to ring an alarm bell. The report of this invention lays emphasis on the circumstance of the signal's being effected at a certain degree of temperature rather than as in all other contrivances for the purpose at a certain degree of pressure. Now it by temperature in the case is meant the latent and apparent heat of the steam—and we know no other meaning regarding temperature as a test of safety—this new gauge does not appear to possess any advantage over the usual gauge under proper care, seeing that, the elasticity varying according to the formula of Tredgold, Arago, etc., as the fifth or sixth power of the temperature, elasticity and temperature bear to each other fixed relations. The elastic force being assumed as the cause of explosions the degree of elasticity appears the simplest and more direct indicator of danger. But perhaps the invention presumes that the elasticity test is more liable to derangement in working: we however incline to think that the column of mercury used to complete the electric circuit will lead to irregularities when in direct contact with high temperature.

If an excessive elasticity of steam be the cause of explosions in steam boilers, the remedy is evidently a safety-valve; and as the safety-valve is in practice found sometimes to fail, the question arises naturally: have the safety-valves used in those cases been of sufficient capacity?

Suppose a boiler that contains 50 cubic feet area is filled with steam and water in equal volumes, and that the pressure on the boiler is one fourth more than the effective pressure on the piston. Assume also that the piston, condensing one cubic foot of

steam at every stroke, makes 100 strokes per minute, and with the steam at the temperature of 308° F., (giving a boiler pressure of five atmospheres or 73 75 pounds) stops suddenly. At the end of the first minute, the boiler, holding in addition to its working quantity, all that would have been condensed by the working of the piston during that time, contains an amount of steam equal to 100 feet at the original temperature and pressure. This being compressed within an area of 25 feet, the elasticity, according to the law of Mariotte, is four times the working elasticity; and the heat that would have been given out with the steam being retained, the temperature in the boiler is four times as great as the working temperature. Now the pressure originally on the boiler having been 73-75 lbs., the pressure arising from the increase of density is therefore 295 pounds; and with a temperature four times as high as the original, the pressure increasing as the 6th power of the temperature, this one minute's stop may be readily conceived to create in a close boiler a power calculated to exceed its strength several hundred-fold.—Of what avail then is a mere signal of danger, seeing that the danger accumulates too rapidly to admit of applying a timely remedy. This view of the case places the supposition of these disasters' being caused by the elasticity of steam quite in keeping with the appearances which they give of the agency of some explosive gas.

Now if the accumulation of steam be taken as the cause of the explosions, the remedy, as said before, is evidently a valve that shall be of sufficient capacity to carry off the accumulations above the point of safety as rapidly as they are generated. In the case supposed the accumulations are taken at 75 feet of steam of 308° Fahrenheit, per minute, and the question of the capacity of the valve becomes: what capacity is necessary to discharge this accumulation in that time? The abstract formula for the velocity of steam through an orifice into another fluid of greater rarity than itself is this:

$$v = 8 \sqrt{h}$$

where h is the height of a uniform atmosphere corresponding to the difference between the elasticity of the steam and that of the rarer fluid. But owing to friction and any other cause that may arise, it might be better to take the co-efficient at 6, so that the formula would stand at the lowest value

$$v = 6 \sqrt{h}$$

The value of h in the case under consideration, the difference between the two fluids being four atmospheres is therefore 111,272 taking a homogenous atmosphere at 27,818 ft. high. The value of v then is $6 \sqrt{111,272}$, or $6 \times 333.5 = 2001$ feet per second. With this velocity the question becomes: what area of orifice will discharge the steam accumulated in the time of accumulation or in the case under consideration 1.66 cubic feet of steam per second under a pressure of five atmospheres. This is clear enough: this discharge requires under the velocity given an orifice of 0.12 square inches. To sum up these remarks in a rule that may be applied in practise by every one: express the proposed maximum pressure of the steam in its equivalent column of a fluid whose pressure is 14.75 lbs. for a height of 27,818 feet: extract the square root of the difference between the height in feet of the column resulting, and that of a homogenous atmosphere or 27,818 ft. and the result multiplied by 6 will give the velocity in feet per second with which steam will rush thro' an orifice under the given maximum pressure into the open air. Divide the velocity so obtained into the maximum volume of steam to be generated per

second by the heating surface and the quotient is the area of the valve necessary to discharge that maximum as rapidly as it is generated.

M. Arago, who has made investigations by order of the French government, into steam boiler explosions, reports a case where the explosion took place after the withdrawal of the safety valve, and P. of Barlow remarking that M. Arago offers no explanation of this fact, attempts to explain it by conjecture; but the common sense view of the question would seem to say that if the elasticity of steam be the agent, a safety valve being evidently the remedy, this particular case, as all others, must have been owing to the insufficient action of the valve. Let safety valves be shown to have been of proper size and then indeed we will be in a position to refer explosions under such circumstances to a cause beyond our knowledge; but at present it appears very unphilosophic to take up at once the supposition of gaseous compulsion, or any other theoretical vagarie without a full inquiring into the condition of the valve.

It may be remarked in conclusion, that the formula given for the velocity is not the exact one; but has been used as less complicated in calculation.—The true measure of velocity is \sqrt{gh} , where h has the same value as in the formula given above, and g is the space a body acted on by gravity alone falls through in one second of time or 16 1-12 feet. The contraction of the fluid vein for steam is supposed to be the same as for water; but the two fluids are so very different and the means of ascertaining the contraction so liable to objection that no proportion can in truth be laid down to establish the "vena contractor" for steam. M. B. H.

The First Steamboat that ever Ascended the Ohio River.

The following article possesses intrinsic interest, as a means of showing how great has been the progress in steamboat building, steamboat navigation and in the facilities for commercial intercourse with the west within the last thirty-four years:

From the Cincinnati Gazette, of 1815.

The Steamboat Enterprise.—This is the first steamboat that has ever ascended the Ohio. She arrived at Louisville on the 1st instant, sailed thence on the 10th, and came to at this port on the evening of the 13th, having made her passage from New Orleans, a distance of 1800 miles, in twenty-eight running days, (by the aid of her machinery alone, which acts on a single wheel placed in the stern,) against the rapid currents of the Mississippi and the Ohio.—This is one of the most important facts in the history of this country, and will serve as a data of its future greatness. A range of steamboats from Pittsburg to New Orleans—connecting Pittsburg and Cincinnati; Cincinnati and Louisville; Louisville and Smithland, at the mouth of Cumberland, or some eligible place on the Mississippi, below the mouth of the Ohio, thence to Natchez and from Natchez to New Orleans, will render the transportation of men and merchandise as easy, as cheap and expeditious on those waters, as it is by means of sea vessels on the ocean, and certainly far safer! And we are happy to congratulate our readers on the prospect that is presented of such an establishment. Two steamboats, considerably larger than the Enterprise, and yet not too large for the purpose, are already built at Pittsburg, and will no doubt commence running in the autumn. Others will follow; the success of the Enterprise must give a spring to this business that will in a few years, carry it into complete and successful operation.

The Enterprise is a small vessel, carrying only 35 tons of cargo, exclusive of her machinery.

She has, however, very good accommodation for between thirty and forty passengers—the ladies' apartment separate from the gentlemen's. The price of passage from New Orleans to Cincinnati is \$130, and hence to Pittsburg \$30.

The Enterprise brought an assorted cargo of cotton, sugar, lead, &c. She sailed from Pittsburg on the morning of the 17th, and was expected to arrive there in eight or ten days; but we learn from Marietta that some part of the engine got deranged, which prevented its operations, and it was not until the 25th that she arrived at that place. She started from Marietta on the morning of the 26th, but we have not yet heard of her arrival at Pittsburg.

Since the arrival of the steamboat, several barges also arrived here from New Orleans, in passages of 130 and 142 days.

We have recorded these acts on the same page in order to call the attention of the public to the superior merits of the steamboat navigation, to mark particularly the period when this navigation may be said to have commenced, and to excite, if possible, an ardent desire to promote its extension.

In the present condition of steam navigation, a voyage is made from New Orleans to Cincinnati in less than five days, and the whole distance to Pittsburgh in about seven and a half days sailing time, or within nine days including all detentions.

The journey from New Orleans to New York, by taking the railroad from Cincinnati to Lake Erie, can now be accomplished in nine days time.

Alabama.

We copy from the National Intelligencer the following interesting account of the natural advantages and resources of this state, and the progress she is making in their development. A few years of unexampled prosperity of the cotton interest turned the whole industry of the south to the cultivation of this plant, and the encouragement of every other branch of industry was looked upon with suspicion as hostile to this interest. The consequences were what might be expected.—Over production was stimulated by this demand, and the culture of cotton from being the most profitable, became the most unproductive business in the country; and those states that were most interested in its production are now most active in turning their labor into other pursuits, and of enlarging the variety of their products. So long as selfishness regulates the laws of trade, so long must a country producing but one staple be always poor, because for all other articles that enter into consumption they are at the mercy of other producers, at the same time they are compelled to part with their staple at any price to procure the necessaries of life.

NATURAL ADVANTAGES.

Open to the Gulf of Mexico on the south boundary, with a spacious bay, over the bar of which ships drawing twenty and three quarter feet at low tide safely ride, and into which all of her rivers, with two exceptions, flow—the one invites thither ships of the largest class, and the others bear to Mobile, from the fertile valleys and plains above, their valuable productions. Alabama is watered by the following noble rivers.

Names of rivers.	Navigable description, etc.	Miles in Alabama	Empties into.
Mobile,	Largest class steamers,	60	Mob. bay
Alabama,	do.	450	Do river
Tombigbee,	do.	540	do.
Warrior,	do.	150	Tombig.
Tennessee,	Do for 1000 miles altogether,	150	Ohio riv.
Chattahoochee,	Do. eastern boundary,	200	Apalach.
Coosa,	Largest bel. & small above falls,	170	Alabama
Cahawba,	Small str's & flats,	120	do.
Tallapoosa,	do.	40	do.
Noxuba,	do.	50	Tombig
Suckernochee,	do.	35	do.
Navigation,		1945	miles.

Such are our great and peculiar advantages of navigation that our citizens will never be compelled to abstract from other investments—they may choose largely of their capital for internal improvements. But there is a railroad now in progress, the Mobile and Ohio, that I may properly regard as associated with the natural advantages of the state. The Gulf of Mexico, sweeping up into this division of the continent, continued northerly by the bay of Mobile, with the Mississippi river inclining from its mouth northeast, throws this river at the mouth of the Ohio within 445 miles of Mobile, the commercial emporium of Alabama. The country between those two points being remarkably level, the route unobstructed by a single mountain or river, or any stream of moment, and running in its whole extent through one of great beauty and fertility, and already settled by an active and wealthy population, must throw their great trade and travel through Alabama into Mobile; and in twenty hours or less citizens of Missouri, Ohio, Kentucky, or elsewhere, may leave Columbus in Kentucky, the upper terminus, and arrive in Mobile with their produce in one fifth the time they could reach New Orleans.

Before I proceed to the other very interesting portions of this branch of the subject, I will here allude to such internal improvements as are already completed or are in active progress.

The Muscle Shoals canal	complete,	35½	miles
Huntsville canal,	"	16	"
Tuscumbia and Decatur road,	"	44	"
Montgomery and W. Pt. nearly	"	87	"
Cawhawba and Marion,	"	35	"

Canals and railroads, length, 217½ miles.

A railroad from Selma or some other point on the Alabama, to the Tennessee river; one connecting the Tuscumbia and Decatur with the Mobile and Ohio road, and another from Blakely, opposite Mobile, to Columbus, Ga.—each of which would add greatly to the traffic and wealth of the state, and pay good dividends—are perhaps the only ones of importance contemplated.

To continue with natural advantages.—From Tuscaloosa, on the Warrior, in the direction of Selma, on the Alabama, are bituminous coal fields and iron ore, with marble and hard and soft limestone quarries, in rich and inexhaustible profusion, immediately on navigable streams. The lands are covered with splendid forests of white and live oak, cypress, pine, cedar, mulberry, hickory, etc. Water power is unlimited and never failing. Irrigated by so many streams, as indicated by 1,945 miles of navigation, with the innumerable tributaries thereto, the lands of Alabama are of amazing superiority, as their productions hereinafter noticed will exhibit, and with a climate temperate and uniform, it is decidedly healthy.

PRODUCTIONS.

To regard alone the ascertained value and extent of the surplus products of Alabama, which we ship off, compared with those of other states, omitting an estimate of our own heavy consumption of corn, wheat, hogs, cattle, sheep, timber, cotton consumed in home

manufactures, value of negroes raised, and horses and mules raised, which would amount to several millions—confining ourselves to the surplus productions, I say we will, I think do so with some astonishment, as associated with it must be the effort to estimate the vastness of the capital employed to produce it.—Her surplus productions are cotton, lumber, staves, turpentine, manufactured cottons, coal, etc.

What is her cotton crop and its value? I will arrive at it in this way, and pardon me for assuring those who read this that I am quite sure I shall not be far from correct. To the amount of cotton received at Mobile, I will add the quantity raised in N. Alabama, which is forwarded down the Tennessee or hauled overland to Memphis. I will also add the quantity which goes down the Chattahoochee to Apalachicola. Adding these together I will deduct the quantities raised in the east counties of Mississippi. This will show the crop of Alabama to result as per following table:

Where received and raised.	No. bales	cotton	cotton for years
	1846-7.	1847-8.	1848-9.
Alabama and Mississippi, at Mobile.....	323,462	436,661	530,000
North Alabama to New Orleans, as per census of '40, 49,225,474 lbs. at 510 lbs. to the bale is.....	96,500	96,500	96,500
East Alabama, shipped to Apalachicola for Chattahoochee.....	50,000	50,000	50,000
	469,962	583,161	676,000
Less Eastern Mississippi crop.....	60,000	80,000	80,000

Nett crop of Alabama in bales.....409,962 503,161 596,000

And the following table will show the value of these crops of cotton, at the average price it sold at, of the respective seasons at Mobile for the three years:

Year.	No. of bales.	Weight of each, lbs.	Total lbs. and average price.	Total value.
1846-7	309,962	510	209,080,620	10½ 24,570,972 85
1847-8	503,111	510	256,612,110	6½ 17,321,317 42
1848-9	596,000	510	298,760,000	6 17,956,200 00
	1,509,123		764,452,730	59,848,483 30
Average of 3 yrs.	503,041		254,817,577	19,949,494 43

Enormous as this is, yet this great interest of Alabama, as well as the whole south, does not yield so profitable a dividend on the capital invested as other investments elsewhere do.

With such varied and extraordinary advantages for commerce, manufacturing mining, ship building, timber getting, etc., it is not to be wondered at that Alabama is beginning to direct her attention to the advantages of diversifying her pursuits; and, under any circumstances, in time, those vast sources of wealth now reposing within her borders must become transcendantly productive. The accumulation of wealth which has been going on, but which has been regularly invested in the purchase of negroes, is now being stayed from that direction, and turned towards other industrial pursuits. It is obvious, however, to every political economist that it is the interest of every one in the country to promote

the value of cotton, as should there be a violent transition of slave labor to the pursuits above alluded to, and which is entirely practicable, a derangement of trade would ensue, which would be prejudicial, to say the least of it, to the interests of other sections of the confederacy.

Cotton factories and iron forges are, however, becoming numerous. Coal mining is attracting great attention, and from the great profits arising from investments in ships, and our wonderful facilities for building with our splendid timber on the spot, etc., it is not unlikely we shall ere long enter the list as competitors with our northern brethren, in this exceedingly profitable branch of their wealth. In Alabama our citizens are generally exempt from embarrassment, and in certain quarters large amounts of money are known to be hoarded.

The university and college, the high schools and academies in all the principal towns and cities of the state, are in the highest degree flourishing; and the great increase of the number of churches and membership, the decrease of crime and orderly character of our citizens, manifest the spreading influences there of religion.

Wire Suspension Bridge.

The Wire Suspension Aqueducts, over the Delaware and Lackawaxen rivers, which were commenced in 1846 and recently completed on the Delaware and Hudson Canal, are now opened for the passage of boats. These works have been erected for the purpose of avoiding the delay, formerly experienced in crossing the Delaware river by means of a dam, and will materially improve the navigation. They are constructed on the plan of the Pittsburgh Suspension Aqueduct, a structure which has proved eminently successful and was the first of its kind in the world, designed and executed by John A. Roebling, Civil Engineer of the city of Pittsburgh. After an examination of the work at Pittsburgh by Mr. R. F. Lord, Chief Engineer of the Delaware and Hudson Canal, a contract was entered into with Mr. Roebling for the erection of the superstructure of the Delaware and Lackawaxen Aqueducts.

The trunks which hold the water are composed of timber and plank, well joined and caulked, and suspended from two wire cables, one on each side. The cables rest in heavy cast iron saddles which are placed on the top of small stone towers of 4 by 6 ft. base rising 4 feet above the towpath. The trunks are wide enough for two boats of the present capacity to pass, and on each side of each trunk is a towpath. The towers are each composed of 3 blocks of a white quartz pudding stone, of great hardness and durability, obtained from the quarries in Ulster county, N. Y. The masonry of the piers and abutments, which support the little towers, has been executed in the most substantial manner, of a durable and compact gray wacke, which constitutes the principal formation of the valley of the upper Delaware. The beds of the face stone are all cut, the backing is large and well bounded, and the whole laid in hydraulic cement. Nothing has been spared to insure the safety of the foundations, and, by the construction of good ice breakers, to guard the piers against the heavy floods and ice, which in this river prove sometimes very violent and destructive.

The cables are each made in one length across the river from abutment to abutment, and connected at their ends with anchor chains, manufactured of solid wrought iron, in bars of from 5 feet to 10 feet long and 5 to 6 inches wide, by 1 1/4 inch thick.—The lower end of each chain is secured to a heavy cast iron anchor plate of 6 ft. square, on which rests a large body of masonry, whose weight resists the strain of the chain and cable. As the cables are protected against oxidation by paint and a copious varnish, and are closely encased by a tight wire wrapping, which gives them the appearance of solid cylinders, they may be considered indestructible.

The woodwork is subject to decay, but will last longer in these works than in common timber structures, and can be renewed at any time.

The following table exhibits the principal dimensions and quantities of the Delaware Aqueduct:

Hydraulic cement masonry in Abutments, Piers and Anchorage.....	7,188 C. yds.
Length of Aqueduct with extensions.....	600 ft.
Number of Spans.....	4
Length of Spans varies from 131 to.....	142 ft.
Width of Trunk at water line.....	19
Depth of water.....	6 ft. 6 in.
Weight of water between abutments.....	1,950 tons.
Weight of water in one Span.....	487 1/2
Diameter of wire cables.....	8 1/2 in.
Length of wire weighing 1 lb.....	17 1/2 ft.
Number of wires in each cable.....	2,150
Total weight of cables and anchor chains.....	490,000 lbs.
Ultimate strength of each cable.....	1,900 tons.

The new Aqueducts over the Neversink at Cuddebackville, and the Rondout at High Falls, will be constructed on the same plan in the course of this season. There will then be on the line of the Delaware and Hudson Canal four wire Suspension Aqueducts, most perfect and complete, as far as durability and economy are concerned.

The general enlargement of the canal has been prosecuted vigorously during the last winter.—Fifty-seven of the enlarged locks, being 100 ft. long between quoins, and 15 feet width of chamber, are brought into use this spring, and the whole are to be completed by the opening of canal in the spring of 1850, making the canal then competent for the passage of boats loaded with 130 to 140 tons of coal.—*Honesdale Democrat.*

Stockbridge Iron Works, July 2, 1849.

H. V. Poor, Esq.,

Dear Sir: I send you herewith some account of our workings in our No. 2 furnace, which you showed in sketch in the last number of the Railroad Journal. The proportions of our furnace differ so much from that adopted in Tuscany, it will do well to compare them. The great yield of the Tuscany furnaces is more to be attributed to the friable nature of their ores and the good quality of the charcoal than to any shape of the furnace. The quantity of stock consumed in Tuscany per day shows that their blowing works are on quite a large scale or they would not be able to consume so much fuel. The quantity of air required to make a ton of iron and to work up the fuel to the best advantage is at least 25 tons to each ton of iron made; proving at all events they are not deficient on this point: besides, all of the ore used is well roasted before going into the furnace, thereby requiring less time to be prepared for separating in the hearth. The blast, of which I send you only a part of the best workings, averaged during the whole time nearly ten tons per day. We have made iron as low as 70 bushels of coal per ton for a week, and take the average on a make of 10,000 tons it will go as low for fuel as the within table—25.68 cubic inches make a bushel in Massachusetts, charcoal measure.

Yours truly, C. C. ALGER.

Tables Referred to by Mr. Hodge on Page 386.

A Table, showing six weeks' working of Furnace No. 2, Stockbridge Iron Works, Stockbridge, Mass.

DATE. 1848.	No. of charges.	Amount of charcoal used in bush.	Roasted ore in pounds.	Wash ore in pounds.	Fluxing in pounds.	Product in cast iron.		Product of ore.	Product of coal.	REMARKS.
						T. cwt.	qrs. lbs.			
Feb'y 10	101	1632	30,300	35,350	12,625	13	16	2		
11	84	1392	27,746	29,400	10,500	12	4	2		
12	88	1456	29,346	30,800	11,000	12	14	3		
13	86	1408	21,400	35,030	10,750	12	1	1		
14	84	1360	21,000	35,285	10,500	11	18	0		
15	87	1408	21,750	36,975	10,875	12	13	1		
16	91	1472	22,750	39,275	11,375	13	9	2		
17	85	1376	21,250	38,250	10,625	12	2	0		
18	87	1408	21,750	39,150	10,875	12	16	1		
19	75	1280	18,750	33,750	9,375	10	10	3		
20	74	1232	18,500	31,600	9,250	10	6	0		
21	75	1216	18,750	30,000	9,375	10	14	2		
22	82	1312	20,500	32,800	10,250	11	12	0		
23	89	1456	22,250	34,000	11,125	11	17	0		
24	81	1312	20,250	35,450	10,125	11	12	3		
25	86	1376	21,500	38,700	10,750	12	11	1		
26	82	1360	20,500	35,850	10,250	12	2	0		
27	90	1454	22,500	32,000	11,250	11	14	3		
28	91	1456	22,750	36,400	11,375	11	15	2		
29	67	1072	16,750	29,000	8,375	10	5	2		
March 1	92	1520	23,000	36,800	11,500	10	17	1		
2	79	1328	19,750	31,600	9,875	11	0	0		
3	84	1360	21,000	35,700	10,500	11	12	0		
4	76	1232	19,000	30,400	9,500	11	2	0		
5	79	1312	19,750	31,600	9,875	10	9	1		
6	79	1312	19,750	31,600	9,875	10	0	0		
7	87	1408	21,750	34,800	10,875	11	12	1		
8	80	1328	20,000	32,000	10,000	11	4	0		
9	85	1392	20,250	34,000	10,625	11	12	3		
10	79	1312	19,750	30,750	9,875	10	2	3		
11	73	1168	18,150	26,975	9,125	11	10	2		
12	92	1472	23,000	38,122	11,500	12	8	2		
13	96	1536	24,000	42,600	9,600	13	11	1		
14	94	1504	23,200	41,150	9,400	14	7	1		
15	68	1152	20,400	22,900	6,800	9	16	2		
16	85	1376	25,500	31,350	8,500	12	6	2		
17	95	1536	28,500	38,000	9,100	14	3	0		
18	90	1504	24,000	36,850	11,250	14	7	0		
19	86	1386	19,800	36,100	10,750	11	3	3		
20	88	1456	14,700	43,475	9,350	12	2	1		
21	103	1780	23,615	49,344	12,200	14	3	1		
22	96	1616	28,550	35,500	12,000	14	5	0		
Total...	3571	53,430	922,807	1,461,681	432,700	502	15	0		
Average per week	595	9,738	153,801	243,631	72,116	83	15	3	9	
Average per day.	85	1,391	21,971	34,801	10,302	11	19	1	17	

47-23 iron produced.
116-22 bushels coal per ton.

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equip-ment.	Cost per mile.	Capital stock paid in.	Debts more than surplus.	Ruling grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Atlantic and St. Lawrence	146	...	36	In progress	...	...	...	..	...	...	...	...	78 a 81	
Androscoggin & Kenneb.	55	...	6	In progress	...	...	...	..	...	...	...	...	70	
Albany and Schenectady.	16½	...	16½	\$1,606,196	100,000	...	...	..	...	...	...	1 5-9	89	
Auburn and Rochester...	78	...	78	2,644,520	34,000	...	...	..	175,922	...	...	8	86a87	
Auburn and Syracuse...	26	...	26	1,125,886	43,300	...	...	..	454,721	...	...	2 9-10	80a81	
Attica and Buffalo...	31½	...	31½	821,313	26,000	...	...	..	172,185	...	...	4½	...	
Allegany Portage	36	...	36	...	...	...	...	..	150,959	...	...	...	...	Leas'd to Western railroad.
Albany and W. Stockb...	38½	...	38½	1,924,701	50,000	...	...	..	...	...	...	...	...
Annapolis and Elkridge.	21	...	21	...	...	...	...	..	...	...	...	...	...
Bangor and Oldtown...	11½	...	11½	...	...	...	...	..	...	...	...	...	...
Boston and Lowell...	25½	1½	27½	2,013,687	73,200	1,800,000	...	10 up, 30 down.	461,339	268,707	192,631	8	118½	
Boston and Maine...	7¼	5	79½	3,571,832	45,000	3,249,804	249,715	47½	511,627	264,534	247,893	8½	102½	
Boston and Worcester...	41½	22	66½	4,960,000	74,700	4,500,000	460,000	40	716,284	406,303	310,080	8½	102½	
Boston and Providence...	41	6½	47½	3,031,106	63,800	2,893,300	26,878	37½	354,375	183,361	170,013	6½	93	
Bost., Concord and Mont.	90	...	38	In progress	...	...	...	..	...	...	...	...	82a85	
Berkshire	21	...	21	600,000	28,500	...	...	..	...	...	...	7	...	
Buffalo and Niagara...	22	...	22	250,396	11,500	...	...	..	60,014	...	...	6 1-3	...	
Buffalo and Black Rock.	3	...	3	...	...	...	...	..	...	...	...	...	...
Baltimore and Susqueh'a.	36	...	36	...	...	...	...	..	...	...	...	...	...
Beaver Meadow	26	...	26	...	...	...	...	..	...	...	...	...	...
Buck Mountain	...	...	4	...	...	...	...	..	...	...	...	...	...
Baltimore and Ohio.	...	...	178	...	...	...	...	..	...	...	...	...	...
Washington Branch.	...	...	31	13,136,910	61,900	...	...	..	1,468,828	805,530	663,198	...	43½a44	
Frederick Branch.	...	...	3	...	...	...	...	..	...	...	...	...	...
Calais and Earing	3	...	3	...	...	...	...	..	...	...	...	...	...
Concord	34	...	34	...	...	1,350,000	...	..	311,326	180,699	130,639	...	121	
Cheshire	54	...	54	2,584,143	48,000	1,453,379	1,140,764	60	...	...	...	...	67a67½	
Connecticut and Passump.	115	...	40	...	...	...	...	..	...	...	...	...	85	
Connecticut River	50	2	52	1,588,184	30,500	1,234,970	426,013	32	165,242	95,658	69,583	8	96½	
Cape Cod Branch	28	...	23	587,116	20,900	343,000	217,395	40	...	...	...	...	62	
Corning and Blossburgh.	...	...	40	...	...	...	...	..	18,069	...	...	...	...
Cayuga and Susquehanna	29	...	29	...	...	...	...	..	...	...	...	...	...
Camden and Amboy...	61	...	6½	3,200,000	33,000	...	...	..	...	...	...	...	140 a 142	
Trenton Branch.	...	...	96½	...	...	...	...	..	...	...	...	...	...
New Brunswick Br.	29	...	29	...	...	...	...	..	...	...	...	...	...
Columbia	82	...	82	...	...	...	...	..	...	...	...	...	...
Camden and Woodbury...	9	...	9	...	...	...	...	..	...	...	...	...	...
Cumberland Valley	...	...	52	...	...	...	...	..	...	...	...	...	...
Carbondale & Honesdale.	26	...	26	...	...	...	...	..	...	...	...	...	...
Chesterfield	12	...	12	150,000	13,500	...	...	..	...	...	...	...	...
City Point	9½	...	9½	195,867	15,919	...	...	..	...	...	...	...	...
Central of Georgia	191	...	191	3,222,289	16,800	...	...	30	516,252	266,450	250,226	...	80	
Central of New Jersey...	63	...	36	...	...	...	...	..	...	...	...	...	...
Dorchester and Milton...	3½	...	3½	114,224	35,100	72,990	41,234	39	...	...	...	...	74	
Detroit and Pontiac	25	...	25	...	...	...	...	..	...	...	...	...	...
Eastern	54	19½	73½	...	...	...	...	40	...	...	...	8	104	
Essex (Salem to Law.)...	22½	...	22½	421,574	18,700	263,746	160,958	55	...	...	...	...	...
Erie and Kalamazoo...	33	...	33	...	...	...	...	..	...	...	...	...	...
Fall River	42	...	42	1,145,982	27,300	1,050,000	83,177	45	184,344	109,390	74,953	7½	85	
Fitchburgh	49½	6½	56	2,945,630	52,300	2,735,910	67,504	..	486,265	286,046	200,219	8½	110½	
Franklin	...	...	22	...	...	...	...	..	...	...	...	...	...
Greenville and Roanoke.	21	...	21	283,917	13,500	...	...	..	...	...	...	...	...
Germantown Branch...	6	...	6	...	...	...	...	..	...	...	...	...	88 a 90	
Gaston and Raleigh...	96	...	96	...	...	...	...	..	...	...	...	...	...
Georgia (Augusta to At'a)	171	...	39	...	...	...	...	40	477,052	267,173	209,879	...	121	
Athens Branch	...	...	210	...	...	...	...	..	...	...	...	...	...
Harrisburg and Lancaster	37	...	37	1,183,257	31,979	609,550	573,707	49	121,350	37,386	83,963	6	96 a 97	
Hartford and New Haven	62	...	62	...	...	...	...	17	...	...	...	...	104 a 105	
Housatonic	74	...	74	...	...	...	...	..	...	...	...	...	87	
Hudson and Berkshire...	31½	...	31½	818,983	26,500	...	...	..	...	...	...	...	...
Hazleton and Lehigh	10	...	10	...	...	...	...	..	...	...	...	...	...
Jackson and Brandon	13	...	13	...	...	...	...	..	...	...	...	...	...
Lexington and W. Camb.	6½	...	6½	252,680	38,900	...	...	55	...	...	...	...	...
Lowell and Lawrence...	12½	...	12½	283,248	22,650	...	...	45	...	...	...	...	85	
Long Island	98½	...	98½	2,173,646	22,100	...	...	..	...	...	...	...	23½	
Lockport and Niagara...	23	...	23	221,000	9,700	...	...	..	...	...	...	...	...
Lewiston	3½	...	3½	33,673	10,300	...	...	..	...	...	...	...	...
Lykens Valley	16	...	16	...	...	...	...	..	...	...	...	...	...
Little Schuylkill	23	...	23	...	...	...	...	..	...	...	...	...	...
Louisa	50	...	50	474,137	9,482	...	...	..	...	...	...	...	...
Lexington and Frankfort.	29	...	29	450,000	15,600	300,000	...	61	50,000	30,000	10,000	...	82a85	
Little Miami	84	...	84	1,513,402	18,000	...	...	..	...	...	...	...	...
Machiasport	8	...	8	...	...	...	...	..	...	...	...	...	...
Morris and Essex	...	...	45	...	...	...	...	80	...	...	...	...	100	
Mauch Chunk and R. Run	36	...	36	...	...	...	...	..	...	...	...	...	...
Mine Hill & Sch. Haven.	25	...	25	...	...	...	...	..	...	...	...	...	136	
Mount Carbon	7	...	7	...	...	...	...	..	...	...	...	...	...
Mt. Carbon & Pt. Carbon	2½	...	2½	...	...	...	...	..	...	...	...	...	...
Mill Creek	6	...	6	...	...	...	...	..	...	...	...	...	...
Montgomery & W. Point	67	...	67	...	...	...	...	..	...	...	...	...	...

AMERICAN RAILROAD JOURNAL.

Saturday, July 7, 1849.

TO THE PUBLIC.

For the purpose of adding as far as possible to the usefulness of our Journal, we have secured the services of several gentlemen who will regularly furnish for its pages, articles upon subjects to which it is devoted, which come within the range of their professional pursuits. Our object is to promote, as far as in our power, the public works in this country, and of the various mechanical sciences which are intimately connected with their progress. And while as conductors of a public journal, we shall endeavor to impart all the instruction in our power, we wish to make our Journal the medium of communication of those persons interested in the same pursuits with ourselves, and would invite from correspondents, discussions upon the various topics which appear in our Journal. We shall weekly devote a part of it to the discussion of newly granted patents and inventions in the arts, and shall be very happy to answer any questions from persons who may be desirous of patenting or making public their inventions, and to aid as far as possible in rendering them valuable to the inventors, at the same time reserving to ourselves perfect freedom in the expression of our convictions as to the value of such improvements.

In this connection we are happy to introduce to our readers Mr. Hewson, who is to be hereafter a regular contributor to the Journal in the department of Civil Engineering. We know of no man better fitted for this duty; and Mr. Hewson brings to it a most critical scientific education united with long experience as a practical engineer, and we feel fully warranted in calling careful attention to the contributions of his pen.

American Railroad Journal.

TO THE READER.

The undersigned, in coming before the readers of the American Railroad Journal, begs leave to state briefly the plan by which he proposes to regulate his intercourse with them.

He enters on the management of that department of the Journal falling within the province of Civil Engineering and the Correct Sciences. He will divide his business into these heads:

To give, from time to time, tables and formula of the results of experiments applicable in construction and the mechanic arts generally—tables of the strength of materials, the elasticity of steam and the like;

To review books on subjects falling within the ground he takes in the conduct of the Journal; and in this as in all other cases to aim at something practically useful;

To canvass all questions arising in the progress of mechanical science here and in Europe; and to do so in a manner removed as much as possible from the embarrassments arising to some readers by the introduction of the higher calculus.

These are the heads under which the undersigned intends to communicate with the reader. He will now add to this general statement only the request that, for the benefit of the profession and the public generally, inventors will have the goodness to forward to this office a plain statement accompanied by the results of experiments that have been made in the case of such of their improvements, and if convenient a detailed drawing, showing the proportion of the several parts, the manner of working

etc. as may be of direct interest to the civil engineer.

M. BUTT HEWSON,
Civil Engineer.

American Railroad Journal Office,
New York, July 6, 1849. }

TO THE SUBSCRIBERS OF THE AMERICAN RAILROAD JOURNAL.

The following is the only apology we can give our readers for not receiving their papers of the 23d ult., until after they were due.

The papers were deposited in the Post Office in this city as usual, and we supposed were regularly forwarded, until the edition of the 30th ult. was taken to the office, where the papers of the week previous were found still remaining in the office. This was the first intimation we had that they were not forwarded. Upon ascertaining these facts, we immediately addressed the Post Master a note, of which the following is a copy:

RAILROAD JOURNAL OFFICE,
54 Wall st., July 2, 1849. }

SIR:—I learned on Saturday last, with surprise, that the edition of the Railroad Journal of the week previous had not been forwarded to its subscribers, but still remain in the Postoffice in this city.

I should be pleased if you would inform me by what authority the papers were retained.

I have the honor to be, &c.,

H. V. POOR,

Editor Am. R. R. Journal:

To Wm. V. Brady, Esq.,
P. M. N. York City. }

To this note, which we sent directly to the Post Master, we have received no reply!

With this simple statement of facts, we leave the matter before the public.

We did not receive the article by C. T. J. on "Steam Boiler Explosion" in season for this week's number.

Railroad to the Pacific.

The magnitude and importance of our newly acquired possessions on the Pacific, their rapid increase in population, and the obstacles which the immense extent of intermediate territory present to an easy communication between the extremes of our country, have turned general attention to ascertaining the best route, and devising the best mode, by which this communication can be opened and sustained.

From military considerations, united with a desire to develop our resources and promote the settlement of the country, it is considered indispensable that the route selected should pass through our own territory; and as water communication is impracticable, the plan of a railroad is universally adopted as the only feasible one to secure the object in view.

The plan of a railroad being adopted, the great questions to be considered, are the route to be selected, and how the means shall be obtained for its construction. Upon these points we must expect an infinite diversity of opinion. Every town in the country will desire to be on the line of the road, and every motive that interest and local prejudice can suggest will be appealed to. It becomes important therefore that these questions should be fully discussed in all their bearings, for the purpose of eliciting all evidence that may exist as to the superiority among the routes proposed, and developing the best plan to be adopted to secure the construction of the road.

The termini of a great line of railway to connect the Atlantic and Pacific must in the end be determined by the wants and necessities of trade and commerce. These have already pointed out New York as the eastern terminus. This city must always remain the commercial emporium on the Atlantic coast, and a railroad, crossing the Rocky Mountains, running east, as soon as it strikes the Mississippi valley, will seek this city by the most direct and feasible route, guided by the same causes that has constituted it the commercial centre of the Union. Other Atlantic cities, from their great commercial importance, will be connected with it by branches, but the great trunk line must run direct to New York, and should Congress adopt any different route than the one indicated, it would cease to be the route of commerce as soon as commerce should acquire sufficient strength to construct a road better adapted to its wants.

We have not the guide of experience in determining the western terminus of the road. It must be either the port of San Francisco or Puget Sound. At the present time the public mind undoubtedly points to the former port as the one to be selected.—The great excitement caused by the discovery of gold in California, attracts a vast emigration to its shores, and is drawing away the few adventurers who settled in Oregon before these discoveries.—Large towns will grow up on the Bay of San Francisco, and it will become the seat of an extensive commerce, before Oregon shall attract any further attention from our people, and should a favorable route be found in this direction, we should have no doubt of its being selected as the Pacific terminus.

Whether it would always remain the great commercial emporium on the Pacific is by no means certain. We do not yet possess sufficient facts as to ultimate resources of our western possessions to determine this point, nor have we sufficient knowledge as to the feasibility of the rival routes by which these points are to be reached, to determine which is entitled to the preference, or in fact, that either are practicable when judged by the ordinary evidence that justifies the construction of a road. All the evidence we possess are the elevations indicated by the barometer, and the general observations of travellers passing over the routes. These may be favorable and the road still impracticable. The first step that Congress should take, should be to institute a suitable commission for the purpose of ascertaining the distance, grades, nature of the soil, and the capacity of the country over which the road is to pass, to sustain a population, and furnish materials for building and sustaining the road, the obstacles interposed by the water courses, etc., etc. In fact, government should do just what a prudent individual or company would do, before commencing work; first ascertain precisely what is to be done, and then determine whether the result to be accomplished will justify the outlay. Individuals who should adopt any other course would instantly lose all the confidence of the community. The great mistakes that have been committed in connection with our public works, have arisen from a want of thorough and critical surveys before commencing work. Yet in the discussions of this subject, both in and out of Congress, these considerations seem entirely lost sight of, and every person having fixed upon what he considers the proper termini, looks upon all the intervening space as mere plastic materials in his hands, to be moulded by the action of his will, into such form as he may wish to give it.

But when we consider how lines of a few hundred miles in extent in the old settled States have

baffled for years the efforts of the most skilful engineer, backed by the energies of a whole State, how little can we estimate the difficulties of a route of twenty-five hundred miles in extent, surmounting a range of mountains at an elevation of over 7000 ft., crossing immense water courses, and traversing a desert more than 500 miles in extent. Yet most people look upon the construction of such a work as mere past time, and individuals among us, offer single handed, to construct this work by aid of grants of land from Government alone, and profess themselves ready to commence its construction, before even an engineer has raised his theodolite in the field!

In saying what we have said, we do not wish to be understood as throwing any obstacle in the way of this great work. We wish to encourage it in every way in our power, and we can do this no more effectually than by indicating the true policy to be pursued with a view to success. The previous preparation should bear proportion to the magnitude of the undertaking. If we commence with insufficient knowledge as to the nature of the difficulties to be encountered, we shall certainly fail in the attempt; and if we miscalculate the results that would follow from its completion, its construction might be a still greater disaster than its abandonment, by involving the loss of greater capital. We propose, therefore, to examine the various plans for the construction of this work, to see how far they are in accordance with the rules we have laid down as our guide in its construction.

To be Continued.

Massachusetts Stocks.

The following is a table of dividends paid in some of the leading Massachusetts stocks on the second instant:

When paid.	Stocks.	Capital.	Div. p. c.	Amt.
June 27	Cabot Man. Co	\$500,000	3	\$15,000
do 27	Chicopee do	700,000	3	21,000
do 28	Taunton Branch railroad	250,000	4	10,000
July 2	Western railroad	5,150,000	4	206,000
do 2	Fitchburg railroad	2,650,000	4	106,000
do 2	Boston and Lowell railroad	1,830,000	4	73,200
do 2	B. & Prov. railroad	3,160,000	3	94,800
do 2	Bos. and Wor. do	4,500,000	3	135,000
do 2	Dorchester & Milton railroad	130,000	3	3,900
do 2	Fall River railroad	1,000,000	3	30,000
do 2	Nashua Manuf. Co.	1,000,000	4	40,000
do 2	Jackson do	480,000	4	19,200
do 2	Lowell do on 1300 shares old stock, \$20 per share			26,000
do 2	Stark Mills	1,000,000	3	30,000
do 2	Cocheco Manuf. Co. on 2000 shares, \$26 per share			52,000
do 2	Salmon Falls do	500,000	4	20,000
do 2	Am. Insurance Co.	300,000	6	18,000
do 2	Franklin do	300,000	6	18,000

Dauphin and Susquehanna Railroad and Coal Company.

The kindness of a friend enables us to present the following interesting account of one of the great coal fields of Pennsylvania, and the works in progress to bring its treasures to market.

This road, which is designed principally for the transportation of coal, commences at Dauphin, Dauphin Co., Penn., (a flourishing village on the north shore of the Susquehanna river, at the mouth of Stony Creek, about 8 miles above Harrisburg,) and follows the valley of that creek in an easterly direction for a distance of 16 miles, to the Yellow Spring Gap.

The route is very direct—the greatest departure from a straight line uniting the termini being only 2500 feet. The curves are generally of a large radius, and there are none less than 1000 feet. The maximum grade is 37 feet per mile, and every gradient descends towards the Susquehanna river in the direction of the trade. The road-bed will be formed of material unusually favorable for permanency, the greater portion being cemented earth, gravel and shale rock. The surface of the ground along the route is very uniform, requiring no deep excavations, or high embankments; and the whole quantity of material to be removed in forming the road-way will not exceed 325,000 cubic yards.—There will be only one road crossing, and only one structure of a perishable character—a bridge of 90 feet span—upon the whole line. The side streams, although numerous, are quite small, and in no case will culverts be required exceeding 3 feet span.—The gauge is to be of the usual width, 4 feet 8 in. The iron rail is of the H pattern, weighing 45 lbs per yard, and will rest upon cross-ties not exceeding 18 inches between bearings.—A sub sill will be used when deemed necessary to secure a firm and uniform bearing.

The location of the line was commenced in March last, and the contractors, Philip Dougherty and G. M. Lauman, Esqs., commenced their operations in April. The grading upon the main line is now more than half completed, and the iron rails will be furnished in July. The cross-ties and other timber are being delivered, and it is supposed the road will be finished and in operation in November next, at a cost for grading, superstructure, &c. exclusive of land, buildings and machinery for operation, of not exceeding \$10,000 per mile.

The proprietors of this road own about 10,000 acres of land which extends from Dauphin, including a large portion of the territory of that village, along Stony Creek for about 18 miles, embracing the whole of the western termination of the southern coal field of the state of Pennsylvania.

The capital of the company, including railroad stock, is \$300,000—divided into 16,000 shares of fifty dollars each.

The great value of their property consists in the fact that they control the whole of the territory east of the Cumberland or Allegheny region that contains a peculiar and extremely valuable class of *transition and semi-bituminous coal*, which burns with a bright beautiful flame, makes excellent coke, generates steam with great rapidity, and is admirably adapted for all manufacturing and steaming purposes. Its qualities have been tested by some of the most eminent operatives of the country, and unqualifiedly pronounced inferior to none.

The first, or Southern Coal Field, extends from the Lehigh river, at Mauch Chunk, in nearly a western direction for a distance of about 65 miles, to the Susquehanna river at Dauphin. The western termination is an elevated mountain range, varying from one to seven miles in width, some 1600 feet above tide, presenting its side towards the various depots on tide water. The coal veins run in the direction of the mountains at various angles of inclination, from one extreme to the other. Commencing at Mauch Chunk we find the hard anthracite; at Pottsville and Pine Grove it becomes more soft, and at Rausch Gap, 2½ miles from the Susquehanna it changes to a free burning coal. From this latter point it gradually becomes more and more bituminous as we approach Dauphin; each gap, of which there are two, Yellow Springs and Rat-

ting Run, affording different qualities, and thus furnishing every variety requisite for economical uses.

The western termination of this coal field is known as Short Mountain. It is an unbroken ridge, increasing in width and elevation from the Susquehanna to Big Flats, about 9½ miles east of Dauphin, where it divides into two ridges known as Third or Sharp, and Fourth Mountains. At Ratling Run and Yellow Springs, the Third Mountain has deep transverse depressions, through which pass small streams draining the valley which lies between the two ridges.

At each of these depressions or "Gaps" the coal veins, (which are nearly vertical at Yellow Springs and Ratling Run,) are cut through at right angles to their general direction, affording cheap and perfect drainage, and superior facilities for penetrating and working the veins with great economy. From the ends of the veins thus exposed, the coal will be mined, put upon self-acting inclined planes, and carried to the main road at the foot of the mountain. Thence it will be transported to Dauphin, transferred to boats, and forwarded to any point via Pennsylvania and Tide Water Canals.

The cost per ton for mining and transporting to the principal markets will be as follows:

Cost per ton delivered at Dauphin	.....	\$1 00
" "	Havre de Grace	1 94
" "	Philadelphia	2 54
" "	New York	3 19
" "	Boston	3 69

The distance from the mines to any one of these points is about 100 miles less than from any other coal field having coal of the same quality.

A few years since several veins were opened at three different localities upon his property under the supervision of R. C. Taylor, Esq., who devoted considerable time to a thorough examination of the estate. The points selected were Big Flats, Ratling Run and Yellow Springs Gap, the former being 9½, the second 12, and the third 16 miles from Dauphin.

From the veins proven by him at these points it is estimated the supply *above water level* equals 10,200,000 tons, which, at the rate of 1,000 tons per day, making 300 days in the year, would afford constant and profitable employment for the road for 34 years, without mining below ground.

Simultaneous with the commencement of the construction of the road, the company began operations at the mines at Yellow Springs Gap, with the view of being prepared to supply in part, the great and increasing demand for their coal, as soon as their road should be completed. Several of the old veins have been re-opened, and a large force is constantly employed driving gangways, and mining coal from the slopes. Quite recently, under the advice and direction of Mr. Jno. R. Garland, who has the charge of the mining department, a tunnel has been started near Yellow Springs Gap, at right angles to the coal veins and 130 feet below the depression in the mountain at that point for the purpose of penetrating all the known and unknown veins in that locality. By this means the water level will be virtually lowered 130 feet, the facilities for mining greatly improved, and the supply of coal very materially increased, estimated equal to 1,500,000 tons from the veins already proved.

At the last session of the Legislature of the state of Pennsylvania, an act of Incorporation was granted to an association of persons under the title of "The Pequa Railroad and Improvement Company." Their charter covers about 32,000 acres of land,

commencing at the eastern boundary of the Dauphin and Susquehanna Coal Company and extending eastwardly for about 10 miles, comprising all the coal land of Third and Fourth Mountains for that distance. The coal is generally a pure anthracite. Upon this estate, Third Mountain has three transverse depressions similar those heretofore mentioned, known as Rausch, Gold Mine, and Black Spring Gaps. At the former gap, no less than 15 remarkable veins, ranging from 3 to 14 feet in thickness, 11 of which average 7 feet, have been discovered, making an aggregate of over 90 feet in thickness of pure anthracite, extending the whole length of the property and to an unknown depth. It is estimated that the quantity obtainable above water level without resorting to tunneling is equal to 18,000,000 tons.

This company propose constructing a railroad from Rausch Gap to the eastern terminus of the D. and S. railroad, a distance of 4½ miles; also, from the same point over Second Mountain to the valley of the Union Canal, about the same distance; thus affording two outlets for the mineral products of both corporations and creating a business fully equal to the capacity of the D. and S. railroad.

The officers of the Dauphin and Susquehanna Coal Company, who are constructing this road, are as follows:

- DIRECTORS:
- Henry G. Stebbins, of New York.
 - M. Morgan, do
 - C. N. Heckscher, do
 - N. Hendricks, do
 - Samuel Jaudon, do
 - J. Foster, Jr., do
 - Isaac Lea, of Philadelphia.
 - Wm. A. Blanchard do
 - Presley Blackstone, do
- Henry G. Stebbins, President,
M. Morgan, Treasurer.
Ashbel G. Jaudon, Secretary.
D. Morton, Chief Engineer.
Jno. R. Garland, Superintendent and Agent.

Ohio.

Mad River and Lake Erie Railroad.—A recent election of Directors of this road resulted in the choice of Samuel Henshaw, Henry Simmons and Mathias Sawyer, of Boston; D. A. Neal, of Salem; E. Lane, E. F. Osborne, and F. Follett, of Sandusky City; M. Hunt, of Clark county; S. Keener, of Champaign; and F. Odlin, of Dayton. The Directors, on behalf of the State of Ohio, are Sampson Mason, of Springfield; Rice Harper, of Sandusky City, and Mr. Stoddard of Dayton. The Urban Citizen says:—"We learn that the company declared a dividend of 12½ per cent. in stock of the company. That is, every eight shares of stock held by an individual, will entitle him to an additional share; and on all fractions of shares, under or over eight, a dividend of 7½ per cent. in money. We also learn that the net earnings of the company, up to the 15th of March last, amounted to about \$160,000. A handsome business.

Virginia.

Orange and Alexandria Railroad.—We understand from the president of the Orange and Alexandria railroad company, that at the meeting of the president and board of directors of the company, held at Fairfax Court House on the 22d ult., an order was passed directing the second party of engineers to begin their work in the field at Gordonsville on the 17th of July next, and prosecute the surveys and examinations of the several routes proposed for the road, taking the points named in the charter, in a direction for Alexandria.

The first party of engineers now in the field are

prosecuting their labors with vigor, commencing at Alexandria, and directing their work towards Culpeper C. H., exploring and enaming the various routes through the country as they progress.

Michigan.

Southern Railroad.—The directors of the Southern Michigan railroad elected last week, are Geo. Bliss, Springfield, Mass.; Charles Butler, N. Y.; Hugh White, Saratoga, N. Y.; Charles Noble, Monroe, Mich.; Joel Rathbone, Albany, N. Y.; Chas. Seymour, Canandaigua, N. Y.; Edwin C. Litchfield, N. Y.; Elisha C. Litchfield, Detroit.

Pennsylvania

Ohio and Pennsylvania Railroad.

A very large number of proposals have been received for the grading and bridging of the Ohio and Pennsylvania railroad, from Beaver to the State Line; and many experienced and energetic contractors, from other public works, have attended the lettings.

The ceremony of breaking ground on this road took place on the 4th inst. at the State Line. Governors Ford of Ohio, and Johnston of Pennsylvania, were expected to be present, and a grand demonstration was anticipated.

In order to have time to compare and deliberate upon so large a number of bids, and to afford an opportunity of consultation with the directors residing in Ohio, the allotment of the contracts will not be made till after the celebration. The contractors, to whom the work is allotted, will be notified by letter, and a list of them will be published in the Pittsburg papers, probably on Saturday, the 7th of July.

Susquehanna and Tide-Water Canal.

The annual report of this company states that its receipts, for the year ending December 31st, 1848, were \$138,013 66—an increase of \$6,073 79 over the year previous, when this work, in common with others through the country, felt the impulse given to trade by the immense grain exportation to Europe. A still larger increase is expected for the present year, in consequence of the completion of two important tributaries, the Wiconisco canal and Lykens Valley railroad. The company were enabled to pay the State of Maryland in 1848, \$50,000 on account of interest, and the directors are encouraged to think that in a few years the current interest upon the whole debt will be regularly met.

The strength and durability of the work, says the Harrisburg Intelligencer, were fully and favorably tested by the freshets of the present season, and the canal is now in fine working order. Its original cost, including the Conestoga connection was \$3,268,554 83.

Opening of the Pennsylvania Railroad.—The work of this gigantic improvement is now nearly finished as far as Lewistown. It will be opened to Middletown, thirty miles beyond Harrisburg, on or about the 26th inst., and as far as Lewiston in a few weeks after. The bridge over the Susquehanna, 5 miles above this place, is almost ready for crossing.

Massachusetts.

Charles River Branch Railroad.—At a meeting recently held, this company was organized by the choice of Messrs. Otis Pettee, Marshall S. Rice, Edgar K. Whitaker, Elijah Perry, and William M. Stedman as Directors whosubsequently made choice of Otis Pettee, Esq., as President of their Board and of the corporation, and of S. F. Plimpton, Esq., as Clerk.

Lexington Railroad.—The annual meeting of the stockholders was held on Wednesday afternoon at the Lexington House. After the usual reports had been presented, the following gentlemen were elected Directors for the ensuing year, viz: Charles Hudson, Saml. Chandler, James Dana, James Gould; S. S. Littlehale, Simeon Butterfield, Geo. W. Rob-

inson. Among the votes passed by the corporation was one requiring the new Board of Directors to devise and report at an adjourned meeting a plan for the payment of the company's bonds falling due in November next.

Newburyport Railroad.

This work is progressing rapidly. One-third of the road, and that by far the hardest portion of it, is now graded, and the cost has come within the estimates. From the moment of its opening for travel and transportation, it will be continually developing new advantages and facilities not only to the people of Newburyport, but to occupants or owners of real estate along the line. In a short time the whole line will be located and the work commenced on the other end of the road, which is mostly embankment. The next assessment of ten per cent. is due on the 10th of July, and if it is promptly met, the work will go on successfully and economically, and secure its extension and communication with the Boston and Maine road. An additional subscription of \$20,000 is desirable to finish the road without incurring a debt.

Maryland.

Business of the Baltimore and Ohio Road.

The following memoranda of the business upon the Baltimore and Ohio railroad during the month of May, 1839, we find in the Patriot:

The transportation eastwardly into the city of Baltimore in some of the principal staples has been as follows:

Flour.....	31,573	barrels
Coal.....	6,973	tons
Tobacco.....	1,273	hhds
Grain, Meal, &c.....	330	tons
Pork and Bacon.....	52	"
Iron.....	1,125	"
Lard and Butter.....	12	"
Hogs and other Live Stock, viz:		
Hogs, in number.....	10,250	
Horses and Mules.....	63	
Horned Cattle.....	81—10,394	all

The Revenue for the month has been as follows:

Main Stem.....	\$34,952 72	\$66,674 23	\$101,626 95
Wash. branch..	18,855 78	4,921 15	23,776 93

Total.....\$53,808 50 \$71,595 38 \$124,403 88

Baltimore and Ohio Road.—The following table will show the comparative aggregate receipts of the Baltimore and Ohio railroad since the 1st of October last, when the fiscal year of the company commenced, compared with the aggregate receipts of the corresponding months of the previous year:

	1848.	1847.
October.....	130,907 21	125,452 74
November.....	121,892 79	129,731 56
December.....	145,611 60	120,967 43
	1849.	1848.
January.....	102,565 82	110,418 51
February.....	106,052 18	116,131 63
March.....	170,963 54	150,030 43
April.....	126,163 35	122,701 65
May.....	125,403 88	113,611 63
	1,029,560 34	989,045 58

This shows an increase in receipts in the eight months since the 1st of October, over the corresponding months of the previous year, of \$40,514 76—which, allowing a relative increase for the four remaining months, would make an aggregate increase in receipts of over 60,000 for the year.

This gratifying fact is evident alike of the prosperity of the road, and of the vast importance it is to the business of the city, and to the country through which it penetrates and to which it extends.—*Baltimore Patriot.*

New Hampshire.

The following is a list showing the amount of railway already constructed and running in this state:

Name of road.....	miles running.
Concord railroad.....	34
Nashua and Lowell, (in N. H.).....	6
Nashua and Worcester, ".....	15

Eastern, (in N. H.).....	20
Boston and Maine.....	40
Wilton railroad, (to Danforth's Corner).....	8
Cheshire, (in N. H.).....	40
Sullivan Co.....	25
Northern, (including the Bristol branch).....	80
Montreal, (to Meredith Village).....	38
306 miles finished.	
Length of line in progress and unfinished.	
Montreal, (between Meredith and W. Rumney).....	23
Manchester and Lawrence.....	25
Concord and Portsmouth, (including branch to Manchester).....	60
N. H. Central, say.....	25
Concord and Claremont.....	25
Contocook Valley.....	15
second class, 198 miles. —	
Coheco, Great Falls and Conway, 25 miles in progress.	
Making 504 miles either completed or in a state far advanced towards completion.	
The following are lines or parts of lines chartered or projected but not in progress.	
Concord and Montreal, from West Rumney to mouth of Passumpsic, about.....	40
White Mountains.....	38
Suncook Valley.....	17
Concord and Claremont, about.....	25
Ashuelot.....	23
Petersborough and Shirley.....	23
Coheco, Great Falls and Conway.....	75
Wilton.....	7
East Wilton ".....	40
third class 288 miles. —	
Total number of miles	792

This last list does not embrace the section of the Atlantic and St. Lawrence road, which is to run through the north part of this state, the length of which has not yet been determined. The probability is, that two-thirds of the projected lines will be soon commenced and completed with reasonable despatch. This will give New Hampshire 646 miles of railroad; a much greater length of line than any state in the Union in proportion to her population, and to her territory if we except Massachusetts.

There will have been expended in this state when the roads in progress shall be completed \$17,640,000, estimating their cost at \$35,000 per mile. The construction of the roads projected and likely to be immediately commenced would require the additional sum of \$6,720,000, making an aggregate of \$24,360,00.

This immense sum will convey some idea of the extent to which roads have been pushed in New England, when compared to other sections of the country.

Northern Railroad.

From an abstract of the report of this great New Hampshire railroad company, it appears that the capital stock of the corporation is \$2,600,000, of which the sum of \$2,548,905 87 has been realised. The nominal stock of the Franklin and Bristol, now united with the Northern road, is \$200,000; but only about \$156,900 has been paid in; and it appears from the report that in uniting with it, the Northern takes it at something over \$236,000, having paid and assumed debts to the amount of \$80,000. For this it has 335 shares of the stock unsold, and a claim for \$6,753 10 due on stock sold—making \$40,253 10, reckoning the stock at par. The receipts from both roads during the past year are stated to be—passengers, \$158,109 39; for freight, \$242,558 76; for mails, express, rents, &c., \$9,287 79. Total, 408,655 94. Deduct—paid lower roads, \$122,068 11; expenses of running and railroad tax, \$119,292 29. Total, 241,378 40. Net earnings, \$166,277 54; deduct November dividend 3 1-2 per

cent. paid, \$92,978 66; earnings not divided, \$74,298 88. This is the sum that would have been divided among the stockholders at this time, had it not been for the debts assumed by the Bristol road. The net earnings of both roads for the year were more than 6 per cent. on the capital stock paid in.

The liabilities of the corporation, exclusive of the above "earnings not divided," are stated to be \$129,978 46. Their assets are stated to be \$178,783 56, in which sum is included real estate that may be sold \$17,604 00; stock in machine shop, \$11,390 02; Bristol road stock at par, \$33,200; and fuel on hand, 28,198 14.

The number of passengers carried in the cars is stated to be 128,544 1-2; number of tons of freight, 73,442; miles run by passenger trains, 97,901; by freight trains, 62,198. Length of Northern road, 69 miles and 1251 feet; length of double track at stations, 3 miles; length of Bristol road, 12 1-2 miles. Number of passengers over the road to and from Concord, 22,758; Manchester, 16,782 1-2; Nashua, 5,480; Lowell, 19,784 1-2; Boston, 27,475 1-2; and all other way stations, 36,246.

Georgia.

Reduction of Fare.—The Georgia Railroad company has reduced the fare to three cents a mile from the 15th of June to the middle of October on all local travel. We trust that this arrangement will prove advantageous to the company.

South Western Railroad.—The Macon Journal & Messenger says: "We learn that during the month commencing on the 7th of May, and ending on the 7th of June, there was employed on this work a force equal to 570 hands. The excavation amounted to 36,498 cubic yards, and embankment to 42,626 cubic yards. The estimate for the month's work, amounts to \$11,690, being an average of \$20 51 to the hand, including cars, etc., and of 25 03 to the hand, not including cars. The total amount of excavation thus far accomplished on the work, is equal to 446,347 cubic yards, and of embankment 463,444 cubic yards: being equal to 24 1/2 miles average of the entire distance between Macon and the Flint river."

East Tennessee and Georgia Railroad.—The Dalton Eagle says: "According to the notice given our last, a large number of the citizens of Dalton, and the surrounding country, assembled at the place designated, on Wednesday afternoon last, for the purpose of manifesting the interest which they feel in the great enterprise, and of witnessing the ceremony of 'breaking ground' at the junction of the East Tennessee with the Western and Atlantic railroad. The occasion was an interesting and important one, and one we opine that will long be remembered as a great event in the history of our town, whether it be for weal or woe."

Atlanta and Lagrange Railroad.—This company was duly organized at Newnan on the 24th May, by the election of the following gentlemen as directors, viz: John P. King, Augusta; Richard Peters, Atlanta; W. P. Menifee, Campbell county; Doctor Terrell and Major Berry, Coweta; J. McClendon, W. F. Fannin, of Troup. John P. King was chosen president of the company, and L. P. Grant, engineer. It is stated by the Atlanta Intelligencer that a portion of the work will be placed under contract at an early day.

Maine.

The Bangor and Piscataquis Railroad.—The Bangor and Piscataquis railroad is now being laid with a T rail in place of the flat bar.

There are several railroad projects on foot, some of which already have charters, and others are now asking them of the legislature. The corporators in the *Androscooggin Railroad Company* have called a meeting for organization, and have petitioned for the extension of their chartered privileges to allow them to carry their road to Farmington. The route of this proposed road is so favorable that we see no reason why it will not be put in progress at once by the people on the line.

The town of Orono has petitioned the Legislature for authority to take stock to the amount of

\$25,000 in the Bangor and Orono railroad, the money to be expended within the limits of the corporation. If this authority is granted, it is supposed the road will be put in progress.

The application for a charter for a railroad from Lewiston Falls to Rumford Falls is opposed by the Buckfield railroad company and the corporators of the *Androscooggin railroad company*.

A meeting of the stockholders of the *Kennebec and Portland railroad* was held at the company's office in Gardiner on Wednesday last. A good number of the stockholders and friends of the road were present, and a fine spirit prevailed. Energetic speeches were made, and the word was, enthusiastic and resistless, the *whole road* must be finished and put in operation with all possible despatch.

The vote in February, creating new 30 per cent. stock was rescinded, and 4000 shares of new stock at par were made, amounting to \$400,000, upon which an interest of 10 per cent. per annum is guaranteed. One eighth of the stock, or \$50,000 was taken on the spot, and there will be no difficulty in disposing of the remainder, as a considerable portion of the road, 23 miles, is all ready to go into operation and will begin to pay immediately. It is estimated (and all the expenditures of the road thus far have come within the original estimates) that this \$400,000 will grade the road the whole distance to Augusta, and put it into complete operation from North Yarmouth to Richmond village, in all thirty-eight miles.

North Carolina.

R. O. Britton, Esq., of Granville, has been appointed president of the Raleigh and Gaston railroad, vice T. J. Miller, resigned. The appointment of Mr. B. is said to be a most judicious selection.

The Salisbury Convention.

A great convention was held at Salisbury in North Carolina on the 14th ult., of the friends of internal improvements, to concert measures for the construction of the great line of railway from Goldsboro' to Charlotte, chartered at the last session of the legislature of that State, to the stock of which the State is to subscribe on certain conditions. A large number of delegates were in attendance from twenty-one counties, and in addition, Hammond Whitney, Esq., and Dr. E. C. Roberson appeared as delegates from Norfolk, Va. The meeting was organized by the appointment of Hon. John M. Morehead president, and Gen. Alex. McRay, W. Boyland, Dr. W. Holt, Col. Daniel Coleman and E. C. Roberson vice-presidents. A committee was then appointed to consider and report to the convention the general measures to be acted upon; who, after consultation, reported among others the following resolutions, which were unanimously adopted.

Resolved, That this convention heartily commends the spirit in regard to works of internal improvement, which characterised our last General Assembly, and that its members are especially gratified by the liberal provisions made by that body for the construction of the "North Carolina Railroad"—a work of the utmost importance to the trade and character of the State, and of almost vital interest to that extensive and productive region lying contiguous to, or within convenient distance of the proposed road.

Resolved further, That a subscription of one million of dollars by individuals being required before the company can be organized for the construction of this railroad, it is the duty of all patriotic citizens to use their best exertions to raise that amount of subscription; and the members of this body do agree to urge this subject upon their respective constituencies, neighborhoods and counties.

Resolved further, That the president of this convention appoint a county committee in each county immediately interested in the construction of the "North Carolina Railroad," consisting of three members, whose duty it shall be to appoint sub-committees in the various sections of their respective counties, to procure subscriptions to the capital stock in said railroad, and to take all other measures

which they may deem necessary to the promotion of this enterprise.

Resolved further, That in the event of the stock not being taken under the first advertisement, the executive committee, if deemed expedient, be requested to employ a suitable agent to travel, call meetings, address the people, solicit and receive subscriptions in and out of the state.

Resolved further, That a committee of two persons be now appointed by the president to inquire and report to this convention whether there be any, and if any, what number of individuals can be associated to subscribe the residue of the stock required to form the company, provided there should be a deficiency in the amount returned on the books of the commissioners aforesaid.

Resolved further, That it is the opinion of this convention, that the payment of five hundred thousand dollars required to be made according to the 36th section will be as well complied with by the execution of contracts for work and materials to that amount as by the payment of money.

Resolved further, That in order to accommodate the terms of payment for stock to the condition and convenience of our fellow citizens generally, the board of directors of the railroad company ought, and will be expected by this convention, in letting contracts for the work and materials of the same, to give a preference to stockholders who may offer to become contractors, in all cases where they propose reasonable terms, to be judged of by the said board, with the aid of the estimate of the engineer.

In relation to this road the National Intelligence, says:—

The General Assembly of that state, in a spirit of liberality which it never before exerted to the same extent, granted a charter for incorporating a company to construct a railroad from Goldsborough, in the county of Wayne, by way of Raleigh and Salisbury, to Charlotte, in Meclenburg county—a distance of about two hundred and ten miles—and agreed to subscribe to the stock of that company *Two Millions of Dollars* on behalf of the state, whenever individuals shall have subscribed *One Million of Dollars*, and paid up one-half of that sum. The eastern terminus, Goldsborough, is at the Neuse river, at the head of navigation, at the point where the Wilmington and Roanoke railroad crosses the stream, about fifty miles from Raleigh. Its Western terminus, Charlotte, is already the terminus of the Charlotte and South Carolina railroad, which starts at Columbia, (S. C.) and, running through Richland, Fairfield, Chester, and York districts, in South Carolina, and part of Meclenburg county, in North Carolina, terminates, as above stated, at Charlotte. The counties of Cabarras, Iredell, Rowan, Davie, Davidson, Guilford, Randolph, Orange, Chatham, Wake, Johnson, and Wayne, that must constitute (very nearly) its track, are, in point of fertility and cultivation, not inferior to any part of the Atlantic states; and, when we consider their various towns and villages, with their schools, churches, banks, factories, and institutions for the dissemination of knowledge; with the University, which is highly prosperous; with the various officers, courts, &c., at Raleigh, (where it meets the Raleigh and Gaston railroad;) with the valuable gold mines in all the counties west of Orange; with the immense coal deposit in Chatham; surely few schemes have ever combined the elements of success in a more abundant degree.

The North Carolina papers represent that the very best feeling prevailed in the convention, and express no doubt of the stock being immediately taken, and that the road will be constructed with all reasonable despatch. We can see no reason why it should not, and we are much mistaken if this state is not equal to this effort, especially as it is the only public work of magnitude occupying her attention. The utility of this great work, the example of her sister cities, and the state pride involved in its completion are sufficient guarantees to our minds of its success.

Indiana.

A company has been organized to build a railroad from Lawrenceburgh to Decatur county, there branching—one branch running north to Rushville,

and the other west, crossing the Madison and Indianapolis railroad at Edinburgh, through Morgantown, Martinsville and Spencer, through the rich bottoms of Flatrock, Diftwood, and White river, and the coal and iron beds, to the Wabash at Terre Haute. The counties through which this road will pass are among the most populous and productive in the state, and the direction of the road is such as to carry the trade to Cincinnati. Louisville is proposing, with Madison, a great attempt to secure the prize, by making an improvement in her own direction; but as yet nothing tangible has resulted.—Meanwhile, the opposition route, has upwards of \$280,000 of its stock taken, and \$70,000 have been subscribed to another company, which must, when the work reaches a certain point, be merged into this. On the 17th of August next, 20 miles will be put under contract, and by next fall, 20 more—making 40 in all.

Jeffersonville Railroad.

In our paper of the 9th ult. we published an extract from a letter of a gentlemen connected with the management of this road, giving an account of its progress, and of the general features of the road, direction, &c. Since then we have read the report of the Directors, and are now able to present a more exact statement of its grades, cost, and other characteristics.

The following is the table of distances and grades and the estimates of the cost of the entire line:

Table of Grades.			
29 Miles,	2665 feet Level.		
4 "	160 "	from level to 5 ft.	p. m.
6 "	4860 "	" " 5 to 10 "	
5 "	2880 "	" " 10 to 15 "	
0 "	0 "	" " 15 to 20 "	
10 "	1337 "	" " 20 to 23 "	
9 "	4230 "	" " 23 to 26 4-10 "	

66 miles 342 " total distance from Jeffersonville to Columbus.

Cost of Road.	
For grubbing, grading & bridging 1st div.	\$55,969.00
" " " 2d "	61,466.00
" " " 3d "	58,138.00
Total	\$175,573.00
Estimated cost of superstructure	133,808.00
5808 gross tons iron rail, 56 lbs. per lineal yard, say at \$53 per ton, delivered	307,824.00
	\$617,205.00

Which is an average per mile of \$9,351.59. If to this be added for superintendence and contingencies 10 per cent. on the cost of grading and superstructure, the average per mile will be \$9,820, exclusive of turn-outs, way-stations, depots, road furniture, &c. &c.

In reference to the business prospects of the road the report goes on to say—

This road will effect a junction at Columbus with the Madison and Indianapolis railroad, which runs in a northwest course to Indianapolis. Between Columbus and Indianapolis several branches are in process of construction, and will soon be completed, throwing in the direction of that line a large increase of the products of the interior. Another branch in contemplation westward will furnish by your road and the connection referred to, the cheapest and quickest route by which access from the Falls of the Ohio, can be had with coal fields and iron beds of that region of the state. The Indianapolis and Terre-Haute railroad, penetrating the Wabash valley on the western border of the state, is under contract and will be urged to an early completion. The Lafayette railroad, leading from the state capitol to the Wabash and Tippecanoe valleys is also being constructed. The Indianapolis and Peru railroad striking the Wabash Canal in Miami county, in a good direction for Lake Michigan, and the Indianapolis and Bellefontaine road designed to connect with the roads in Ohio to Lake Erie, are both being constructed. The centre and northern portions of the state, unsurpassed for the fertility of the soil, will furnish by these roads immense quantities of agricultural products, much of which will seek a southern or southeastern market. For this portion of the business, this road cannot have a successful competitor.

It will be connected with others extending their ramifications into nearly every state in the Union; it will form a portion of one of the main routes which will hereafter be the principal means of communicating between the north and the south, extending through ten degrees of latitude; it will afford facilities for a reciprocal interchange of dissimilar products, superior to any line of the same extent on a parallel of longitude; it will offer a choice of markets to a multitude of producers in different climates of our own country; it will give a new impetus to agricultural and commercial pursuits, and the largely increased trade which will result must be annually augmented by the growing prosperity of our country; and in a few years the business of this road will far exceed the expectations of its most sanguine friends.

The natural direction of trade is from north to south and from the south to the north. Hitherto, the larger portion of the surplus products of Indiana have found their way to a southern market.

And from the considerations presented, it cannot be doubted that a fair share of the products as well as travel, arriving at Columbus, will pass over your road.

The various roads alluded to in Indiana, are being pushed onward with an energy indicating strong confidence in their ultimate success and profit.—Cheered by the prosperity of the only road now in operation in the state, and which yields an annual income of not less than 15 per cent., there is nothing to discourage them. Mature investigation of the subjects briefly presented, must produce the irresistible conviction that this road offers extraordinary inducements for the investment of capital. It is deemed sufficient to say that if the stock of any of the roads alluded to will pay a handsome dividend, will pay equally as much.

Situation Wanted,

As an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

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Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
New York and Harlem Railroad Extension,
Lithgow, Dutchess Co., N. Y.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Bullder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

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James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

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HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

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IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
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Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
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Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
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To Railroad Companies.
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SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

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Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849. If the above will favorably compare with any other rails.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and whenever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

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THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axo Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by A. WRIGHT & NEPHEW, Vine Street Wharf, Philadelphia.

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RAILROAD IRON & LOCOMOTIVE TIRES Imported to order, and constantly on hand, by A. & G. RALSTON,
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Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Allegheny county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President, Troy, N.Y.
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WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN,
41 Broad street.
March 29, 1849. 3m.15

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to COOPER & HEWITT, Agents,
17 Burling Slip, New York.
October 30, 1848.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory.

PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other purposes.
 German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc.
 All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.
 All fit to re-lay. For sale cheap by
PETTEE & MANN,
 228 South St., New York.
 May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE
 and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

½ Round and square, to 6 inches.
 ¼ Flat " " " " " "
 Ovals, half-ovals and half-round.
 Hoop, band and scroll iron.
 Nail plates, superior charcoal Horse shoe, Iron, sheet and Boiler iron.
 Tire iron for locomotives.
 Railroad spikes.
 Pig iron of superior quality for chilling.
 do. for foundry purposes.
 For sale by **JOHN F. MACKIE,**
 85 & 87 Broad Street,
 Sole agent for the New Jersey Iron Co,
 June 9, 1849.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
 Albany Iron and Nail Works, Troy, N. Y.
 The above Spikes may be had at fact^y prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Br. Inc, Edinboro, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS, FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
 28 Platt street, New York.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloerdale* and *Catarba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler* and *Fluc Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.*
 Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 R Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
 100 " " 1, " " " "
 100 " " 2, " " " "
 100 " " " Forge " "
 400 " " Wilkesbarre " "
 100 " " "Roaring Run" Foundry Iron.
 300 " " Fort " " "
 50 " " Catoctin " " "
 250 " " Chikiswalungo " " "
 50 " " "Columbia" "chilling" iron, a very superior article for car wheels.
 75 " " "Columbia" refined boiler blooms.
 30 " " 1 x ½ Slit iron.
 50 " " Best Penna. boiler iron.
 50 " " "Puddled" " "
 50 " " Bagnall & Sons refined bar iron.
 50 " " Common bar iron.
 Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 64 South street
 New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mil & Co., and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,**
 109 Water Street, New York.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.
 For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
 142 Front-street, New York.
 Orders for the above will be received and promptly attended to at this office. 32 1y.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track-rails; being laid down or removed without cutting or displacing them.
 It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.
 Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.
 Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
 Reading, Pa.

PHILADELPHIA CAR MANUFACTORY,
 CORNER SCHUYLKILL 2D AND HAMILTON STS.,
 SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
 Philadelphia, June 16, 1849. 1y25

Contract for building an Electric Telegraph from Halifax and onwards, in the Province of Nova Scotia.

Sealed Tenders will be received until the 30th day of June next, for building a Line of Electric Telegraph, starting from the city of Halifax—following the public road on the western side of Bedford Basin, thence from the head of the Basin to the Eastern Post Road from Halifax to Truro, and from Truro to the north-west boundary of Nova Scotia, passing through the village of Amherst—following generally the line of the post road, or such other line near thereto, as may be hereafter directed by the commissioners.

The line will be built forty posts to the mile—said posts to be Haematac or Cedar, 25 feet in length, 6 inches in diameter at the top, stripped of bark, as nearly straight as the natural growth will permit, and each post to be set five feet in the ground, either in firm earth of sand or gravel, and strongly embedded. Where rock occurs, they are to be firmly secured by means of foot bands and braces, or by a wall of stone well laid, not less than five feet in height, wedging towards the poles; and where soft, or wet earth or clay is found, the hole shall be enlarged sufficiently, and the earth replaced with stone, so as to prevent equally the poles from being disturbed or driven from the perpendicular by the action of violent winds, or their upheaving in soft and wet soil by the frost.

Where the Line passes through forests, dead trees and all other trees, which, by falling, may touch the wires, to be cut down at the expense of the Contractor—the object being to prevent the working of the line being affected by wind falls.

The line is to be constructed with a single line of wire, of the best quality, number nine, and weighing not less than 330 lbs. to the mile—each wire to be firmly connected with, and yet insulated from, the top of the posts, by the Patent Insulator—of which a pattern may be seen by applying at the office of the Provincial Secretary. It consists of a cast iron shaft, with teeth cup and cover, glass ball, with bolt and shoulders, and nuts and screws at each end to secure the wire firmly to the glass ball. The glass ball to be cemented in the cast iron cup, with a non-conducting cement, by a lining of some non-conducting substance between the bolthead and the cover, so as to secure a perfect insulation, and to protect the glass from fracture and other damage.

The party contracting will be required to furnish the necessary Registers, Batteries, and magnets, of the latest and best quality, of Morse's Patent, for not less than three stations—their different sites to be hereafter appointed by the commissioners.

The whole line will be required to be completed in good working order, and ready to be delivered to the commissioners or their agents, fit for immediate use, on or before the first day of October next.

The Tenders will not include the cost of the poles—the commissioners having already arranged by contract for a sufficient number of these to build the whole line; and these will be laid down in such quantities and sites as may be required.

Ample and satisfactory security will be required for the due and faithful performance of the work, as above stipulated.

JOSEPH HOWE,
GEORGE R. YOUNG,
W. MURDOCK
A. G. ARCHIBALD,
THOMAS LOGAN,
 Commissioners.
 Halifax, May, 1849. 3c25

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 24 feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

P. S. DEVLAN & CO'S Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
54 Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Bliester, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyler & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawings, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

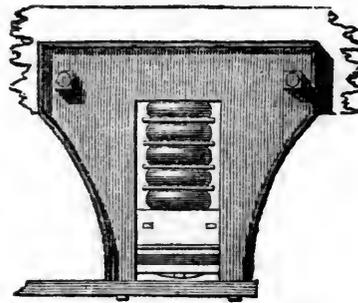
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 24 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton. May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by expensive statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

Extension of the Baltimore & Ohio Railroad.

TO CONTRACTORS FOR GRADUATION AND MASONRY.

PROPOSALS are invited for the graduation and masonry of about 25 miles more of this road, beginning at a point some 64 miles west of Cumberland, and ending at a point about 13 miles west of Cheat river, embracing all the sections from No. 61 to No. 88, both inclusive. The graduation on nearly all of these sections will be heavy, and will include one Tunnel of considerable length and three short ones. There will be also two Viaducts of medium size.

Specifications and plans of the work will be ready for distribution to proposers by the 13th of June, prox., at the Company's office in Cumberland. The proposals will be addressed to the undersigned, and will be received up to Saturday, July 7th, inclusive, at the same place. Proposers are earnestly requested to examine the line closely before bidding, and to avail themselves of the ample means of information of the value of the work, which will be furnished them, as contractors from a distance, accustomed to more difficult excavations than those to be met with on this line, will otherwise be likely to make their estimates too high. The best testimonials will be required, and an energetic prosecution of the work will be necessary. The payments will be cash, with the usual reservation of one-fifth till the completion of the contract. By order of the President and Directors. BENJ. H. LATROBE, Chief Engineer.

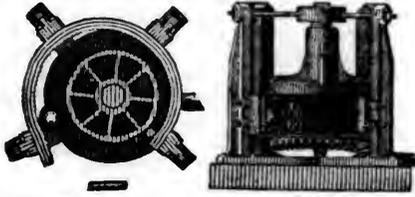
Baltimore, May 31, 1849.

To Contractors.

OHIO AND PENNSYLVANIA RAILROAD.

Proposals will be received at the office of the Ohio and Pennsylvania railroad Co., in the city of Pittsburgh, until SATURDAY, the 30th of JUNE, 1849, for the Grading and Bridging of the Railroad from the mouth of Big Beaver to the State line of Ohio, a distance of about twenty miles. Drawings and specifications of the work to be let may be seen at the office in Pittsburg, during the week before the letting, on application to Solomon W. Roberts, Chief Engineer; and information may be obtained at any time at the office of Edward Warner, Resident Engineer of the Eastern Division, New Brighton, Beaver county, Pa. The work is well worthy of the attention of experienced and energetic contractors, and the line passes through a fertile country, and easy of access at all points.

By order of the Board of Directors. WM. ROBINSON, Jr., President. Pittsburg, May 21, 1849.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

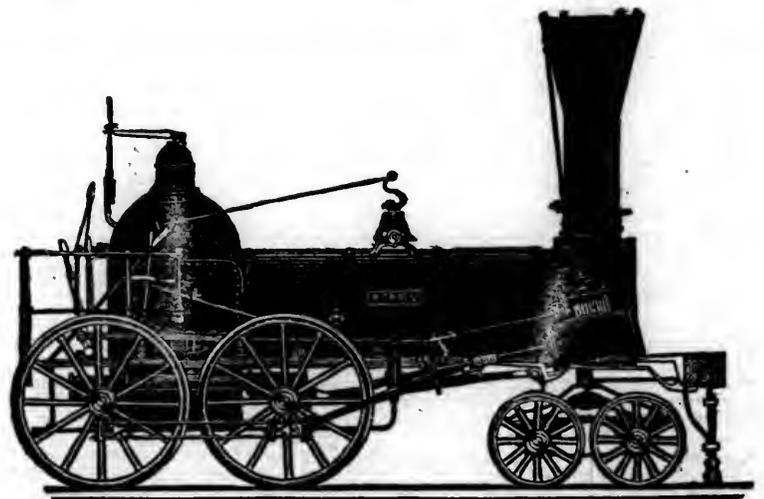
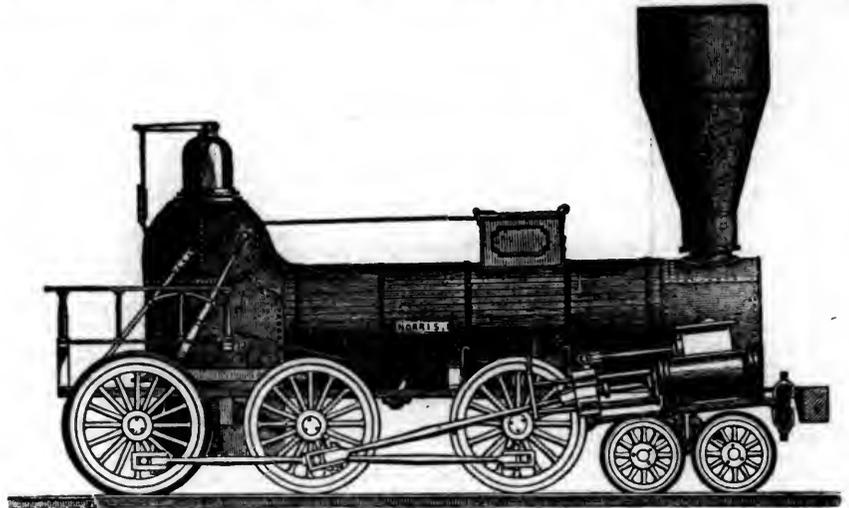
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

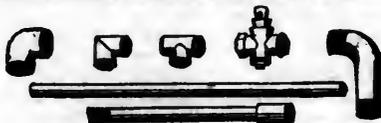
- | | |
|-------------------------|---|
| Charles Cook, | } Canal Commissioners
of the
State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | |
| Willard Smith, Esq., | } Engineer of the Bridges for
the Albany Basin. |
| Messrs. Stone & Harris, | |
| Mr. Wm. Howe, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. S. Whipple, | |
| | } Engineer & Bridge Builder,
Utica, N. Y. |
- January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1/2 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T, L, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLOWS.



Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

THE NEWCASTLE MANUFACTURING Co.
continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron. Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

FRENCH & BAIRD'S Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't

N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.
The letters in the figures refer to the article given in the Journal of June, 1844.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

- 1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.
- 2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.
- 3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.
- 4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relating the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3 1/2 by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,
Eng. New Orleans and Carrollton Railroad."
New Orleans, March 14, 1849.

Orders received and full information by
J. ELNATHAN SMITH, Patentee,
22 John street,
New York, May 26, 1849.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 38 Broadway, New York.
Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

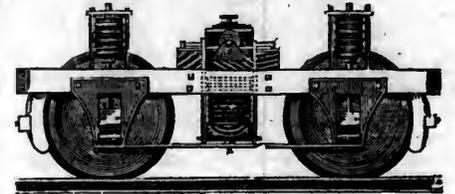
Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in Italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].
INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevit, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

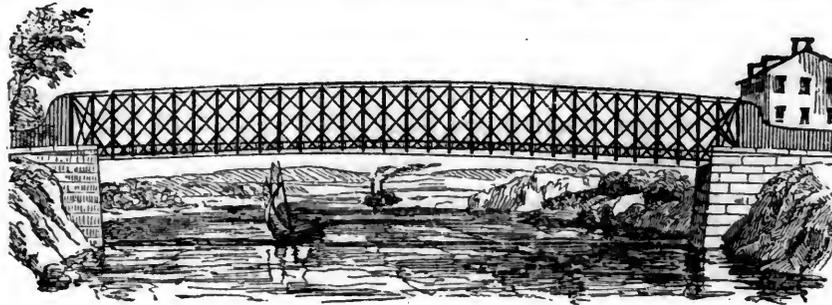
"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevit refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevit, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 53 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

RAILROAD India-rubber Springs,

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 95 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevitt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 5½ Pine St., New York.
Im19

May 12, 1849.

RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 5 a.m., and 5 p.m.
Leave Worcester at 10½ a.m., and 4½ p.m., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 p.m.—At New York from pier No. 18, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a.m., from Norwich at 9 a.m.

S. H. P. LEE, Jr., Sup't.
May 20, 1849.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, '49.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Salem, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Manchester, 10, a.m., 3, 5½ p.m.
Gloucester, 10, a.m., 3, 5½ p.m.
Newburyport, 7, a.m., 2½, 4½, 7, p.m.
Portsmouth, 7, a.m., 2½, 4½, p.m.
Portland, Me., 7, a.m., 2½, p.m.

And for Boston,

From Portland, 7½, a.m., 3, p.m.
Portsmouth, 7, 9½, a.m., 5½, p.m.
Newburyport, 6, 7½, 10½, a.m., 6, p.m.
Gloucester, 7, a.m., 2, 5½ p.m.
Manchester, 7½, a.m., 2½, 5½ p.m.,
Salem, 7, 8, 9, 10½, 11-40*, a.m., 2½, 6*, 7* p.m.
Lynn, 7½, 8½, 9½, 10½, 11-55*, a.m., 3, 6½, 7½, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 6½, 8½, 10½, 11-25, a.m. 2½, 4½, 5½, p.m.
Salem for Marblehead, 7½, 9½, 10½, a.m., 12½, 3½, 5½, 6½, p.m.

GLOUCESTER BRANCH.

Trains leave Salem for Manchester at 10½, a.m., 3½, 6½ p.m.
Salem for Gloucester at 10½, a.m., 3½, 6½, p.m.
Trains leave Gloucester for Salem at 7, a.m., 2, 5½ p.m.
Manchester for Salem at 7½, a.m., 2½, 5½ p.m.
Freight trains each way daily. Office 17 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6½ a.m. and 2½ p.m.
For Rochester at 6½ a.m., 2½ p.m.
For Great Falls at 6½ a.m., 2½ p.m.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 p.m.
For Lawrence at 6½, 9, a.m., 12 m., 2½, 4½, 6, 7½ p.m.
For Reading 6½, 9 a.m., 12 m., 2½, 4½, 6, 7½, 9½* p.m.

Inward trains for Boston

From Portland at 7½ a.m., 3 p.m.
From Rochester at 9 a.m., 4½ p.m.
From Great Falls at 6½, 9½ a.m., 4½ p.m.
From Haverhill at 7, 8½ 11 a.m., 3, 6½ p.m.
From Lawrence at 6, 7½, 8½, 11½, a.m., 1½, 3½, 7 p.m.
From Reading at 6½, 7½, 9, a.m., 12 m., 2, 3½, 6, 7½ p.m.

MEDFORD BRANCH TRAINS.

Leave Medford at 7, 9½ a.m., 12½, 2½, 5½, 6½, 9½* p.m.
Leave Medford at 6½, 8, 10½ a.m., 2, 4, 5½, 6½, p.m.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.

Leave Boston at 7½ a.m., 12 m. and 5 p.m.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.

Leave Boston at 7 5 and 9½ a.m., 2½, 4½ & 6½ p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.

Leave Woburn Centre at 6, 7, 9, 10 a.m., 1½ and 4½ p.m.
Leave Boston at 8, 11½ a.m., 3, 5½ and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7½ a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,
Agent Boston and Lowell Railroad Cor.
Boston March 5, 1849. 22tf

ESSEX RAILROAD—SALEM to LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover. On and after Thursday, March 15, 1849, trains leave daily (Sundays excepted.) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 8, a.m., 12.45, 3.45, 6.30, p.m.
Salem for North Danvers at 8, a.m., 12.45, 3.45, p.m.
Salem for Lawrence, 8, a.m., 3.45, p.m.
" North Andover 8, a.m., 3.45, p.m.
" Middleton 8, a.m., 3.45, p.m.
South Danvers for Salem at 6.45, 10.15, a.m., 2-15, 5.45, p.m.
North Danvers " 10, a.m., 2, 5.40, p.m.
Middleton " 9.45, a.m., 5.15, p.m.
North Andover " 9.20, a.m., 5.05, p.m.
Lawrence " 9.15, a.m., 5, p.m.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, APRIL 2d, the

Steamboat Train will run as follows:—

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.
Accommodation Trains—Leave Boston at 8 a.m., and 4 pm. Leave Providence at 8½ a.m., and 4, pm.

Dedham Trains—Leave Boston at 8½ a.m., 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7, 9½, a.m., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 a.m., and 5½ pm. Leave Stoughton at 11½ a.m., and 3½ pm.

Freight Trains—Leave Boston at 11 a.m., and 6 pm. Leave Providence at 4 a.m., and 7.40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, a.m., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.— On and after Monday, April 23d, 1849, Trains will run as follows:

Express Train.

Leaves Boston at 7½ a.m.; Fitchburgh at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains.

For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.

Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.

Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.

West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains.

From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.

Groton, 8 20 a.m., 12 30 and 5 15 p.m.
Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.

Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 p.m. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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SATURDAY, JULY 14, 1849.

[WHOLE No. 690, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, July 14, 1849.

Copper Ores of Lake Superior.

Continued from page 418.

The treaty for the cession of these lands to the United States was no sooner effected, than the whole territory bordering the lake was overrun by a host of adventurers. Some went to take possession by "squatting" on such tracts as they found unoccupied, and considered worth attempting to hold in opposition to those coming with claims apparently more legal; and others went provided with 'permits' issued by the war department, as the President afterwards declared without legal authority. These permits authorised the holders to take such tracts as might select of three miles square each; and on the location being certified to by the agent sent out by the department as not interfering with others previously made, and bonds being given, a lease to work the tracts under certain conditions was granted.—This lease was to continue three years, then subject to two renewals of three years each, if Congress in the mean time should make no other disposition of the lands. The agent at Lake Superior soon began to issue permits as well as the Department of Washington; and had these been continued of three years each beyond the year 1844 there would have been little territory left from the pickings of the first comers. The extent of the locations was then reduced to one mile square; and in 1845 the work went on,

and French Voyageurs, half-breeds, and children, who applied, received their permits and made their locations. Here it was the President declared the whole system unauthorised by law—that consequently the leases made were not valid, and no others could be granted to those holding permits not yet certified to. So the matter was left subject to Congress;—in the mean time, those having possession retained their rights, and continued their operations, and the government agent called the 6 per cent. duty on all ore raised. During the session of Congress of 1846–7, a law was passed confirming the leases and providing for the sale of the lands on the expiration of each, giving to those in possession of leases a pre-emption to the whole they held at the rate of \$2 50 per acre, or to a portion less than the whole at \$5 per acre. Squatters too are entitled to purchase at the lowest rates.

It is not a little extraordinary, and a fact worth recording for the credit of our people, that notwithstanding the confusion and competition arising from this pouring in to an unsurveyed territory, reputed to be a perfect el dorado, and the unavoidable contentions that arose from conflicting claims, no single instance has come to my knowledge of parties actually resorting to violent means to maintain their pretensions. Threats, it is true, have been made, and obstinate stands taken, but no personal injury has been sustained, and the disputes have most of them been adjusted. Considering that all this has been going on in the very far west, and in a region where no legal jurisdiction had yet extended her protecting shield, and moreover that the class of mining adventurers do not enjoy the reputation of being the most peaceable people in the world, it certainly seems very extraordinary, that deeds of violence have not disgraced the region.

Extent of the Mining Region.—What may properly be called the mining district commences on the south shore of the lake at a point designated by Dr. Houghton, 150 miles west from the Sault, and thence extends to the very head of the lake, and around on the north side its whole length back to the Sault.—The head of the lake does not appear to be its termination, for Mr. Schoolcraft and Dr. Houghton and others have recognized the same geological formations on the tributaries to the Mississippi. Neither on the Canadian side does it terminate at the Sault; for mines of promising character have been opened on the shores of Lake Huron, and it is probable the formations are continuous throughout. All the

islands in the northern part of the lake consist of the same formations, and add much to the extent of available mining territory. The largest of these, Isle Royal, belongs to the United States. What the width of the metalliferous belt may be it is impossible to say. Mining operations have been extended back on the south shore more than twenty-five miles, and the statements of those, who have explored the country, make it to reach very much farther than this. A strip of the width along the 200 miles of the south shore would give 500 square miles of mining territory; and on the north shore, 350 miles in length, 8750 square miles. The United States own the territory on the NW. side of the lake as far to the eastward as Pigeon river; it is held however at present by Indian tribes. A considerable portion of this tract I have marked out is occupied by rocks not likely to prove metalliferous, as the sandstones and conglomerates associated with the traps and amygdaloids and porphyries. Their relative extent cannot be ascertained. They occur together, often in alternating bands of a few yards in thickness, so that the whole district must be considered as the mining region.

Keewenaw Point.—The most promising portion of this district, at least on the American side, is that large headland projecting out into the lake called Point Keewenaw. It is usually the first land made by vessels sailing from the Sault, and here they find the most convenient harbors. At the first, called Copper Harbor, the government has secured a beautiful spot for a militia garrison on the banks of the lovely little lake called Fanny Hooe, which lies embosomed in the forrest and hills just back from the Harbor. Here quite a village is springing up, and the place promises to be one of considerable importance. Agate Harbor and Eagle Harbor are both also on the north side of the Point. The former very deep, well protected and capacious, the latter, though likely to be as important as any of them, cannot at present be safely entered at all times by vessels drawing more than six feet of water.—The north shore of this promontory is formed of rocks of sandstone and conglomerate, whose range is parallel with the coast, and whose dip is at different degrees of steepness always towards the lake. Belts of greenstone traps, which appear to have been protruded between the sandstone strata, run parallel with them, and at point of contact with them an amygdaloidal. The hills forming the axis of this headland commences near the water at the point,

and ore there is part conglomerate and part trap.—Back of Copper Harbor, the great trap belt of hills is fully developed, which continues without interruption nearly parallel with the coast to the head of the lake. South of this belt the red sandstones are seen again, and other belts of igneous rock, which partake more of the porphyritic character than is usual in the trap of the northern belt. The height of these hills is sometimes nine hundred feet above the lake. I found, by careful barometrical examination, that the highest point on the Albion location at the head of the west branch of Eagle river is 860 feet above the level of the lake, and this point is evidently somewhat lower than others seen towards the east. H.

Steam Boiler Explosions. No. 2.

The next hypothesis set up to account for the explosion of steam boilers is, that, when the water in the boiler has been much reduced below the proper water line, it foams up above its surface, comes in contact with the heated metal, is converted into gas or steam, and that by the ignition of the former or pressure of the latter, an explosion is caused. The hypothesis relative to the generation and explosion of gas we have, we think, disposed of in a former number. But, allowing the water to foam as supposed, and that foam to be converted into steam, and the boiler to be exploded in consequence, what would that prove? The question now is, can the explosion be caused by the foaming of the water? It is well known that that part of the water converted into foam or froth contains but a small portion of water; and that, consequently, it could yield but a very little of steam. A steam boiler, to be at all trustworthy, should be capable of bearing, at least, double the pressure it usually sustains when worked. Working with a pressure of sixty pounds in the square inch, the boiler should be capable of sustaining one hundred and twenty pounds; and it cannot be supposed that the quantity of water in the foam or froth if entirely converted into steam would add sixty pounds per square inch to the pressure. If not, then the increased pressure would not explode the boiler unless it had some defect, which would render it unfit to be used with a pressure of sixty pounds to the inch. But, it is not true that the foaming of the water can produce such an effect. Of this body of foam, only the outer surface can come in contact with heated metal; and to convert its watery particles to steam, the heat must be gradually transmitted from particle to particle through the whole body and, be intermingled with the body of steam in the boiler: and its own temperature must be reduced in the same ratio as that of the water and steam would be increased by it. The latent heat existing in the steam generated from the foam cannot raise the temperature of the water and steam in the boiler so as to increase the force some thirty, forty, fifty or sixty pounds to the square inch. Those who speculate do not seem to take these circumstances into the account. They appear, in the first place, to consider the exploded boiler as having been faultless, and working at a safe pressure. In the second place, to account for its explosion, they reason as if the foam was a solid body of water, and that, the moment it comes in contact with the heated metal, the whole mass was instantly converted into steam of a high temperature and elasticity, acting as suddenly and powerfully as gunpowder.—Such cannot be the fact. The conversion of the foam or froth into steam, cannot be instantaneous. It must be gradual. There can be but a very small quantity of it generated at a time; and the force of

it could not be so great as to produce the effect to explode a good boiler, carrying no more than the ordinary head of steam, supposing the engine in the mean time at work. The writer, who has been practically acquainted with the steam engine for something like twenty years, is somewhat skeptical about this whole history of foaming.

All that can be known of this is mere conjecture founded on certain external appearances. That there is no ebullition in a steam boiler, and that there can be none is a well known fact. The pressure of the steam on the surface of the water effectually prevents that. How then can it be that the pressure which prevents even the appearance of a bubble on the surface of the water, should permit the water to foam up in the same manner as if unconfined? To ascertain the height of water in the boiler, the engineer opens one or more of the gauge cocks. Should the surface of the water happen to have fallen below them, it is probable that there will be a discharge of a quantity of spray or vapor, which, from its color and consistence, may impart the notion that the water within is furiously foaming; but this is owing undoubtedly to the great pressure by which the steam is forced out, and its coming in contact with the low temperature of the atmosphere.

A similar mistake, or one growing out of an error leading to the above conclusion as to the foaming of the water, is made by many persons on viewing a steam boiler immediately after its explosion. The fracture in the boiler may have taken place on the upper side, and it may not have been removed from its bed—yet it is found entirely destitute of water. From these facts, the conclusion is, that the water was deficient, if not entirely exhausted, previous to the explosion. This is a great error.—The boiler at the time of the explosion may be two-thirds filled with water, yet upon examination immediately after the explosion, and you will find it empty. The truth is, nine tenths of the water, up to the instant of the explosion, remained in its original form. The other tenth had been converted into steam. But both the steam and water were of one apparent temperature, and when the explosion took place, and the water relieved from pressure, the whole of it was converted into steam. For the same reason if the gauge cocks be kept open, in a short time, they would discharge every gallon of water from the boiler in the form of spray, after its surface had descended below their level; and it appears very evident, from these well known facts, that no discharge from the gauge cocks can furnish even the slightest proof of the foaming of the water.

When but one boiler is used, the gauge cock, as a general thing, pretty accurately indicates the height of the water, but even this is not always a certain test. Numerous experiments, during a long experience, have fully satisfied me, that the water, from some cause, is inclined to follow the course of the steam. In the furnace of a single boiler, the fire may be, and frequently is, more intense in one part than in another. The effect is, constantly to impart a greater degree of heat to one portion of the water than the other. True, this heat is rapidly diffused over the whole boiler; but as long as a disproportionate degree of heat is kept up in any one part, the equalization cannot become perfect. The water in consequence, will become lower in one part of a boiler than in another. Hence, the gauge cock may at one moment indicate a sufficiency of water, and at the next moment a deficiency; without any actual change having occurred. Where a number of boilers are used in connection, these aberrations are more numerous, and more striking. In this case,

not only may there be disproportions in the degrees of heat, between the different parts of one boiler, but also, and necessarily, between the different boilers, compared with each other. The result is, that the water will be found higher in some boilers than in others; and in one boiler, in which the water may be found below the gauge cock at one moment, it may be above it at the next. It is on these changes, which result from the tendency of the water to follow the course of the steam, that the entire hypothesis of foaming is founded—an hypothesis, in the opinion of the writer, entirely falacious.

My firm conviction is, that the gauge cock is not an unerring test either of the sufficiency or deficiency of water, unless it be very high, or very low, at best, not sufficiently so as to obviate the error originating in the unequal distribution of heat. For the reasons also given, I am as firmly convinced that the water in a steam boiler does not and cannot foam; that no good evidence of the supposed fact can be derived from the operations of the gauge cocks; and even if it did, and should come in contact with red hot iron, the additional quantity of steam generated by that means, could not have the effect assigned to it. C. T. J.

The Tubular Bridge over the Menai Straits.

During the early part of the past week the shores of the Menai, already celebrated for its suspension bridge, which carries the road way from the Carnarvon to the Anglesey shores, at an extraordinary elevation above the stream at high water, have been crowded by thousands of visitors and tourists, to witness the fixing of the tubular bridge that is to carry the Chester and Holyhead railway across the same chasm, beneath which a deep and rapid arm of the sea is ever running.

The particular spot at which the Britannia bridge crosses the Menai straits, is exactly a mile nearer to Carnarvon than the suspension bridge; the railway after leaving the end of the bridge passing close under the Anglesey column. The shores are of the same precipitous and shelving character at both places, but the stream is wider here than at the suspension bridge, being about 1100 feet across at high water. It is divided nearly exactly in the middle by the Britannia rock, which at high water is covered to a depth of ten feet. The rise and fall of the tide is ordinarily 20 feet, and its velocity very great, often as much as eight miles and a quarter an hour. It is from the Britannia rock that the bridge takes its name, the centre pier being based upon it. It and the Anglesey shore consists of chlorite schist, a very hard and intractable kind of rock, worked with great difficulty; from this and the circumstance that no coffer dam was used, and therefore, few hours only could be consecutively spent on the rock, some months were passed in laying the bottom course of the tower. It was commenced in May 1846, the first stone being laid, without ceremony, by Frank Foster, Esq., acting engineer of the railway between Conway and Holyhead, and of the masonry, scaffoldings, etc., of the Britannia bridge.

The stone of which the towers are built is a hard carboniferous limestone or marble, called Anglesey marble; it abounds in fossils, and is capable of receiving a very high polish. Some specimens of it are very handsome. It is obtained from quarries expressly

opened for the purpose on the sea shore at Penmon, at the northern extremity of the island, where it abounds in great abundance, and in convenient strata of every thickness, from three to four feet downwards. The stones are split off with great dexterity by iron wedges, and wrought into shape with heavy steel picks. Some of the stones in the work are no less than 20 feet in length, and others weigh from 12 to 14 tons. A great portion of the interior masonry, however, is built of red sandstone, from Runcorn in Cheshire. This is a very soft stone, and easily worked, but at the same time very durable, especially when not exposed. The stones in the towers are all left with a rough or quarry face, except at the angles, and in the recesses, and the entablature at the top. This circumstance, coupled with their immense size and height, gives the towers a truly noble appearance. The abutments on either side of the straits, are huge piles of masonry.— That on the Anglesey side is 143 feet high, and 173 long. The abutment on the Carnarvonshire side is nearly as large, but owing to the elevation of the ground, the masonry is less in altitude. The wing walls of both terminate in splendid pedestals, and on each are two colossal lions, couchant, of Egyptian design. These lions, like the tube they adorn, are on a gigantic scale, each being 25 ft. long, 12 ft. high, though crouched, 9 ft. abaft the body, and each paw 2 ft. 4 in. They contain 8000 cubic feet of stone and weigh 120 tons.

When the whole structure is completed, it will consist of two immense wrought iron tunnels or tubes, each considerably upwards of a quarter of a mile in length, placed side by side, through which the up and down trains will respectively pass. The ends of these tubes rest on abutments, the intermediate portions being supported across the straits by three massive and lofty stone towers. The centre tower, as has been just observed, stands on a rock, which is covered by the tide at high water. The side towers stand on the opposite shores, each at a clear distance of 460 feet from the centre tower. The abutments are situated inland, at a distance of 230 feet from the side towers.

The Britannia tower is 62 ft. by 52 ft. 5 in. at the base; it has a gentle taper, so that where the tubes enter it is 55 ft. by 45 ft. 5 in. Its total height from the bottom of the foundations will be, when completed, nearly 230 ft.; it contains 148,625 cubic feet of lime stone, and 144,625 of sandstone, weighing very nearly 20,000 tons, and there are 387 tons of cast iron built into it in the shape of beams and girders. The total quantity of stone contained in the bridge is 1,500,000 cubic feet.

The land towers are each 62 feet by 52 ft. 5 in. at the base, tapering to 55 ft. by 32 at the level of the bottom of the tubes; their height is 190 ft. from high water; they contain 210 tons of cast iron in beams and girders.

The bridge itself is divided into four spans, viz: the two small spans at each end, which are over the land, and are each 230 ft. wide,

and the two principal spans which are over the water, and are each 460 feet wide. The small tubes, as they are termed, or those which cross the land, being constructed on the platforms, at their ultimate level, do not require any removal. Although called the "small tubes," their span is vastly greater than that of any other railway bridge in existence, the Conway tubes alone excepted.— But the large tubes, which are to cross the water, were constructed on timber platforms along the beach, on the Carnarvon shore, just above the level of high water. The length of one of these tubes, as constructed on the platform, is 472 ft, that is, 12 ft. longer than the clear span between the towers. This additional length is intended to afford a temporary bearing of six feet at each end after they are raised into their places, until there is time to form the connection between them across the towers. Our readers will better appreciate the length of these tubes by remembering that if one of them were placed on end in St. Paul's church yard, London, it would reach 107 feet higher than the top of the cross!— The span is much greater than has ever before been attempted, except in bridges on the suspension principle. The length of the iron arch of Southwark bridge, in London, the largest rigid span in this country, is but 240 feet.

Each tube consists of sides, top and bottom, all formed of long narrow wrought iron plates varying in length from 12 feet downward.— The direction in which these plates are laid and riveted together is governed by the direction of the strains on the different parts of the tube. They are of the same manufacture as those for making boilers, varying in thickness from three eighths to three fourths of an inch. Some of them weigh nearly 7 cwt., and are among the largest it is possible to roll with any existing machinery. In the sides the plates are 6 and 8 feet long, and half an inch thick, but the longest plates are in the bottom, being 12 ft. long, by 2 ft. 4 in. wide, arranged in double layers. At the top they are 6 ft. in length and 1 foot 9 inches in breadth. The connection between top, bottom and sides, is made much more substantial by triangular pieces of thick plate riveted in across the corners to enable the tube to resist the cross or twisting strain to which it will be exposed from the heavy and long continued gales of wind that, sweeping up the channel, will assail it in its lofty and unprotected position. The rivets, of which there are 2,000,000, each tube containing 327,000, are more than an inch in diameter. They are placed in rows, and were put in the holes red hot, and beaten with heavy hammers. In cooling, they contracted strongly, and drew the plates together so powerfully that it required a force of from four to six tons to each rivet to cause the plates to slide over each other. The total weight of wrought iron in the tube floated on Tuesday is 1600 tons.

The height of the tubes is not the same at all parts of their length. It is greatest at the centre, in the Britannia tower, where it is 30 ft. outside, and diminishes gradually towards the ends, at which, in the abutments, the ex-

ternal height is only 22 ft. 9 in. the top forms a regular arch (a true parabolic curve) and the bottom is quite straight and horizontal.— The clear internal height is on account of the double top and bottom, less by four feet than the external, being 26 ft. at the centre, and 18 ft. 9 inches at the extreme end. The land tubes are outside 27 ft., and inside 23 ft. high at their small ends. The internal width from side to side is 14 feet, though the clear space for the passage of the trains is but 13 ft. 5 in. The whole width, outside, is 14 ft. 8 inches.

Each tube contains about 10 miles of angle and T iron, and the whole bridge 65 miles. The weight of the wrought iron in one of the large tubes is estimated at about 1600 tons, of which 500 are in the bottom, 600 in the sides, and 500 in the top.

The resident engineer of the iron work of the Britannia and Conway bridges, and of the floating and lifting operations connected with them, is Mr. Edwin Clark; the immediate command during the operation of floating being at both places entrusted by Mr. Stephenson to Captain Claxton, R N, who so distinguished himself in assisting to extricate the Great Britain from her perilous position in Dundrum bay.

Tuesday, the 19th, was the day fixed upon for the floating of this stupendous work.— The attendance of visitors was immense.— The morning opened unpropitiously, with a high southwest wind and heavy driving showers, but as the sun moved towards the meridian the wind dropped, the rain discontinued, and the weather, as well as everything else, worked well for the coming off of the experiment. The scene as early as 6 o'clock presented a very busy appearance, multitudes of men depositing the buoys, and shipping the enormous cables from the London and Manchester platforms of the work. The experiment of floating was to be made in the evening at 7 o'clock, but when the time arrived the attempt was suddenly averted by the breaking down of a capstan, and the floating was postponed till the rise of the next tide. The accident arose from no insufficiency of strength in the capstan itself, but from the fact of the shore lashing behind the tube not having been cut away or detached from the tube, and as a natural consequence, while the capstan was employed in drawing the tube out into the stream, the shore lashings detained it, and the capstan, failing to overcome the resistance, started, strained and broke. On Wednesday morning the capstan on the renewed attempt, again failed, but at half past nine o'clock in the evening the final operations for placing this magnificent work were completed, and the tube fixed firmly upon its bed, amidst the loudest demonstrations of approbation from all the spectators assembled upon this interesting occasion.

In addition to Mr. Stephenson Captain Claxton, Mr. Clarke, Mr. Brunnel, and Mr. Locke were on the tube, rendering valuable and unceasing assistance throughout the perilous process. The applause of the multitude, mingled with salutes of cannon, continued for upwards of half an hour after the

completion of the experiment, which was celebrated by the engineers on the tube and pontoons in successive rounds of champagne. The tube was floated obliquely, and then gradually swung round, with its face to the space between the piers. Arrived here, the next step was one of the most anxious character, seeing that if, from the run of the tide, or any giving way in the great net work of tackle, or the tube overstepping the line of destination parallel with the piers, the experiment must have failed, and the process of bringing it back would have been one of great difficulty. Fortunately, however, such was the nicety of the arrangements, and skill, and quickness of the directing power on the top of the tube, and the moment of its progress to the spot so geometrically measured, that the success of the final step was unerringly secured by the vigorous action of a giant vice upon the Anglesey end of the tube, which clinched its extremity, and instantly held it fast. The next operation, that of elevating the tube to its permanent position, will be accomplished as soon as possible. This is to be done by huge hydraulic presses, of a magnitude commensurate with the size of the works, one cylinder alone being almost large enough at the entrance to contain a man standing, and of the ponderous weight of 40 tons. It is the most powerful machine ever constructed. The two end tubes will now be raised, and it is expected from the rapidity of the movements that this great iron highway over the Straits will be ready for the passage of trains in the autumn.—*Liverpool Times.*

English Items.

Calcined Granite as a Material for Fictile Purposes.—Experiments have lately been made by Mr. Archibald McDonald, at the Seyton Pottery, Aberdeen, upon calcined granite as a substitute for clay in the manufacture of pipes and other earthenware articles. He states, in a note to us, that the material stands a strong fire, and is not affected by transitions from heat and cold. The native color of the stone can be nearly retained in the formation of busts, statues, vases, urns, and general pottery, as also in chimney pieces, spouts, and chimney cans. In such articles as are intended to withstand the effects of great heat, where an extract only of stone is used, the color cannot be kept so well—as, for example, retorts, crucibles, and melting pots; but any preparation of the material, when once properly finished, may be heated to whiteness without injury. Up to the present time, the experimental trials have been carried on under every disadvantage, as, from the circumstances of the inventor, the preparation of the material has been entirely performed at spare moments in his own dwelling house, the articles being afterwards carried to the pottery to be fired. As the existing furnaces would not fuse a suitable glaze, the ordinary brown ware glaze had to be used, thus spoiling the true tint of the stone. Mr. McDonald is also the possessor of a new composition for coating ship's bottoms, as a preservative.—It is a transparent black, not brittle, but very adhesive, and it is said to destroy marine insects and prevent vegetable deposit.—*Prac. Mech. Jour.*

Wilton's Elastic Screw Coupling for Railway Carriages.—This is an ingenious adaption of springs to the screw-coupling apparatus of Mr Booth, being intended as a substitute for the usual buffing and draw spring apparatus. The thin ends of the right and left screw-spindle are tapped into the ends of two tubes, bored out a little wider than the diameter of the screws, except at one end, which acts as a nut. These tubes pass through cross-pieces, in which they slide, but are prevented from turning round by a flat on the side; and between each cross-

piece, and a flange at the opposite end of the tube, is placed a helical spring, coiled upon the tube.—Each cross-piece has two pins on its ends, to which are attached the double draw-links, for hooking on to the buffer draw-hooks. When the coupling is tightened up in the usual way, by the weighted pendant lever in the centre of the screw-spindle, all the strain is transmitted through the two helical springs which, by their elasticity, prevent any sudden blow or shock, the tubes sliding through their cross-pieces as the springs are extended or compressed. The apparatus presents a very neat combination of a coupling and buffing and draw-spring apparatus in one arrangement, and will be found very advantageous in its application to wagons with dead draw-hooks and solid buffer-ends. In some late trial with it on the Eastern Union Railway, two trucks, with dead draw-hooks and solid buffer-ends, were connected by one of the couplings, and attached to one of Slaughter & Co.'s 15-inch cylinder luggage engines, with as many loaded trucks behind as the engine could draw. This train was drawn and shunted about at the Ipswich station, without causing any shock between the coupled trucks, although frequently started and stopped in a sudden manner.—*Ibid.*

Governors in Screw Vessels.—The principle in this apparatus is the same as that of the land engines being a machine for controlling the throttle-valve, as occasion requires. Two heavy balls are suspended by means of arms to an axis revolving with the engines. The upper ends of these arms are jointed to the axis, and therefore, as the axis rotates, the balls will fly out from it; and their distance from the axis will depend on the velocity. The arms by which the balls are suspended are connected with rods, which give motion to the throttle-valve, and are so arranged, that as the engines move faster, and therefore the balls fly out farther, the valve shall begin to close; and if the engine relax in its speed, and the balls droop towards the revolving axis, the valve will open. Governors are sometimes fitted to screw-steamers of light draught of water, to limit the supply of steam to the cylinders when the ship pitches. For, since the propeller is at one extremity of the vessel, it will at times, by the pitching of the ship, be performing its revolutions in the air; the engines will then be relieved of their load; and if the supply of steam were not reduced, they would fly off at a great velocity, which would again be checked as the stern of the vessel became immersed in the water. This would be detrimental to the machinery. The governor is so adjusted, that when the speed of the engines is about 40 per cent. above what ought to be their maximum, the throttle-valve closes, and admits no more steam till the revolution decreases, and thus lessen the centrifugal force acting on the balls.—*The Marine Steam-Engine.*

Method of Working Marine Engines without Cylinder Covers, in case they are broken by any accident.—It can be effected in this way. Let the broken cover be removed, and the upper steam-port blocked up with a piece of wood, so shaped as to prevent its being forced inwards towards the slide by the pressure of the atmosphere; the orifice is made steam-tight by interposing fear-nought between the wood and the edges of the port. The wood must be kept in its place by two shores, one on each side of the piston-rod, pressing with one end against the wood, and with the other against the opposite side of the cylinder. The steam will be admitted, therefore, to the under surface of the piston, but not by the upper surface; the upper surface will be acted on by the atmosphere alone. Now, since the pressure to which the steam is raised is considerably above that of the atmosphere, the piston will be forced up against the resistance the air exerts; and, on creating a vacuum underneath the piston, it will be forced down by the atmosphere. To prevent irregularity, we should not create too good a vacuum;—thus, if the steam has a pressure of 10 lbs. above that of the atmosphere, we have an effective upward pressure of 10 lbs., and consequently the downward pressure should be about 10 lbs. But the pressure of the atmosphere is 15 lbs.; hence we may have a back pressure of 5 lbs., arising from the uncondensed steam, or a deficiency from a vacuum amounting to 10 inches of mercury; and since a perfect vacuum amounts to 30 inches, the height of the barometer-gauge should be about 20 inches. In most

engines this precaution is unnecessary, and need only be used when unpleasant jerks are experienced as the wheels rotate. This method has been tried very successfully in H. M. S. *Bee*, which has only one engine, and where, in consequence, it was most likely to fail, on account of the difficulty of turning the centres. The vessel's rate was found to be about two-thirds her ordinary speed. If the engines be fitted with Seward's slides, we need only detach the upper slides on the steam and vacuum sides when covering the upper ports.—*Id.*

Improvements in the Steam Engine.—Messrs. J. & G. Davies, of the Albion Foundry, Staffordshire, have just obtained a patent, the improvements sought to be secured by which are as follows:

1. A mode of converting rectilinear into rotary motion, by supporting the crank pin in brasses which slide in the cross head of the piston. The brasses, as they wear away, are to be screwed up tightly, and the piston is made to pass through the crosshead and give motion to the piston of a blowing machine.

2. The rectilinear motion of the piston of a blowing machine is converted into a rotary one, and communicated to a shaft by means of a rod keyed loosely to the end of the piston rod of the blowing machine, and passing through a sliding stuffing box in the side thereof. The other end of the rod is connected to the crank pin.

3. The steam induction and eduction ways, both at the top and bottom of the cylinder, are each worked by two valves fixed on the same spindle, which are constructed of slightly different diameters, so that the pressure to be overcome is that due to the difference in the diameters.

4. The same principle is proposed to be applied to the construction of valves in the feed pipes of steam boilers.

5. The apparatus for working the dampers consists of a pipe communicating with the boiler, and closed at the top by a valve, which is weighted at less than the safety valve. Above the valve is placed an inverted vessel, which is connected at top to the damper, and is fixed in equilibrium, with the sides dipping into the water contained in the exterior casing of the steam boiler pipe. This casing is provided with an overflow pipe. It follows that when the valve is opened by the increased pressure of the steam, the inverted vessel will be lifted up, and the dampers partially or wholly closed. When the valve is closed, the inverted vessel will descend into its first position.

Claims: The mode of fixing the cross head to the piston, so that it may pass through it and give motion to the piston of a blowing machine; also the use of the brasses. The arrangement for converting rectilinear into rotary motion. The mode of working the steam valves. The method of working the feed valves of steam boilers. The mode of working the dampers.

Consumption of Smoke.

All who have, for a few years, been acquainted with the towns of Manchester and Salford must have noticed a marked change in the purity of the atmosphere. Instead of the dense volumes of black smoke vomited forth by a thousand chimneys of steam-engines, until the air was thoroughly impregnated with soot, begriming clothes, goods in shops, and penetrating every room, the atmosphere is now comparatively clear, and the factory chimneys present a totally different appearance in the quality of the vapour they now distribute. This has been brought about by the authorities under the corporation, who are now empowered, by their local Acts, to enforce the application of those known means for the prevention of the emission of smoke which are easily applicable. Among these is a plan patented by Messrs J. and W. Galloway, of Knot Mill Iron-Works, which has proved highly successful wherever it has been applied; and upwards of 300 boilers are said to be fixed on this principle in the neighborhood. The construction is simple; the boiler is cylindrical, and is furnished at the front, extending the length of two sets of fire-bars, with two distinct flues, having a water space between them. These flues then gradually converge into one central flue, which traverses the remainder of the boiler. Each grate is fired alternately, so that the dense smoke, unconsumed carbon, and vapours, which pass from the newly applied coal, rush over incandescent fuel in the other grate, and are con-

sumed in passing over the bridge with the vapours from both fires; by the time the last made fire is clear the other will require firing, and so on alternately. It is stated that, as a general average, there is a saving of 30 per cent. in coal; and Messrs. Cooke, of the Oxford-road Twist Company, have six large boilers fitted on this plan, by which 70 tons of coal per week performs the same work as 100 tons under the old system. In some cases, Messrs. Galloway introduce a series of vertical tubes between the upper and lower surfaces of the black flue, which it is said to considerably increase the duty of the boiler.—*Mining Journal*.

Royal Institution

Mr. Faraday's fourth lecture on Static Electricity was delivered on Saturday, to a very crowded audience. The curious property and phenomena of induced electricity formed the principal subject of the discourse, which was illustrated with a great variety of well-contrived and curious experiments. In the first place he exhibited the simple phenomenon of induction, by showing the action of an excited glass rod at a distance from the electrometer, and its power of communicating electricity to an insulated brass cylinder without touching it, and by that means setting fire to gas. The induction of electricity in these instances takes place through the air, which is a non-conductor, and the power increases when more perfect and solid non-conductors are used, as was exhibited by interposing a great thickness of sulphur and shellac between the electric fluid and the electrometer. The more perfect insulators transmit induced electricity with greater facility than imperfect ones; and it has been ascertained that sulphur is $2\frac{1}{2}$ and shellac $2\frac{1}{2}$ more effective than air in transmitting induced electricity. The power which one electrified body possesses in inducing electricity in all other bodies has no known limit, and may be supposed to extend through infinite space, though the intensity diminishes in a greater ratio than the distance. As an illustration of the extended influence of induction, a large metal globe was suspended at a considerable height in the lecture room, and having been charged with electricity, the extent of its influence was shown by collecting electricity, by holding a small piece of insulated gold paper towards it, by which means sufficient electricity was collected to diverge the leaves of the electrometer. The charged metal globe, Mr. Faraday said, might be considered as a small thunder cloud; and in a subsequent lecture, when treating of atmospherical electricity, he should have to remark on the important effects of induction on the large scale. A very remarkable characteristic of static electricity is, that one kind of electricity cannot be excited without the other kind, and this is peculiarly manifest in electrical induction. When an excited glass rod is held near to any body, the glass being positively electrified, induces negative electricity in that part of the body nearest to it, and positive electricity in the part most remote. If the body be insulated, and the positive electricity be drawn off by a momentary connection with the earth, it is left in a negative state when the glass rod is withdrawn. For the purpose of showing that when electricity is induced in metals they convey it along their surfaces only, and that the inside of a metallic vessel contains no electricity, an ice pail was electrified, and though the outside gave abundant evidence of electricity, a metal ball lowered inside to the bottom did not effect the electrometer. A white mouse was enclosed in a wire gauze cage, and being placed on an insulated stand, and connected with the electrical machine, very powerful sparks were taken from all parts of the gauze without disturbing the mouse, which seemed quite unconscious of miniature lightning storm around it. As a further illustration of this curious property, several brass pillars were arranged in a circular form on an insulated metal stand, and though there was the space of half-an-inch between each pillar, the interior of the skeleton cylinder gave no trace of electricity, which emitted in strong sparks from the outside of the rods. Induction affords an explanation of the apparent repulsion of bodies similarly electrified. Some strips of paper, on being held together at one end, started far apart when in connection with the prime conductor of the machine, as if repulsive power acted on each strip, and when

both ends were fastened the strips distended in the middle like a balloon. This apparent repulsion was, however, shown to be entirely due to the attractive power induced in surrounding bodies, for when the balloon was partially enclosed by the hands, the stronger attraction caused by increased proximity, caused it to distend with much greater energy. As electricity is induced through the intervening substance of a non-conductor, the inside of a vessel made of shellac or glass will contain electricity as well as the outer surface, in which respect non-conductors differ essentially from metallic substances. The same principle on which Mr. Faraday explained the cause of metallic vessels not containing electricity, he also applied to explain the cause of electricity being much more readily emitted from angles and small ball than from large balls and flat surfaces; but this part of the subject was hurried at the conclusion, and was not made so clear as Mr. Faraday's illustrations generally are.—*London Mining Journal*.

English Patents. Manufacture of Steel.

This invention relates to the process of refining the metal, and forcing currents of atmospheric and gaseous air during the process so as to convert it into steel; and also to prepare the metal previous to submitting it to the process of conversion into steel.

The apparatus consists of the converting furnace, to the tuyere whereof a blast pipe is attached, formed into three passages, provided with valves for regulating the air currents. Two of the passages communicate with two iron receptacles in front of the converting furnace—the centre passage passing between them and to the front of the receptacles.—These receptacles are provided with gratings and ash pits beneath, and with covers for closing them.

The process of converting the metal into steel by this apparatus, consists in allowing the air to pass into the two passages of the blast pipe communicating with the receptacles, such receptacles being filled with charcoal, which is then ignited, and the receptacles closed by means of the covers; the air thus passed through the receptacles is formed into carbonic oxide, and enters the tuyere of the converting furnace, where it is mixed with such a quantity of atmospheric air from the centre passage, as may be judged desirable, though the patentee states that a large quantity should generally be avoided. By means of the valves, the quantity of gaseous or atmospheric air can be regulated by the operator. To prepare the metal for the process of conversion, the patentee states, that if it be pig iron, it is to be smelted sufficiently in a cupola furnace, to which is applied the apparatus above described; but if it be wrought iron, a plumbago crucible is used, in which the metal is to be placed, being properly stratified with charcoal or carbonaceous material. *Practical Mechanics Journal*.

New Mode of Treating Oxides of Iron.

This improvement relates to treating the oxides of iron for obtaining a black or dark colored pigment, or a volatile oleaginous product, or an inflammable gas. The oxide of iron is finely pulverised and mixed with carbonaceous matters. The proportions vary considerably—the addition of 10 per cent. of carbonaceous matter is generally sufficient; but the patentee prefers a little excess of car-

bonaceous matter, and mixes the oxide of iron with from 12 to 15 per cent. of carbonaceous matters, or such a quantity that, when the process is complete, a slight excess of carbonaceous matter will remain in the retort unimpregnated. Any kind of carbonaceous matters, which are not too volatile or expensive, and which can be mixed intimately with the oxide of iron, may be used; but when not in a fluid state, they must be pulverised. Those preferred are resin and tar. When resin is used, it must be pulverised, and the oxide of iron mixed therewith in a dry state. When tar is employed, the oxide of iron is mixed therewith in a moist state, for the purpose of facilitating the incorporation of the materials; and the mixture is dried at a temperature sufficiently high to deprive it of nearly the whole of its moisture, and reduce it to a state of powder.

The mixture is to be put into retorts or close vessels; and the patentee prefers to use cast iron retorts, of the ordinary kind, five feet in length, and one foot in diameter, with a cover, to be fastened on the open end, and a ring at the opposite end for the purpose of lifting it. A retort of this size may be charged with 1.2 cwt. of the mixture; and then, the cover being secured, it is lifted by a crane, and placed in a suitable furnace, in a vertical position, with the cover end downwards, in order that the volatile products evolved from the mixture may be consumed, and thus aid in heating the retort. The heat is to be gradually raised until the whole of the retort has arrived at a low red heat: at which temperature it must be kept until about two hours after the evolution of the combustible volatile products has ceased; and then, the process being complete, the retort is removed from the furnace, and allowed to become cold, or nearly so, before the charge is withdrawn—as it would be injured by contact with the air while hot. The material produced will be black, or dark colored, and will form a good pigment for many purposes. Some carbonaceous matters, when used in the production of this material, will cause it to be sufficiently pulverulent; but when this is not the case it must be ground and pulverised; the pulverised matter is to be ground with oil, so as to form paint in the usual way. When the combustible volatile products of the calcination are not burnt, the cover on the retort is luted, so as to make it air tight, and a pipe inserted therein to convey the volatile products to a condenser. The calcination will cause a volatile oil to be evolved from the contents of the retort, and the oil will pass through the pipe into the condenser, where it will be condensed. The calcination will also cause the evolution of an inflammable gas, suitable for the purpose of illumination;—which gas must be conveyed by a pipe from the condenser to a gasometer.

The claim is for treating oxides of iron by mixing them with carbonaceous matters and subjecting them to the action of heat in the manner above described, for the purpose of obtaining one or more of the several products before mentioned.—*Practical Mechanics Journal*.

AMERICAN RAILROAD JOURNAL.

Saturday, July 14, 1849.

Railways---American and English.

In the United States and England only, have railroads, from the amount of capital invested in them, taken rank among the leading monetary interests, and consequently furnish the best illustrations of the influence they are calculated to exert on the capital and business of a community in which they exist. The experience of their operation in these two countries has been widely different—with us, their action has been in harmony with the business of the country, has been promotive of general prosperity, and they stand high in popular favor. In England on the contrary their construction has been followed with most disastrous results; and from occupying the highest place in public confidence, they are now regarded with universal distrust. An examination of the causes of these widely different results may teach us a useful lesson, and enable us to avoid the disasters that have overwhelmed this kind of property in England.

In looking into the systems of the two countries, we are struck at the outset with the great disproportion in the cost of their respective roads. At the present time we have about 6,750 miles of road in operation in this country, at an estimated cost of 30,000 per mile, making an aggregate cost of \$202,500,000. In the United Kingdom there are about 4,600 miles in operation at a cost of about \$150,000 per mile, at an aggregate cost of about \$690,000,000. Labor and iron, under which terms are embraced nearly the whole cost of a road in this country, are much cheaper there than they are here. In fact our roads are built with English labor and iron. We have to pay what these cost there with the additional charge of transportation. On the other hand, the English roads have a double track, while ours, with a few exceptions, have but one. The gradients of their roads are much less than of ours, consequently the amount of excavation required is much greater. The land necessary for track, station houses, and depots costs a vast sum, while in this country it is either given gratuitously or costs but little, compared with the whole cost of the road. Their roads are much more thoroughly built than ours, and all the structures connected with them are of the most durable kind. In England vast sums are undoubtedly wasted in the finish and ornament given to their roads, that might without any real detriment, have been saved; while on the other hand we lose largely from the imperfect manner in which some of our roads are built, which renders them almost worthless when they are considered as finished.

But what chiefly distinguishes American from English roads are the objects in view in their construction. As a general rule, the stock to our roads is not subscribed for investment. They are regarded as public works, constructed to accommodate the wants of a peculiar section, or enlarge the business of some town, upon the same principle that any ordinary road is built. The great advantages resulting from them is not measured so much by the dividends they pay, as by the enhanced value they give to the property of the sections through which they run, and in the town in which they terminate. In this country all our markets are on the seaboard, and produce one hundred miles distant may be nearly worthless for want of suitable means to bring it to market. A farmer can well afford therefore to lose a few hundred dollars in railroad stock for the sake of a cheap and easy means of forwarding

his products. The same holds good in regard to cities. An expenditure of a million of dollars in a road frequently adds five times that sum to the value of the real estate in the town in which it terminates. And as the ownership of real estate is nearly as general as that of personal property, every person among us is directly interested in the encouragement of railroads, and when one is projected this feeling for their utility, forces every person to contribute something in proportion to the extent he expects to be benefited. Every man is called upon to do what he can. Those whose property is nearest the road, and consequently receive the greatest advantage from it, are either expected to give it the right way, or sell their land for this, and for depots and station houses at a very low rate. If, after all, associated strength is not able to accomplish the work, corporate bodies, such as cities and towns, and very often states themselves are called upon to lend their credit to finish it.

Such are the great objects of railroads in this country, and such are the means to which we are compelled in most cases to resort to secure their construction. Those persons who are most interested in their success, are usually entrusted with their construction and management. They are actuated and controlled by the same sentiments that pervades the community. Where the most strict economy is requisite to success, each step they take is watched and criticised by every person interested. In no other state of things can such accountability be secured. The motives brought to bear upon the Directors, and the careful scrutiny exercised by the whole community over all their acts, are the best pledges that can be given for the honest discharge of their duties. They may make mistakes, but they will not sacrifice the interests of the roads for selfish purposes.

English roads, on the other hand, are undertaken upon the same principle that a ship is built, for income to be derived from the business they are to do. Both are the instruments of commerce which, in fact, gives them all their value;—but they are built, not to create a commerce, but to act as the agents of one already existing. Those who contributed towards the construction of English roads were probably in the main indifferent to the influence they exerted upon the business and property of the country. There exists in that country a very numerous class, of which we have fortunately no representatives here, of persons, who, without labor, live upon the stated income of a fund set apart for this purpose; of annuitants, of half pay officers, widows of military men, and spinsters, for whom some relative has made scanty provision, of men who are in the easy enjoyment of sinecures created by a corrupt government, and sanctioned by time, who, being removed above the necessity of labor, are incapacitated from education and habit of supporting themselves by their own exertions. During the mania in railways, these persons in common with the whole community, supposed that by converting their property into railway stock, they could double their income; and under this idea, their investments, which were paying but a moderate income, were transferred into railway stock.

A road might vastly increase the value of the real estate of a particular section, and yet they be made none the richer. This indirect influence was not the inducement to their subscription. In England real estate is held in a few hands. A man may be possessed of large personal property, without owning lands. In the United States almost every person in the agricultural district is a landhold-

er, though he may have but little personal estate.—The English agriculturist has but little interest in railroads, compared with the American farmer.—The former has a constant market in the numerous large towns that cover that island. Consequently, those interested in roads there bear but a small proportion to the number interested in them here. The Directors of English roads are actuated by entirely different motives from the American Directors.—Having but a slight interest in the results of the road, they are more open to the temptation to make money out of their position, either by speculating in its stocks, or by being interested in the construction contracts, or by selling their influence to carry out the selfish schemes of others. The value of the stock they own may be insignificant compared with the opportunity their position gives them to make money out of the road, in some of the ways stated. They were not looked after and watched by every man in the community, who felt that unless the pittance he contributed was properly applied, the work could not be completed. The consequence of all this has been, that in England the great object of the Directors on many of the lines has been to enrich themselves out of the road. Every species of fraudulent management has been practiced in the construction of their roads. After they were completed and their stocks went into the market, their prices were raised or lowered by false entries of amount of earnings, to suit the purposes of a speculator, who could control the directorship. But all these frauds necessarily had an end. Stockholders were at last aroused to the necessity of looking into the conduct of their directors, and taking the management of affairs into their own hands; but not till after the capital of many of their road had been wasted, and 4 or 500,000,000 of dollars had been irretrievably lost, carrying with it an amount of suffering, of which in this country we have no conception. If we have escaped these disasters, it has been owing to the different condition of things in this country, and not to any difference in the principle by which human nature is controlled.—The moment that Directors cease to have an interest in the results of the road, as a public work, we lose one of the strongest guarantees for the faithful discharge of their trusts. Our only safety then consists in constantly subjecting those who have the management of a road to the influence of the same motives, brought to bear upon them in its construction. The moment we fail to do this, we shall be in the direct road to the same state of things that we now witness in England.

To allow speculators to control the management of a road, is as fatal to its character as the touch of a libertine is to virtue. A formidable party is at once raised up all whose efforts are directed to bring the road into disgrace. The antagonistical one, though it may be interested to keep up the price of its stock, is not actuated by any greater friendship for the road than its rival. Both are equally indifferent as to advancing its true interests. The stock becomes the dice of gamblers, and then the more its real condition is veiled in mystery, the better is it adapted to their purposes. We regret that all of our roads in this country have not escaped the dangers we have pointed out; roads not only of great public utility, but which should have yielded a profitable return upon the capital invested in their construction. New York has been particularly unfortunate in this respect. We propose in another number to point out in a more particular manner the causes of failure which have so signalled all her attempts at railway construction.

Railroad to the Pacific.

As the author of a distinct plan, Mr. Whitney occupies the most prominent place before the public. No man among us has given the subject so much attention. He tells us that he has exclusively devoted the last seven years to this work, and as we believe he has no other object in view but the success of this work and the good that will result from it, his views are certainly entitled to great respect and attention. His project has received the favorable consideration of a majority of the states, and should he fail in carrying out his own scheme, he will certainly enjoy the satisfaction of having done more to bring this subject before the public mind than any man in the country.

Mr. Whitney asks government to sell him a belt of land sixty miles in width, extending from Lake Michigan to the Pacific Ocean, at ten cents per acre; in consideration for which and the low price to be paid, he proposes to build a railroad between these points; that the road so built, shall only charge sufficient to keep the same in repair, or if improperly managed by him, not only its management but the road itself shall vest in government. If government will make this grant, he offers to take the entire responsibility of its construction upon himself, and obtain the means from the sale of the land so granted. As an inducement to this grant he argues that this road if built, in addition to the advantages it would confer on us by opening a communication between the two extremes of our country, would become the great thoroughfare for the trade of the world. That not only the commerce of the United States with Asia, but that of all Europe would follow this route in preference to all others, and that it would place us in a position in which we might enrich ourselves at the expense of the rest of the world.

We propose to discuss—

- 1st. The practicability of his scheme.
- 2d. Can it be executed by him?
- 3d. Will it secure the results predicated?

To show more in detail his plan, we give it to our readers in his own words, copied from the work referred to:

"The entire length of the road from Lake Michigan to the Pacific Ocean, allowing 250 miles for detour or windings, would be 2,030 miles. It is estimated that, on the proposed plan, it would cost to construct the road, as the annexed bill (No.4) provides, with a heavy rail of sixty-four pounds to the yard, and on a gauge or width of road not less than six feet, \$20,000 per mile, amounting to.....\$40,600,000
And it is estimated that it will cost for machinery, for repairs and expenses of operation while the road is being constructed, and before its earnings can provide for itself..... 20,000,000

Making the total cost ready for use \$60,600,000 I ask of Congress to set apart and sell (not grant) to me sixty miles in width of the public lands, from Lake Michigan to the Pacific Ocean, in all, good, bad, and indifferent, 77,952,000 acres, at a reduced price, fixed by the committees in Congress at ten cents per acre.
To the estimated cost of the road of...\$60,600,000
Add ten cents per acre to be paid into the United States Treasury for the 77,952,000 acres..... 7,795,2000

Total.....\$68,395,200
Now it will be seen that this 77,952,000 acres of waste wilderness lands must be made to produce the sum of \$68,395,200, equal to 87½ cents per acre for all, or the work cannot be accomplished, and which sum is ten times as much as these very lands could ever be made to produce, and this can be done only by connecting the sale and the settlement of the

lands with the work itself; the road creating facilities for settlement, and the settlement producing the means in labor and money to build the road.

Of this 2,030 miles, 800 miles of the first part, say from the lake onward, the land is of the very best quality for the production of food for man; the surface beautiful, without rock or mountain, or even hill; just enough rolling and descending to let the water off, and well watered with living streams every ten to twenty miles; and all covered with a rich grass, ready for grazing or for harvest, enough for millions of cattle, no preparations required for a crop—the farmer wants but the plough, the seed, the sythe, and the sickle. 500 miles of this 800 is without timber, and 150 miles with but a small amount—not enough for agricultural purposes, (buildings and fences) should the country become settled. Beyond this 800 miles, and to the Pass in the mountains, a great part of the land is represented as too poor to sustain settlement; but I am inclined to believe that the facilities which the road would undoubtedly create, must make a part of it productive and useful.

From "the South Pass" to the Pacific, I am disposed to believe, from information procured, that there is more land suitable for culture and grazing than has been inferred from different writers.

Of the entire route, 1,200 miles is without timber, even sufficient for the construction of the road, though with an abundance of coal; a great part of the distance is without stone or material for such a work or for the settlement of the country; and the road must be the only means of transit, as it would progress, for its own material, as well as for the material for buildings and fences, for the settlement of 1200 miles of the route.

We will now proceed to an explanation of the plan or mode of operation by which it is proposed to carry out and accomplish this great work. As before stated, the bill sets apart and sells to me 60 miles wide of the public land from the lake to the Pacific, and an equal number of acres for any already sold, expressly for this work; and as before stated, the 800 miles of the first part, the good lands must be made to produce means to construct 1,600 miles of road, (800 miles though poor lands) or one mile by 60 being 38,400 acres, must furnish means for two miles of road. I should, immediately after the bill becomes a law, survey and locate the route for 200 or 300 miles so as to secure the lands; then make a contract for the grading of 100 or 200 miles of the road, and make all arrangements and preparations, with machinery, to go on with the work; and when, having completed 10 miles of road, as the bill provides, on the best plan of construction of railroads of the present day, on a gauge of not less than six feet wide, and with an iron rail of not less than sixty-four pounds to the yard, all to the full satisfaction of the commissioner or government and to his satisfaction that the work was being continued with a prospect of success, then, under the certificate of the commissioner, I should be allowed to sell 5 miles by 60, the one-half through which the road has been completed, or 192,000 acres; which, at the present price (72 cents per acre) for soldiers' bounties, and which must be the price of the best lands until some 16,000,000 of acres are disposed of, would amount to \$138,240. Now such a road as the bill calls for cannot be built short of \$20,000 per mile, and the ten miles would cost \$200,000, for which outlay I should receive lands which can now be purchased for \$138,240, or \$61,760 less than my actual outlay; the government holding the other half, (5 miles by 60) 192,000, through which the road had been built, and also holding the road. Now if I could not make this 192,000 acres produce enough to return the \$200,000 expended on the 10 miles of road, then the work could not be continued, and the government would not allow me to take one acre of land, and I should have sunken the \$200,000, and as much more as had been expended in the experiment. But if from the results of my energies, efforts, and labor, I raise from its present value of \$138,400, the 192,000 acres to or beyond the \$200,000 expended, then the work could be continued, and the 192,000 acres and other half held by the government, would have imparted to it an equal increase in value from the same causes. Such would be the case or proceeding for 800 miles through the good or available lands, or so far as the 5 miles by 60, or 192,000 acres would furnish

means to construct the 10 miles of road, the government always holding one-half (alternate 5 miles by 60) and all the lands, and also holding the road as security for all; each and every ten miles being always completed in advance of my being allowed to take any lands.

Can this road be built for \$20,000 per mile? If not, then there is an end to Mr. Whitney's scheme, as the lands asked for are to defray its whole cost. Mr. Whitney gives us no data why the sum of \$20,000 per mile was fixed upon as its cost. The New England roads cost on an average about \$50,000 per mile. Here labor, skill, materials of all kinds, and trustworthy agents, all the elements of cheap roads exist in greater abundance than in any other part of the country. All these Mr. Whitney must transport to the line of his road, and they must cost him vastly more than the same service and material in the Eastern States. The grading of the road proposed by Mr. Whitney may cost something less than the average of New England roads. This is the only item in his favor. From the high northern latitude of the route proposed, his road will require the same amount of ballasting as the Eastern roads. The cost of bridging must be vastly greater. The Mississippi and Missouri rivers are to be spanned by structures above the reach of steamboats navigating these waters; works, which in the older states, with all the necessities that exist for them, and all the means at command, neither states nor individuals have yet had the hardihood to attempt.—The road, until it crosses the Missouri, runs at right angles to the water courses; and it is one of the peculiar features of the west, that their rivers, though frequently of great length, water but a small extent of territory;—and are separated from each other only by narrow ridges of land. Every few miles, the road would encounter rivers, which, though usually discharging but a small volume of water, are of great magnitude when swollen by rains or melting of snows. If Mr. Whitney had equal facilities on his route, as far as labor and materials are concerned, as are possessed in New England, we do not think that he could construct his road at less cost than theirs. Such we feel confident would be the opinion of any experienced engineer. Unless he can do this his scheme is impracticable.

Mr. Whitney is guided in the selection of his route by the fact, that the first part of it runs thro' timbered lands. These lands, he says, must furnish timber for the whole route, or at any rate for the first sixteen hundred miles. He claims that all other routes are impracticable, in not possessing this important condition. Now it is notorious that a large portion of the northern part of Illinois and the southern part of Wisconsin is prairie; and that the timbered lands, which, as a general rule, are confined to the water courses, have been taken up by settlers. The same is the case for a great distance west of the Mississippi. We have no doubt that before Mr. Whitney could locate his road the whole, or nearly the whole of the timbered lands on the line of his route will have become the property of settlers. This will compell him to purchase all the timber necessary for his work at a high price, from its great scarcity. On the line of his route too, a great portion of the good lands for some hundreds of miles have been, or will be sold before he can commence. As he cannot sell the lands on the route only so fast as he progresses with his road, he will be compelled to resort to the reserved lands in the other states, which will derive no additional value from the construction of the road.—For the distance therefore that the lands on his route are sold, he cannot, as he proposes, build the

road by the labor of colonists in exchange for lands along its line. So far he has no advantages over any individual or company who should undertake to build the road by private means.

But suppose Mr. Whitney reaches the lands still held by the government, and that can be made available to his purposes. He then proposes to build the road by labor of settlers, given in exchange for lands. In relation to this he says:

"It is proposed to establish an entirely new system of settlement, on which the hopes for success are based, and on which all depend. The settler on the line of the road would, so soon as his house or cabin were up, and a crop in, find employment to grade the road; the next season, when his crop would have ripened, there would be a market at his door. So that in one year the settler would have his home with settlement and civilization surrounding, a demand for his labor, a market at his door for his produce, a railroad to communicate with civilization and markets, without having cost one dollar. And the settler who might not have means in money to purchase land, his labor on the road, and a first crop would give him that means, and he too would in one year have his home with the same advantages and as equally independent."

This involves the necessity of Mr. Whitney's undertaking the construction of the road himself, and not through the agency of contractors, as is always the case in works of a similar kind. The great object of employing contractors is to interpose between the company and the laborer, competent men, who have a direct interest in seeing that every laborer employed shall perform the work expected of him. These men give companies a guaranty that a certain amount of work shall be performed for a stipulated sum, and competition is sure to reduce the amount to be paid to the lowest living point.—A contractor undertakes only so much work as can be performed under his own eye. A large number of persons are distributed along the line of a road, who have, in fact, a much more direct interest than the company itself in the progress of the work. The reason why companies by employing their own men themselves, cannot build a road at even double the cost that contractors can, is, that they have none to represent their interests among the persons employed, who act only upon the motive of getting the most money for the least work. Mr. Whitney will find himself in the same situation. He cannot build the road himself at double the cost of a fair estimate.

But we will suppose that he has surmounted all these difficulties; that he has conducted his road through the wooded section bordering on Lake Michigan and the Mississippi; and that he stands on the confines of the boundless prairies of the west.—From this point he must carry with him not only his laborers and provisions, but every material.

A simple statement of these difficulties to be encountered seems to us sufficient to appall any man, however ardent and enthusiastic he might be. This railroad is to preclude all common roads. How much will it cost to deliver along the first ten miles of its line, without even the aid of an ordinary road, the provisions for the operatives, lumber for their houses, timber and iron for the road, and timber and stone for bridges. The rivers of the west run over clayey and sandy beds. The bridges over them must be enormously expensive, requiring heavy stone abutments and piers, sunk below the action of the water and frost. Mr. Whitney admits that 1200 miles of the route furnishes no materials for this work. Where is he to get the stone for bridging every water course he encounters? This he will often be obliged to drag over the soft soil of the prairies, almost impossible in rainy seasons, for a distance of ten miles. After he has proceeded 1200

miles he will be compelled to return to the point of starting for every article that goes into the construction of the road. The transportation of these articles this distance, at the same rate as on the New England roads, will cost \$20.50 per ton, equal to about one-half of the cost delivered in this country, of English rails. At the same rate the transportation of a cubic yard of stone would cost \$41. No public work has ever yet been undertaken involving such difficulties as these.

To be Continued.

Railway Economics—Permanent Way.

Permanent way, whether it be regarded as to its immense first cost, its expensive annual maintenance, or its rapid final decay, is a question of the first importance to the progress of locomotion. The want of active association amongst civil engineers in the United States is a very serious misfortune to the country; and in order therefore to collect all the information scattered through the members of the profession on this all-important subject, we beg leave to invite them earnestly to make this Journal the medium of communicating to each other the particulars of their experience on permanent way. Hoping that others will follow, we will ourselves begin the work by throwing out for candid, friendly discussion such suggestions of our own as strike us worth the consideration of the profession. In reference to any thoughts that may from time to time occur to us on this or any other question, we take leave here once for all to state that no foolish fondness for our own idea shall enter into our discussion of them with others; and that considering all questions arising in the progress of mechanical science as strictly abstract things apart from any petty interest or paltry selfishness, we will ourselves in turn canvass the thoughts of others to the best of our ability in all honesty and candor.

The platform of a railway is of three kinds—the cross-sleeper; the longitudinal bearer; the sleeper and bearer combined. The first is open to the objection that sinking into the permanent way, it requires constant "packing;" and also that affording a support only at certain intervals, it involves a greater vertical strength and side-stiffness in the rail. The longitudinal bearer, though for a long time in use on the Great Western railway in England, has not been brought so much as the sleeper under the observation of engineers generally; but the objections to which it seems open are chiefly that, presenting less surface to the permanent way it is more liable to sink; that crossing the drainage of the road it retains water to an extent that quickens its decay; and that timber being a bad conductor, the metal receives no compensation for lost heat as it does from the earth in the case of sleepers. The system combining sleepers and bearers as used by Sir John McNeill on the Great Southern and Western in Ireland, appears faulty on the grounds that constitute the objections to the longitudinal bearer alone, except that of liability to crush into the ballast; this liability being by the greater area of surface presented to the ballast diminished in the case of the combination of the cross-sleeper and longitudinal bearer.

The formula for the strength of cast iron as adopted by Tredgold is this:

$$W = \frac{952 \text{ bd}^2}{l}$$

where W is the breaking weight at the middle in pounds, b the breadth of the beam in inches, d the depth in inches, and the divisor, l, the length between the supports in feet. It appears therefore that the

strength of a rail, varying directly as the length between the supports, is three times as great when laid on supports one foot apart as when laid on supports at intervals of three feet; and that this increase of strength (or in other words this *saving of metal*) goes on as the points of support approach each other, until on the longitudinal bearer, assuming the bearer perfectly rigid, the vertical strength is measured by the force necessary to crush the rails. In such a case the vertical strength of an ordinary track may be expressed by the force required to press the base of the rail into the timber, or the base of the timber into the ballast. From these considerations we are led to discuss the means of increasing the resistance of the roadway to the bearer and of the bearer to the rail; seeing that the great disproportion of metal on a sleeper track and a bearer track of the same vertical strength of rail is so great as to justify us on the ground of economy in even metal alone to give exclusive preference at this stage of the argument to one or other of the systems of longitudinal bearers. Economy in construction is the end and aim of all the science and experience of the engineer; and for this reason we do not discuss the question of cross sleepers farther than we have done: the saving of metal is so very considerable with the longitudinal bearer, that we believe the interests of the railway will be served best by directing the ingenuity of the engineer to the devising of some means for meeting the faults in that system.

The longitudinal bearer laid on cross sleepers may, we should think, be pronounced without any hesitation the better of the two systems to which we have narrowed the question; but again, the cross-sleepers constitute such a very considerable item in the final cost and maintenance of a railway that we should not adopt it while anything may remain to be done for improving the system of longitudinal bearers held in gauge by occasional cross timbers. The first and chief objection to the latter system we consider to be its liability to sink under heavy traffic into the ballast. This may be lessened in two ways: by increasing the base of the bearer or by using a ballast sufficiently compact. We lay a great deal of stress on the latter of these remedies; why may not the platform be made to sit on a perfectly macadamised foundation? A good soaling of such stones as are used for the same purpose on a common road may be placed on the cutting or embankment as the case may be, and these being coated over with metal, gravel, and sand, using perhaps sharp gravel and lime screenings under the longitudinal bearers, the whole will form a surface sufficiently compact to resist any loading with which the platform may be charged. Such a ballasting as this, removed from the wear of weather and traffic to which it is exposed in ordinary roads, will require no repairs for centuries: and being well crushed with a rammer or roller in the first instance, will save the constant "packing" necessary under the present system; and all this at the same time that the excess of the first cost over the usual item for "ballasting" will be less than the cost of the cross sleepers, which on such a compact surface will be quite unnecessary. This ballasting will occasion no disagreeable sensation in passing along the rail laid on it, seeing that while the whole surface acts as one body it is not, when resting on a foundation of earth, by any means inelastic; and furthermore, the elasticity of the timber bearer will, when considered together with this, give an elasticity quite sufficient for easy and agreeable transit at the same time that, if the whole be constructed with care, this elasticity will stop at the point where the greatest

amount has been evolved consistent with the proper limits of wear and tear on the track.

We have still to deal with the question of drainage. With respect to the preservation of the rail from the injury of constant cold and damp, we would suggest that the top of the bearer be slightly bevelled from the middle towards each edge, the footings of the rail being made at an oblique angle with each other in order to fit the bearer exactly;—and that a strip of felt boiled in tar, be laid between the wood and the metal, taking care that the joint of the felt and rail be always kept tarred perfectly water tight. The drainage of the road we would propose to effect by these means: The cross section should be made the concave side of a curve, the point at each bearer being the highest; and the curve sinking there in a quicker slope, until at the middle it shall have amounted to a deflection from the right line of some three or four inches. At this last point the drainage water may be received in an open channel formed of the common drainage pipe used in England for field drainage, and then carried off in close pipes of the same material under the timbers, at such places as may be most judicious for that purpose. This simple arrangement does all we believe that can be done, and far more than has as yet been done for the drainage of the road; and beside its advantages to the permanent way generally, its results will be found beneficial in removing to a certain extent one of the chief causes of "slips" in embankments—threads of water within the embankment acting according to the well known principle of hydraulics with the force due to their height. The faults of the longitudinal bearer have now been discussed at length; and in submitting to the profession the remedies by which they are proposed to be met, it must be explained that the suggestions thrown out are the results of our own deliberations on the subject; and having occurred to us as the several features of the case presented themselves, are offered for trial without any more definite guarantee than that of our own strong conviction of their practical efficiency.

In the next place, having disposed of the question of ballasting and platform, we will go into the question of the rail itself and the means of fastening it to the bearers. We will first examine the improvements in these particulars proposed in England;—and then come forward with the result of our own consideration of the conditions of the case. The Practical Mechanics Journal for last April recommends some one of the three following systems;

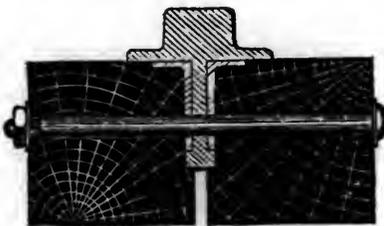
Fig. 1.



Each of these is we presume intended for longitudinal bearing. Fig. 1. consists of two baulks each 7 inches square receiving between them the tail of the rail in grooves cut into each for its reception.—The two pieces are bound together by a transverse bolt that, running through the tail, holds the rail vertically. The bearing surface of the rail is embedded in tar in order—by making the joint water tight—to save the metal from rust. Fig. 2 represents a combination exactly the same as that in Fig. 1, except in the bent wrought-iron plates used with

a view to additional security at the joints. Each of

Fig. 2.



these rails, from the dimensions stated, weigh about 100 lbs. to the running yard.

Fig. 3.



These contrivances strike us as inferior to the present system of fastenings. The cross bolt is faulty in having the thread exposed; for when the nut requires tightening the thread under such circumstances is apt to break. It would appear very difficult indeed to prevent the looseness of the rail on and between the bearers after a few shocks from the flange of the wheels; and this is still more readily seen as the space between the bearers being open at the bottom there is no resistance at that point to the spreading at the top. Indeed, if the two were closed at this point, the construction would be less faulty. If, as must be the case until the fibres of the wood are somewhat compressed beyond the natural state, the rails work a little into the bearer, the whole loading becomes at once a cross strain on a bolt of 4 inch scantling, which being forced beyond its elasticity will break. The system of bolting through the timber in a direction deviating ever so little from the line of the force exerted on it, is objectionable; and how much more so when the bolts are made to cross the timber at right angles to the direction of that force? We have very little hesitation in saying that these transverse bolts will split the bearers when heavily loaded: and under even light loads will render them by splits unfit for use before the expiration of half their term of service. We cannot for these reasons approve of the tracks shown in Figs. 1 and 2, though quite aware that they possess some considerable advantages. Fig. 3 represents a T-headed rail of four inches deep with a bearing on the bottom of 4 1/4 inches. Two cross bolts are used in this. The rail here promises to remain more steadily between the timbers than in either of the former cases. However, the same objection that has been urged against the screw-threads in Figs. 1 and 2, applies in Fig. 3 with double force. It may also be remarked that the probability of cross bolts' splitting the bearers when loaded heavily is in this case, also doubled; inasmuch as here, as in figs. 1 and 2, it is intended to run those bolts across at intervals of 18 inches. The vertical strength of the bearer in fig. 3 is considerably reduced, seeing that almost all the force being applied at the base of the rail, the base meeting a resistance proportionally less than the total strength of the bearer by an amount varying as the square of the depth below the top.—In figs. 1 and 2 the lateral stiffness, for which in fig. 3 a larger proportion of vertical strength is sacrific-

ed, is made to combine with the full amount of the vertical strength of the bearer, though, as observed before, the construction used can hardly obtain a sufficient amount of steadiness.

We will conclude the subject of permanent way here for the present; but in the next week's number, after giving that very important item of expenditure in railways the special consideration to which it is entitled, we hope to be able to place before the public some useful hints on the form and other conditions of the rail. For the present we would commend the suggestions already thrown out to the notice of our brethren throughout the country: if we might venture on a more precise form of expression, we should indeed be glad to see our views carried out experimentally by such intelligent members of the profession as Mr. A. C. MORRIS, of the St. Lawrence and Atlantic Railway. M. B. H.

Mechanical Agents.

Even the simplest looking contrivance requires knowledge, especially mathematical knowledge, of no ordinary degree.

It is true that many of these calculations are already published in tabulated forms, and therefore the inventor is not called upon to calculate them for himself. But few can hope to become successful improvers who are not at least competent to understand their nature, and able to determine the particular points of every new contrivance where such considerations become important.—Edinburgh Review.

In order to place within the reach of the working mechanic—his practical experience giving him peculiar advantages in all matters of mechanical improvements—the benefits of a clear understanding of the abstract conditions of the agents employed in machinery, we propose to publish from time to time tables and rules, accompanied by brief explanatory remarks, on the leading properties of the three motive powers—steam, air, water. We will begin this week with steam.

STEAM.

The condensation and the elastic force of steam are the two properties of this fluid that give it importance as a prime mover. We will therefore tabulate the conditions and degrees of those properties, commencing with elastic force.

Elastic force of steam at various temperatures, from experiments of M. M. Arago, Prony, etc.

Temperatures.		Elastic force in lbs.
Fahrenheit.	Centigrade.	
254.6	123.7	31.6
261.4	132.8	42.3
272.0	133.3	42.5
280.0	138.3	49.4
290.7	149.7	67.6
305.4	151.9	71.6
308.7	153.7	75.5
326.1	163.4	96.0
335.3	168.5	109.2
336.9	169.4	112.3
342.1	172.3	119.7
357.3	180.7	145.9
362.7	183.7	156.3
368.8	187.1	169.3
371.3	188.5	172.0
380.7	193.7	194.5
389.3	198.5	214.3
295.1	201.7	231.1

The first column here shows the temperature of the steam in degrees of Fahrenheit's thermometer, the second showing the same in degrees of the Centigrade thermometer. As the Centigrade degrees are used from this forward, it may be as well to observe here for the convenience of those who use Fahrenheit that the two are convertible in this way:

$$T = 32 + \frac{9t}{5}$$

and

$$t = (T - 32) \frac{5}{9}$$

The first equation giving Centigrade degrees in their equivalent degrees on Fahrenheit, the second equation giving Fahrenheit degrees in their equivalent number on the Centigrade, T and t representing respectively, the first, degrees of Fahrenheit, the second, degrees of the Centigrade. The elastic force of steam is seen by the above table to increase with the temperature; though indeed so seemingly irregular that it has been found very difficult to discover the law of this increase. There are, however, several formulæ for calculating the elasticity from the temperature. Tredgold gives for this purpose the expression:

$$f = \left(\frac{t + 75}{85} \right)^6$$

Where t is the temperature of the steam in degrees of the Centigrade, and f is the elastic force in centimetres of mercury, a centimetre being 0.3937 inches. To find the elastic force from the temperature: divide 85 into the sum of the degrees of the Cent. and the constant 75; multiply the log of the quotient by the log of 6, and the natural number corresponding to the resulting log will be the elastic force for the assumed number of degrees in centimetres of mercury. Multiply the number of centimetres so found by 0.3937, and the quotient will be the elastic force in inches of mercury of which 30 inches represent an elastic force of 14.75 lbs. avoidupois.—This rule, though not quite so simple as could be wished, gives results remarkably close to those given by the formulæ of M. Roche, M. M. Prony and Arago, etc.; and as also agreeing very well with the experiments of the two latter, maybe used when it is necessary to make the greatest possible approximation to the truth. A rule rather more simple, though not quite so much in harmony with experiments, has been published in the Practical Mechanics Journal for last May by Mr. Curr. To find the temperature from the elasticity according to the formula of Mr. Curr:

$$100 \sqrt[4]{a} = t$$

the temperature in degrees of the Centigrade;

$$180 \sqrt[4]{a + 32} = T,$$

the temperature in degrees of Fahrenheit: where a is the number of atmospheres (of 14.75 lbs. to the square inch) representing the total pressure for which the temperature is to be found. By transposition we can find the pressure from the temperature, the equation in that case standing thus:

$$a = \left(\frac{T - 32}{180} \right)^4 = \left(\frac{t}{100} \right)^4$$

a being the same value as before, t being the corresponding temperature on the Centigrade, and T being the same in degrees of Fahrenheit. To illustrate this by an example: What, let us inquire is the temperature of steam in degrees of Fahrenheit at a pressure of 16 atmospheres, or 236 lbs. to the square

* To find the temperature in Fahrenheit degrees from degrees on the Centigrade: multiply the latter by 1.8, and the result increased by 32 gives the corresponding degrees on Fahrenheit.

To find the temperature in degrees of the Centigrade from degrees of Fahrenheit: subtract 32 from the degrees of Fahrenheit and five-ninths of the remainder will give the corresponding degrees on the Centigrade.

M. B. H.

inch? Here a = 16, and therefore the temperature on the centigrade is

$$t = 100 \sqrt[4]{16}.$$

The square root of 16 is 4, and the square root of this latter being the fourth root of 16 is 2, consequently

$$t = 100 \times 2 = 200$$

degrees of the centigrade for a pressure of 16 atmospheres—the corresponding value for t by an approximation from Arago's experiments being something under 201. These formula are too plain to require any more simple form of expression.

M. B. H.

Androscoggin and Kennebec Railroad.

Portland, July 5, 1849.

The annual meeting of the stockholders of the Androscoggin and Kennebec Railroad Company, on the third instant, was made the occasion for the opening of the road to Winthrop, 20 miles from Lewiston Falls, at which place the meeting was held for the election of Directors. The train left Portland at 7 o'clock A. M. with eight large cars, and received a constant accumulation of people at each station until its arrival at Winthrop, 54 miles from Portland. The approach of the train was announced by the discharge of cannon and the ringing of bells. The immense concourse of people assembled at the terminus greeted its arrival with enthusiastic cheering. There was no formal opening of the road, and the completion of the line to Waterville, 83 miles from Portland, is looked forward to as the occasion for a public demonstration.

There was a large gathering of stockholders, and the whole day was consumed in transacting the business of the company, the Hon. Mr. Boutelle, President of the company, in the chair. The Reports of the Directors and Treasurer were read by Hon. S. P. Benson, the Secretary, giving a full statement of the condition of the company. By these it appeared, that the amount expended for the construction and equipment of the road to June 18, 1849, was \$927,780 77, and the money received into the treasury to the same date amounted to \$937,754 75. Of this sum \$446,907 was received on account of the assessments on the stock, and the balance from loans.

The length of the line is 55 miles, and the Directors estimate the entire cost of the road and equipment at \$1,350,000. They require a further sum of \$311,773 above the present means to complete it.

The grading is nearly finished to Waterville, and the laying of the track is going forward with a view to its completion by October, 1849.

The equipment of the road consists of 4 locomotive engines, 6 passenger cars, 10 box freight cars, 20 platform cars, and one mail car.

The stockholders voted to reduce the number of Directors from 13 to 7, after full discussion.

Judge Preble of Portland moved the appointment of a committee of the stockholders to investigate into the doings of the Directors, to report at a future day. The particular object of his motion was regarded as having reference to the amount of brokerage received by the Directors on monies raised by them on loans for the company.

The Directors submitted a report of their doings in regard to this loan, by which it appeared that on a loan of \$200,000 raised by John Ware, Esq., of Athens, one of the directors, they allowed him a brokerage or bonus of eight per cent. on the amount. It was raised at a time of great stringency in the money market. On motion of Mr. Barnes, of Port-

land, the doings of the Directors in the premises be ratified by the shareholders.

A committee of investigation was appointed, consisting of Judge Preble, of Portland, Dr. A. Gardiner, of Lewiston, and Mr. Stackpole, Esq., of Waterville.

A choice of Directors was then had by ballot, and T. Boutelle, of Waterville, John Ware, of Athens, Sam'l. Taylor, Jr., of Fairfield, Solomon Jenness, of Readfield, Josiah Little, Jr. of Lewiston, William Goodnow, of Portland, Neil Dow, of do

were elected. Messrs. Boutelle, Ware, Taylor and Jenness without opposition. The Portland shareholders nominated P. Barnes and Ira Crocker.—Samuel Pichard, of Lewiston, was nominated by the stockholders at Lewiston and vicinity, in room of Mr. Little. Messrs. Barnes, Crocker, and Pickard had very nearly the same number as Messrs. Goodnow, Dow and Little, who were elected.

On motion of Judge Ware, of Portland, a stockholders' committee was raised to examine into the doings of the Directors for the ensuing year, and to have an advising oversight of the road, without any executive powers. Judge Ware, of Portland, Col. J. R. Bachelder, of Readfield, and H. A. Smith, Esq., of Waterville, were appointed such committee. Subsequently, the stockholders re-considered the vote appointing this committee, and the whole matter was indefinitely postponed. The shareholders voted to authorise the Directors to issue preferred stock to supply the funds to complete the road, or to issue bonds at their discretion.

The meeting of stockholders was large. The discussion of the various matters that came up was characterised by distinguished ability, and carried on in perfectly good temper. Some of the stockholders complained that the Directors had paid too high to masonry to carry on the work. We have rarely witnessed a similar occasion of greater interest than this. All parties were eager in urging the completion of the road, and the principal question was as to the best means to raise the money.

The comp'y. met at ten o'clock A.M. and excepting a brief respite for dinner, held a continued sitting till half-past eight P. M. Hon. W. B. S. Moore, of Bangor, Hon. S. P. Benson and Seth May, Esq., of Winthrop, Messrs. Noyes, Smith, and Stackpole of Waterville, Dr. A. Garcelon, of Lewiston, and Hon. Judge Preble, Hon. Judge Ware, Hon. J. Anderson and Messrs. Barnes, Mussy and Poor, of Portland, and several others took part in the discussions.

Eighty-six miles of finished railroad now terminate at Portland, coming from the north and east, all of which have been opened within the last 12 months. Eighty-three miles more are in rapid progress, in continuation of the same lines, seventy miles of which will be opened for travel the present year. Portland is soon destined to become the centre of an important system of railways extending through the whole State.

New Hampshire.

Manchester and St. Lawrence Railroad.

The annual meeting of this company was held at Manchester, N. H., on the 26th ult. It appears from the representations of the officers of the corporation that the road is rapidly progressing towards completion, and will probably be ready for permanent use as early as October next.

The following gentlemen were chosen Directors for the ensuing year, viz:

- James U. Parker, Merrimack.....2791
- John A. Richardson, Durham.....2791
- David A. Bunton, Manchester.....2796
- John N. Anderson, Londonderry.....2791
- John Tenney, Methuen.....4572
- Edward Crane, Boston.....4567
- Nath'l. B. Baker, Concord.....4548

At a subsequent meeting of the Board, Hon Jas. U. Parker was re-elected President, and Nath'l B. Baker Clerk pro tem.

The whole number of shares represented was 4,572; necessary to a choice 2287.

To Railway Companies.

Contracts.—In justice to the large number of our subscribers, who being engaged in the execution of railway contracts, are scattered through the country, we beg leave to suggest to companies that our Journal is the only means of bringing under the eye of capital, energy and experience, the notices of lettings that appear from time to time in papers of a mere local circulation. The advantages to a company of bringing into competition in letting of contracts the greatest amount of skill and capital, are clear and distinct; and we would therefore only point out the prudence of advertising all such things in this Journal as the only one that circulates among contractors, of whom, from the nature of their duties, only at most a few can have an opportunity of seeing the advertisement that is confined to a local print.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Situation Wanted,

AS an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

LEWIS BURYER,
64 Avenue B, New York.

ENGINEERS.

- Arrowsmith, A. T.,**
Buckfield Branch Railroad, Buckfield, Me.
- Bancks, C. W.,**
Engineer's Office, Southern Railroad, Jackson, Miss.
- Berrien, John M.,**
Michigan Central Railroad, Marshall, Mich.
- Clement, Wm. H.,**
Little Miami Railroad, Cincinnati, Ohio.
- Fisk, Charles B.,**
Cumberland and Ohio Canal, Washington, D. C.
- Felton, S. M.,**
Fitchburgh Railroad, Boston, Mass.
- Floyd-Jones, Charles,**
New York and Harlem Railroad Extension,
Lithgow, Dutchess Co., N. Y.
- Ford, James K.,**
New York.
- Gzowski, Mr.,**
St. Lawrence & Atlantic Railroad, Montreal, Canada.
- Gilbert, Wm. B.,**
Rutland and Burlington Railroad, Rutland, Vt.
- Grant, James H.,**
Nashville and Chattanooga R. R., Nashville, Tenn.
- Harry, P.,**
Binghamton, New York.
- Holcomb, F. P.,**
Southwestern Railroad, Macon, Ga.
- Higgins, B.,**
Mansfield and Sandusky Railroad, Sandusky City, O.
- Johnson, Edwin F.,**
New York and Boston Railroad, Middletown Ct.
- Latrobe, B. H.,**
Baltimore and Ohio Railroad, Baltimore, Md.
- Miller, J. F.,**
Worcester and Nashua Railroad, Worcester, Mass.
- Morton, A. C.,**
Atlantic and St. Lawrence Railroad, Portland, Me.
- McRae, John,**
South Carolina Railroad, Charleston, S. C.
- Nott, Samuel,**
Lawrence and Manchester Railroad, Boston.
- Reynolds, L. O.,**
Central Railroad, Savannah, Ga.
- Roberts, Solomon W.,**
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.
- Robinson, James P.,**
Androscoggin & Kennebec Railroad, Waterville, Me.
- Schlatter, Charles L.,**
Northern Railroad (Ogdensburg), Malone, N. Y.
- Stark, George.,**
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.
- Steele, J. Dutton,**
Pottstown, Pa.
- Trimble, Isaac R.,**
Philad., Wil. & Baltimore Railroad, Wilmington, Del.
- Tinkham, A. W.,**
United States Fort, Bucksport, Me.
- Thomson, J. Edgar.,**
Pennsylvania (Central) Railroad, Philadelphia.
- Whipple, S.,**
Civil Engineer and Bridge Builder, Utica, N. Y.
- Williams, E. P.,**
Auburn and Schenectady Railroad, Auburn, N. Y.
- Williams, Charles H.,**
Milwaukee, Wisconsin.

BUSINESS CARDS.

- To Railroad & Navigation Cos.**
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.
- J. T. Hodge,**
EAGLE RIVER P. O., LAKE SUPERIOR.
- James Laurie, Civil Engineer,**
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*
- James Herron, Civil Engineer,**
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.
- Dudley B. Fuller & Co.,**
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.
- Cruse & Burke,**
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.
- To Railroad Companies.**
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address
E. S. NORRIS.
May 16, 1849.
- Manning & Lee,**
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.
- IRON.**
THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
Nos. 65 and 67 Broad St.
New York, June 8, 1849.
- Railroad Iron.**
OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, June 1, 1849.
The above will favorably compare with any other rails.
- Railroad Iron, Pig Iron, &c.**
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 24 by 4 Flat Bars.
25 Tons of 24 by 9-16 Flat Bars.
100 Tons No. 1 Garscherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best fagotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Sepaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. KALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, ALLEGHANY COUNTY, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N. Y.

ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.

All fit to re-lay. For sale cheap by **PETTEE & MANN,** 228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

½ Round and square, to 6 inches.
¼ Flat " " 4 "

Ovals, half-ovals and half-round.
Hoop, band and scroll iron.

Nail plates, superior charcoal Horse shoe.
Iron, sheet and Boiler iron.

Tire iron for locomotives.
Railroad spikes.

Pig iron of superior quality for chilling.
do. for foundry purposes.

For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street.

Sole agent for the New Jersey Iron Co.
June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York.

February 3, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO., 45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street.

March 29, 1849.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md.,

Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler* and *Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.*

Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " " Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catoctin " " "
250 " Chikiswalungo " " "
50 " " Columbia" "chilling" iron, a very superior article for car wheels.
75 " " Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " " Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO., 64 South street

New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroad and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent. Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of **Erastus Corning & Co Albany;** **Merritt & Co., New York;** **E. Pratt & Br. 1st, Farmers Md**

LAP—WELDED WROUGHT IRON TUBES

FOR **TUBULAR BOILERS,** FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER, Patentee.

28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship **Hendrick Hudson,** from London, made by **Billingley, Mial & Co.,** and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

**P. S. DEVLAN & CO's
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Pres. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyler & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

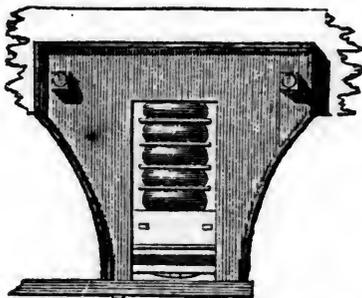
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueeducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton. 6w20
May 19, 1849.

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1814, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueeducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

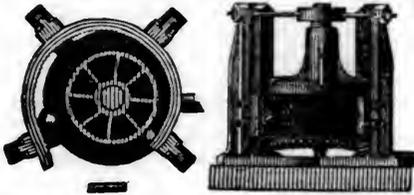
4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

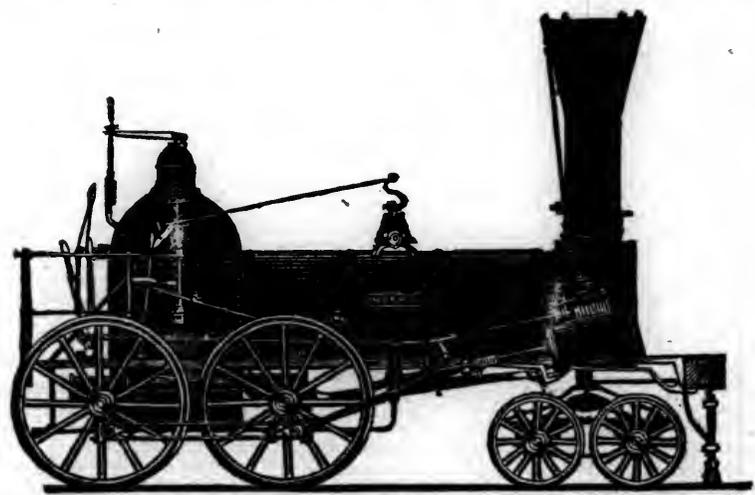
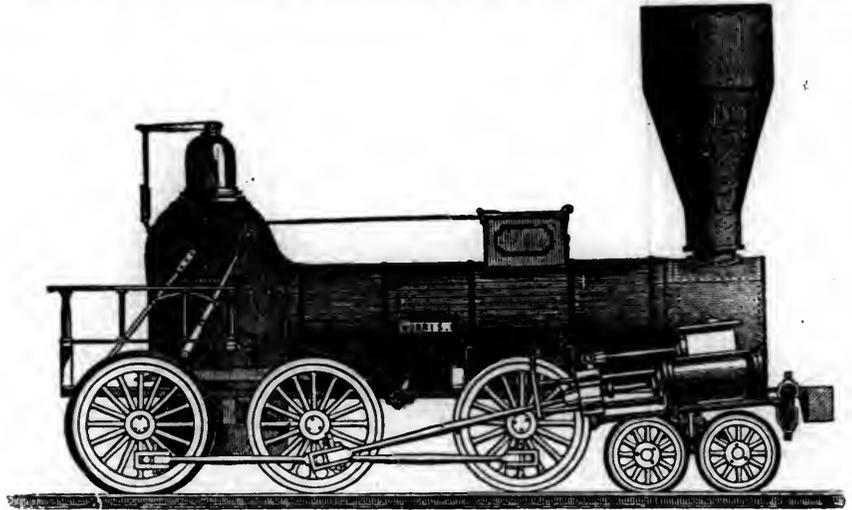
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK,

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving Cotton, Woollen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

- | | |
|-------------------------|---|
| Charles Cook, | } Canal Commissioners
of the
State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | |
| Willard Smith, Esq., | } Engineer of the Bridges for
the Albany Basin. |
| Messrs. Stone & Harris, | |
| Mr. Wm. Howe, | } Railroad Bridge Builders,
Springfield, Mass. |
| Mr. S. Whipple, | |
| | } Engineer & Bridge Builder,
Utica, N. Y. |

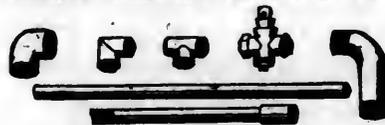
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 4 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T, L, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse S. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

PATENT MACHINE MADE HORSE-SHOES.

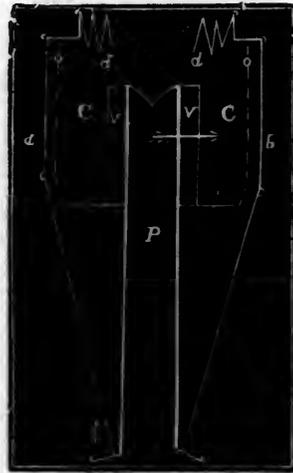
The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent.

Troy Iron and Nail Factory, Troy, N. Y.

**FRENCH & BAIRD'S
Patent Spark Arrester.**



TO THOSE INTERESTED IN RAILROADS.

Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't

N. Jersey railroad and transp. co; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed.

The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.

FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.

The letters in the figures refer to the article given in the Journal of June, 1844.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.

2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.

3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.

4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relaying the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3 1/2 by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,

Eng. New Orleans and Carrollton Railroad,"
New Orleans, March 14, 1849.

Orders received and full information by
J. ELNATHAN SMITH, Patentee,

22 John st., N. Y.

New York, May 26, 1849.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 38 Broadway, New York.

Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

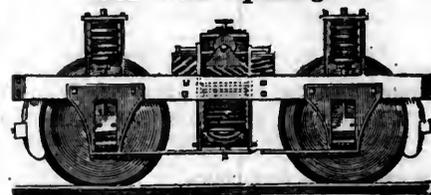
Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in Italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper."

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,
Agent for the Company.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.
May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by IRVING VAN WART, 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Mr. Hale:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most for the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE, Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

The Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS.
Philadelphia, April 2, 1849.

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

14tf

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 5½ Pine St., New York.

May 12, 1849.

1ml9

RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)

Leave Norwich at 5 a.m., and 5 pm.
Leave Worcester at 10½ a.m., and 4½ pm., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 pm.—At New York from pier No. 13, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sunday excepted.—From Worcester at 6½ a.m., from Norwich at 9 a.m.

S. H. P. LEE, JR., Sup't.
May 20, 1849.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, 1849,

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)

For Lynn, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Salem, 7, 10, a.m., 12, 2½, 3, 4½, 5½, 7, p.m.
Manchester, 10, a.m., 3, 5½ p.m.
Gloucester, 10, a.m., 3, 5½ p.m.
Newburyport, 7, a.m., 2½, 4½, 7, p.m.
Portsmouth, 7, a.m., 2½, 4½, pm.
Portland, Me., 7, a.m., 2½, pm.

And for Boston,

From Portland, 7½, a.m., 3, pm.
Portsmouth, 7, 9½, a.m., 5½, pm.
Newburyport, 6, 7½, 10½, a.m., 6, pm.
Gloucester, 7, a.m., 2, 5½ pm.
Manchester, 7½, a.m., 2½, 5½ pm.,
Salem, 7, 8, 9, 10½, 11-40, a.m., 2½, 6, 7, pm.
Lynn, 7½, 8½, 9½, 10½, 11-55, a.m., 3, 6, 7, 7½, pm.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave Marblehead for Salem, 6½, 8½, 10½, 11-25, a.m., 2½, 4½, 5½, pm.
Salem for Marblehead, 7½, 9½, 10½, a.m., 12½, 3½, 5½, 6½, pm.

GLOUCESTER BRANCH.

Trains leave Salem for Gloucester at 10½, a.m., 3½, 6½ pm.
Salem for Gloucester at 10½, a.m., 3½, 6½, pm.
Trains leave Gloucester for Salem at 7, a.m., 2, 5½ pm.
Manchester for Salem at 7½, a.m., 2½, 5½, pm.
Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849. Outward Trains from Boston

For Portland at 6½ a.m. and 2½ pm.
For Rochester at 6½ a.m., 2½ pm.
For Great Falls at 6½ a.m., 2½, 4½ pm.
For Haverhill at 6½ and 12 m., 2½, 4½, 6 pm.
For Lawrence at 6½, 9, a.m., 12 m., 2½, 4½, 6, 7½ pm.
For Reading 6½, 9 a.m., 12 m., 2½, 4½, 6, 7½, 9½ pm.

Inward trains for Boston

From Portland at 7½ a.m., 3 pm.
From Rochester at 9 a.m., 4½ pm.
From Great Falls at 6½, 9½ a.m., 4½ pm.
From Haverhill at 7, 8½ 11 a.m., 3, 6½ pm.
From Lawrence at 6, 7½, 8½, 11½, a.m., 1½, 3½, 7 pm.
From Reading at 6½, 7½, 9, a.m., 12 m., 2, 3½, 6, 7½ pm.

MEDFORD BRANCH TRAINS.

Leave Boston at 7, 9½ a.m., 12½, 2½, 5½, 6½, 9½ pm.
Leave Medford at 6½, 8, 10½ a.m., 2, 4, 5½, 6½, pm.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Sup't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:

Express Trains.

Leave Boston at 7½ a.m., 12 m. and 5 pm.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.

Accommodation Trains.

Leave Boston at 7 5 and 9½ a.m., 2½, 4½ & 6½ p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.

Woburn Branch Trains.

Leave Woburn Centre at 6, 7, 9, 10 a.m., 1½ and 4½ p.m.
Leave Boston at 8, 11½ a.m., 3, 5½ and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.

The trains from Boston at 7½ a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.

WALDO HIGGINSON,
Agent Boston and Lowell Railroad Co.
Boston March 5, 1849. 22tf

ESSEX RAILROAD—SALEM TO LAWRENCE, through Danvers, New Mills, North Danvers,

Middleton, and North Andover. On and after Thursday, March 15,

trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.

Salem for South Danvers at 8, a.m., 12.45, 3.45, 6.30, pm.
Salem for North Danvers at 8, a.m., 12.45, 3.45, pm.
Salem for Lawrence, 8, a.m., 3.45, pm.
" North Andover 8, a.m., 3.45, pm.
" Middleton 8, a.m., 3.45, pm.
South Danvers for Salem at 6.45, 10.15, a.m., 2.15, 5.45, pm.
North Danvers " 10, a.m., 2, 5.40, pm.
Middleton " 9.45, a.m., 5.15, pm.
North Andover " 9.20, a.m., 5.05, pm.
Lawrence " 9.15, a.m., 5, pm.

JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD. On and after MONDAY, APRIL 2d, the

Trains will run as follows:--

Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m., and 4 pm. Leave Providence at 8½ a.m., and 4, pm.

Dedham Trains—Leave Boston at 8½ a.m., 12 m., 3½, 6½, and 10½ pm. Leave Dedham at 7.9½, a.m., 2½, 5, and 8 pm.

Stoughton Trains—Leave Boston at 1 a.m., and 5½ pm. Leave Stoughton at 1½ a.m., and 3½ pm.

Freight Trains—Leave Boston at 11 a.m., and 6 pm. Leave Providence at 4 a.m., and 7.40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½, and 10½ pm. Leave Dedham at 8, 10½, a.m., 1½, 4½, and 9 pm.

WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.— On and after Monday, April 23d, 1849, Trains will run as follows:

Express Train. Leaves Boston at 7½ a.m.; Fitchburg at 3 55 p.m. or upon arrival of the trains from the upper roads.

Accommodation Up Trains. For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.

Concord, 6 50 and 11 a.m., 3 40 and 7 p.m. Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.

Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m. West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.

Down Trains. From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m. West Townsend, 7 30, 11 55 a.m. and 4 40 p.m. Groton, 8 20 a.m., 12 30 and 5 15 p.m.

Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m. Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.

West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.

Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.

The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.

The 11 a.m. up train will not stop at Weston and West Acton.

The 3 40 p.m. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.

The morning train down will not stop at Lunenburg and Lincoln.

The evening train down will not stop at Lunenburg and Stony Brook.

S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

NEW YORK AND ERIE RAILROAD. EXTENDED TO OWEGO.

On and after the 1st June, the trains will run as follows, daily, excepting Sundays: For Passengers—Through trains will leave New York for Owego by steambot, from the Duane-st. pier, at 7½ o'clock, A.M. and 5 o'clock, P.M. stopping at Ramapo Station, Chester, Goshen, Middletown, Otisville, Port Jervis and all the way stations west of the last-named place; and will leave Owego on and after the 4th June, at 6 A.M. and 7 P.M.; and Binghamton, on and after the 1st June, at 7 A.M. and 8 P.M. arriving in New York at 7½ P.M. and 8½ A.M. stopping at all the way stations between Owego and Port Jervis; and, east of Port Jervis, at Otisville, Middletown, Goshen, Chester, Rainapo Station and Spring Valley. Way Trains for Port Jervis and all the intermediate stations, will leave New York, by steambot Thomas Powell, from Duane-st. pier, at 7½ A.M. and 4 P.M.; and will leave Port Jervis at 6 A.M. and 4 P.M. Milk Trains—A train leaves Otisville at 5½ A.M. arriving in New York about 11. The afternoon milk is taken by the train leaving Port Jervis at 4 o'clock P.M. and arriving in New York about midnight. Freight—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Owego every morning at 6 o'clock; and another will leave Port Jervis, as usual, every morning at 8 o'clock, with market freight, &c. JAS P. KIRKWOOD, Superintendent. May 30, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—
Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.
Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4, 15, 5.30 pm.
Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.
Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.
Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave Morrisiana and Harlem at 7.20, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.
Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.
Hunt's Bridge at 8.20, am., 3.18 pm.
Underhill's Road at 8.10 am., 3.05 pm.
Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.
Hart's Corners at 7.55 am., 2.52 pm.
White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.
Davis' Brook at 9 am., 2.35, 4.30 pm.
Pleasantville at 8.49 am., 2.20, 4.19 pm.
Mount Kisko at 8.30 am., 2, 4 pm.
Bedford at 8.25 am., 1.55, 3.55 pm.
Mechanicsville at 8.15 am., 1.45, 3.45 pm.
Purdy's at 8.05 am., 1.35, 3.35 pm.
Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, and 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 12, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.; leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at	-	-	7 am.
"	"	"	3 pm.
Leaving Montreal at	-	-	10 am.
"	"	"	6 pm.

THOMAS STEERS, Secretary.

May 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at	-	-	9 am. and 3½ pm.
Arrive at	-	-	9 am. and 6½ pm.
Leave York at	-	-	5 am. and 3 pm.
Arrive at	-	-	12½ pm. & 8 pm.
Leave York for Columbia at	-	-	1½ pm. & 8 am.
Leave Columbia for York at	-	-	8 am. & 2 pm.

Fare to York	-	-	\$1 50
" Wrightsville	-	-	2 00
" Columbia	-	-	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
Or via Lancaster by railroad - 10
Through tickets to Harrisburg or Gettysburg - 3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - 5½ pm.
Returning, leaves Owing's Mills at - 7 am.
D. C. H. BORDLEY, Supt.
31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.
This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Gingseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—WINTER ARRANGEMENT.

Change of Hours. On and after Thursday, November 9th, 1848, until further notice, Passenger Trains will run as follows:

Leave Depot East Front street at 9½ o'clock, am., and 2½ o'clock, p.m., for Milford, Foster's Crossings, Deerfield, Morrow, Waynesville, Spring Valley, Xenia, Yellow Springs, and Springfield.
Returning, leave Springfield, at 2½ o'clock, and 9½ o'clock, am.

Passengers for New York, Boston, and intermediate points, should take the 9½ o'clock, am., Train from Cincinnati.

Passengers for Columbus, Zanesville, Wheeling and intermediate towns, should take the 9½ o'clock, am., Train.

The Ohio Stage Company are running the following lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 2½ o'clock, pm. Train from Cincinnati.

The 2½, pm., Train from Cincinnati, and 2½, am., Train from Springfield, are intended for the accommodation of Way Passengers only, and will be eight hours on the road.

Fare from Cincinnati to Xenia	-	-	\$1 90
Do do Springfield	-	-	2 50
Do do Sandusky City	-	-	6 50
Do do Buffalo	-	-	10 00
Do do Columbus	-	-	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENTS, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value to that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock.

passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steambot lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburg. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburg \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburg \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1.60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13 y1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8½ am., and 10 pm.
Leave Baltimore 9 am., and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" " Baltimore at 8 pm.

Trains stop at way stations.
Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.
Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.
" " Wheeling, 13.

Through tickets sold at Philadelphia office only.
Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7½ am., 4 and 7 pm.

Newcastle Line.
Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm.
Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.
I. R. TRIMBLE, Gen. Supt.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 29]

SATURDAY, JULY 21, 1849.

[WHOLE No. 691, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, July 21, 1849.

Copper Ores of Lake Superior.

Continued from page 434.

Veins.—The great peculiarity in the metallic veins of this district is, that the copper occurs almost universally in its native state. Veins of its ores are comparatively rare. But the course of them all, whether characterised by native copper or vitreous copper, or other ores, is such as to refer them to the same system. The causes that produced the vein-fissures acted at right angles to the bearing of the trap ranges, and the veins consequently running across them, and come down straight to the coast, the line of which is parallel with the belts of trap. There is, however, another set of veins of more obscure character, not so promising in their metallic contents, which run longitudinally with the ridges, holding their course straight through the north and south set. These latter are heaved by them and in one instance the north and south vein was found much enriched near its contact with the other. But the east and west set is not known to be productive in ores, unless it be on the south side of the Point at some mines opened since my visits, which are favorably spoken of.

The gangue of both is usually quartz of exceedingly hard and close texture. Through this the copper is disseminated in fine particles, or occurs in lumps and sheets of all sizes. A little silver is

occasionally found accompanying the copper—both alloyed with it, and another portion uncombined with the copper, though united closely to it in one piece. This singular union of the two metals may be effected in a crucible by partial fusion. Perhaps in a long process of cooling a separation may take place even after a perfect alloy had been formed.

Besides quartz, other gangues are of frequent occurrence, particularly laumontite, prehnite, chlorite slate and calcareous spar, the last being the prevalent veinstone in the conglomerate and sandstone. In one instance, at Agate Harbor, it was associated with sulphate of Barytes, and the copper occurred as a grey sulphuret. The most common crystals in the veins, which cannot be regarded as gangues, are various forms of calcareous spar, stilbite and analcime. The veins vary much in width as well as in composition in the different rocks, through which they pass. In the compact trap they are pinched, and the gangue is usually quartz or chlorite slate with little copper. In the amygdaloid they widen out, and the best veins yet found appear to be in this rock. In the conglomerates they are huge collections of white calcareous spar, which are well marked in the rocks along the coast, and in calm weather may be traced far out into the deep water, from the canoe, that floats high above them. In the veins in the conglomerate rock large masses of crystalline copper are sometimes found completely embedded in the calcareous gangue; but though of great weight, reaching occasionally 1000 lbs., their number has not been sufficient to encourage the continuation of the exploration of these veins. The rich black oxide of copper, found in Copper Harbor was in a vein of conglomerate rock, but though the surface indications were very encouraging, the vein did not prove worth working. So at Agate Harbor, where a shaft was sunk ninety feet, the vein was no richer at the bottom than it had been near the surface. The description I shall give of more successful operations will go to establish the point, that it is the amygdaloid that is to be regarded as the true metalliferous repository.

The copper occurs also disseminated through the wall rocks, sometimes many feet from the vein. One of these "stockwerks" has been estimated extremely rich, and indeed was considered by those who wrought it as the vein itself.

An interesting feature in these veins is their tendency to wear away from atmospheric causes faster than the rocks at their sides. The consequence

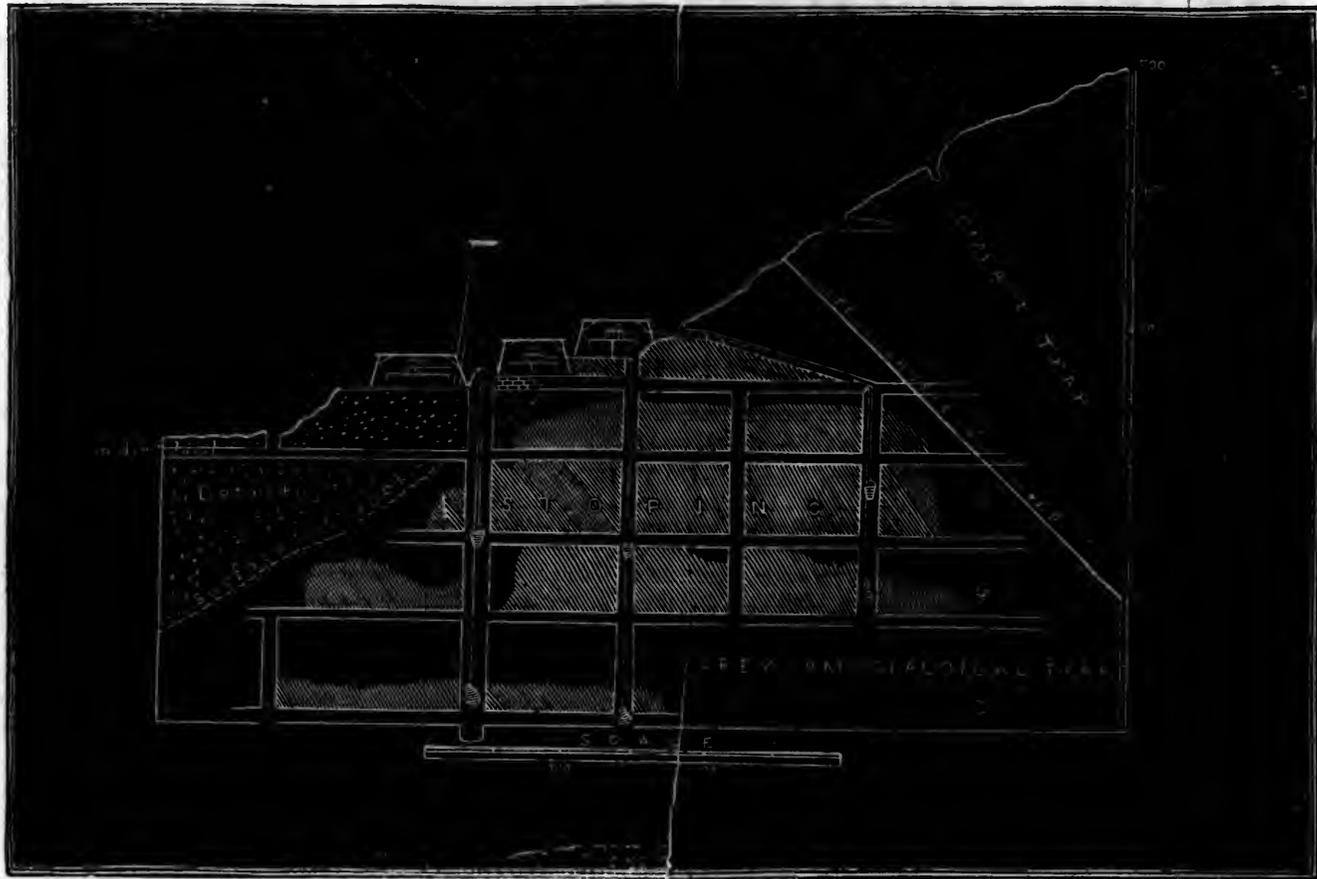
of this is that their position is marked upon the surface by a depression in the soil or a break across the ridge or trap. The rivulets fall into these depressions, and enlarge and deepen them: and though their beds may finally be filled in with loose materials, and even become dry, yet when these are found pursuing for some distance the general course of the veins, they may be considered a true indication of the existence of a vein beneath. A stranger would be astonished to find how much dependence can be placed upon this guide; and how readily the eye of one skilled in these researches marks a vein here and there, where he can perceive nothing unusual. The gold veins of the south are characterised by a quality the very reverse of this, for they weather better than the rocks that contain them, and consequently project above the surface; they are frequently seen crossing the roads in a little ridge or dyke, which, if attention is not first directed to them, are sure to attract it by the unpleasant jolt they cause. The coal beds of the western coal fields are most distinctly marked on the hill sides by the benches at their outcrop, which I have already found an infallible guide to their position; and the lead veins in Wisconsin are marked by lines of depression similar to those of the copper veins of Lake Superior. Thus by these curious contrivances is the place of these useful materials revealed to those who seek them out, and who make their study the laws of construction of the materials of the earth and the changes to which they have been subjected.

I shall now proceed to the description of some of the best developed mines with which I am acquainted.

CLIFF MINE.

The most successful of the early explorations in the Lake Superior region, were those of the Pittsburg and Boston company in the high cliffs of trap rock, three miles above the mouth of Eagle river. In the spring of 1845, a quartzose vein, containing laumontite and calcareous spar, with small particles of copper and less silver was discovered in the steep face of the cliff on its southeast side, passing vertically across the line of the ridge in a course N. 26° W. On the side where the vein was exposed, the ridge presents a bold face of high walls of massive trap, with occasional depressions or breaks, which are usually occupied by veins, their materials having been gradually removed by atmospheric agencies, which the trap-rock better resisted.

Profile of Cliff Mine, Copper Harbor.



The profile, above represented, was executed by William Schlatter, Esq., of Copper Harbor, and represents the present condition of the workings in the mine, and of the portions of the vein already removed by the process called *stopping*, or working by stopes or steps. These are the parts shaded by oblique lines.

On the northwest side the ridge falls away gently towards the lake. Its height above the lake in the gap where it is crossed by the road from the mouth of Eagle river, is 619 feet, as I found by observations made with one of Bunten's mountain barometers. The platform of the main shaft of the mine, at the base of the cliff, is 430 feet above the lake, and 190 feet being added to this, which is the height of the cliff above this point, the whole elevation is the same as in the gap.

The upper portion of the ridge is compact greenstone trap, lying in large stratiform masses, whose direction is the same as that of the ridge, and whose dip is towards its axis. Beneath this, with the same dip, is a cross vein of quartz, some three feet thick; and under this amygdaloidal trap. This variety of trap prevails below the cross-course; there are places, however, where the rock appears compact again, as is seen in the main shaft in thin bands alternating with the amygdaloid. The vein was traced down the face of the cliff on the surface in many little strings and feeders of laumonite and quartz, with occasional show of specks and little lumps of copper; their whole thickness was less than a foot, and they seemed little indicative of the richness of the vein below. Followed into the rock, the size and number of the masses of copper rapidly increased, particularly in the amygdaloid directly

under the cross-course; but in the compact trap above the vein was unproductive. Besides this apparent effect of the cross-course upon the contents of the vein, it had also thrown it somewhat out of place, the upper portion of the vein lying to the left or west of the lower part. In contact with the cross-course, the lode swelled out largely, and here furnished large masses of copper and more native silver than was found in any other portion. The large irregular excavations, seen in the engraving at this point, were made in consequence of this swelling out of the lode, which extended even to twelve feet in width. But before discovering this point some levels were run into the rock at considerable expense, and with much discouragement, which failed entirely of any important development; and it was not till the winter of 1846-7, when the country was shut up by snow and ice, that the rich masses below the cross-course, and the extraordinary specimens of silver and of silver and copper mixed were found. A man on his way through the country on snow shoes happened to stop at the mine, and loaded himself with twenty-six pounds of these metals, which then appeared to be fair samples of the lode. On his arrival in Boston, three analyses were made by A. A. Hayes, Esq., and the results were of one—twenty-seven per cent. of silver, equal in value to \$10,000 per ton; of another, sufficient to give \$3,700 per ton; and of the third, seven per cent. of silver, or \$2,800. This last showed no silver to the eye. Of course such results created a great excitement, and the report brought with the samples being that the whole vein was of this character, which was then supposed to be the case, the shares very naturally rose to extravagant rates; and it was not for months

afterwards, when navigation opened, and large quantities of ore were shipped to Boston, that the true character of the vein began to be understood.

The principal shaft commenced near the bottom of the cliff, and passed down 20 feet through sand and gravel, and has thence been continued through trap and amygdaloid to the present depth of 250 feet. At its top one of the principal levels runs into the cliff, and at the depth of 57 feet, it is crossed by the adit level driven in from the swamp below, a distance from the shaft of 483 feet—most of the way through quick sand. There are three other levels below, at distances of 60 feet apart. Two other shafts are sunk from the upper level under the cliff, which are connected with the main shaft by the lower levels, & large portions of the lode between the shafts have been removed by stopping. The mine is remarkably dry;—the water accumulating in 24 hours being discharged in two hours by a horse-pump. The copper is found in rough irregular shaped sheets and masses, and in points, lumps and strings mixed through the veinstone. This is principally quartz, sometimes calcareous spar, more rarely epidote and prehnite. The masses are elongated sheets of irregular shapes and rough surface, more or less mixed with the veinstone: some are nearly pure copper, losing in refining not more than five per cent. They sidan edgewise along the vein, sometimes several side by side, separated or not by a little veinstone or else *fluca*. The size of some of them is enormous. I have passed along the side of one, as it stood in the vein, for thirty feet in length the whole wall on one side being solid copper six feet high. The thickness of the sheet varied from six to eighteen inches. Neither of its limits in

length or depth were then reached. But subsequent statements represent it to have been from 50 to 60 feet long, and 15 to 20 feet deep. And when it terminated below, other sheets lapped against its lower edge, carrying down the same metalliferous belt, with only occasional interruptions of greenstone.—Some of the masses have been found no less than three feet thick, and when cut through with chisels, the face is soft copper nearly pure. The greatest weight of single pieces has been about eighty tons. Great difficulty was long experienced in breaking up and removing such masses. Holes drilled and charged behind them would blow out, though ever so well tamped, as a charge from the barrel of a rifle. The rock around was moreover so filled with copper that it was extremely difficult to succeed in drilling holes at all, many attempts frequently being made before one was effectual. Finally, the cold chisel was found best suited for this work; and the masses when cut up are drawn out of the shaft by an eight inch rope, in pieces weighing some of them six tons.

Besides these masses of native copper, the lode furnishes a large amount of "stamp work," which is veinstone with copper in small particles diffused through it. This after roasting, to diminish its toughness, is taken to the stamps (eight in number at present,) which are run by a small steam engine; and the fine copper is collected from the washing flows below, of which there are three, one below the other, the washings of each lower one being less rich than of the one above. This is barrelled up, as are also the smaller masses or "barrel work," in strong casks made at the mine.

The thickness of the vein may be estimated at about twenty inches on the average. It spreads out, as before remarked, to a much greater thickness, however, and is contracted sometimes to four or five inches of veinstone, with not more than two or three per cent. of copper. Its greatest thickness rarely exceeds five feet. Its lines of separation from the walls is not always well defined, the copper spreading into the amygdaloid. The gangues are distinct however, and sometimes cleave perfectly from the rock at the sides. To give the average richness would be a difficult computation, the percentage lying between the extremes of the poorest veinstone and pure copper. But large quantities that have been sold in Boston have given of the masses 94 per cent., and of barrel ore 63 per cent. Including all from the stamps, it is usually estimated to yield of all kinds between 50 and 60 per cent. The quality of the copper is much preferred for all purposes to that smelted from the ores.

The silver attached to, and mixed with, the copper, but not alloyed with it, has been found in considerable quantity, as I have before stated: but this is very uncertain, and what is met with is in great part purloined by the miners. I have now before me six pounds and eight ounces, avoirdupois, in rough lumps and hammered bars, which have been seized from one of the men, who was about absconding with it.* There is good reason to believe that several thousand dollars worth is now kept concealed by the hands. It is forged into clumsy finger rings, the same ring showing streaks of copper and silver, and is carried off in lumps and bars. The quantity secured by the company has not been sufficient to affect the value of the mine, nor excepting in some small parcels, to make it an object to separate from the copper.

No ores (properly called) of copper or silver are

* Mouth of Eagle river, July 4th.

found in the vein except mere coatings of the red oxide and carbonate of copper. On the continuation of the vein over the north side of the ridge the trap rock is porphyritic; and in this portion of other similar veins, on the same ridge I have seen small particles of sulphuret of copper scattered in the veinstone, and the vein, moreover, was here better defined at the surface than even in the amygdaloid.—It is to be regretted that no shafts have been sunk in the vein in this rock, which is in other parts of the world generally regarded as the most favorable for the development of metallic veins.

At present about 150 men are employed at the mine; and the amount of ore prepared for shipment is estimated at 100 tons per month, or say 1,000 tons for the year. There have already been shipped since the opening of navigation, which is now only a month, about 300 tons. But a small proportion of the stamped ore collected in the winter has yet been washed.

The following data are extracted from the Report of the President and Directors of the Company, dated January, 1849.

"About one-third of the entire product is of sufficient purity to ship to market in the shape in which it comes from the mine; producing when refined about 60 per cent of pure copper. The poorer ores are crushed and washed at the mine, and brought up to a value of 60 or 70 per cent."

"Eight hundred and thirty tons of mineral, averaging 60 per cent., were shipped from the mine in 1848. The superintendent estimates the product of 1849, of the same description, at 100 tons per month. It would be safer, probably, to say 1,000 tons for the season."

"On stamping or washing the poorer ore, small particles of silver, from the size of a pin's head to half an ounce, make their appearance, which, on being flattened in the process of stamping, are readily separated by means of the fingers. One thousand dollars worth was selected from 88 tons of the stampings, which were sent to Pittsburg the past year."

"The force employed on the mine consists of one superintendent, one mine-captain, one assistant mine-captain, one clerk, and 146 miners and laborers. The labor in the mine is chiefly done by contracts, which are let to the best bidder, at the commencement of every month. The aggregate monthly wages in 1848 of the whole force averaged \$5,140. The total monthly expenditures of the company for the same year averaged \$7,073, and are estimated at about the same for 1849."

Fifty acres of land have been improved, twenty-five of which are under cultivation; and it is the design of the directors steadily to progress with the improvement of the surface, until a sufficient quantity of land shall have been cleared, to furnish hay and pasturage for the teams, and an adequate supply of vegetables for the inhabitants.

Twenty-five buildings have been erected, constituting quite an imposing little village, whose inhabitants number about 300 souls; having its regular physician, a preacher of the gospel, and a schoolmaster.

During the last year the company has availed itself of its pre-emption claim to this location, and purchased the lands from the United States Government at the minimum of \$2 50 per acre, the whole number of acres being 4350,53-100. This purchase of the fee exempts the company from any further payment of rent on the mineral."

"At a meeting of the Directors of the Company held on the 26th of January, and after a careful ex-

amination into the state of its affairs, it was adjudged expedient to pay to the stockholders a dividend of \$10 per share, as soon as the refined copper now on hand may be got to market and converted into money for that purpose, and it was accordingly

Resolved, That a dividend of ten dollars per share on the capital stock be paid to the stockholders on the 21st day of May ensuing."

The whole number of shares is 6,000, the rate at which the stock was lately selling at the east was from \$60 to \$70 per share. From the present very favorable appearance of the lode, and the flourishing condition of the mine, the price has probably risen since the last account. The small sales made in the mining country are always at a higher price than at the eastern cities.

The copper is now all taken to Pittsburg, where the company have built a furnace for smelting it. The product for the year 1848 sold and smelted, according to the report above referred to, was \$166,407 02; and the value of ore on hand was \$35,664.96; making \$302,067 96, as stated with slight error in the figures. The product of the year 1847 was about \$71,000, and of 1846 \$8,870. The total expenditure, which includes about \$25,000 expended at another mine at Copper Harbor, now abandoned, which mine produced only \$2,968 worth of ore, has been \$289,456 89. The total product \$234,884.93. So that the mine has paid for itself and for a multitude of heavy expenses new operations of this kind must always meet with in a new country, and which cannot hereafter recur. The present workings show no evidence of any falling off to be anticipated in the productiveness of the lode, but on the contrary the deeper the workings the more productive they are found in general, though barren spots are often met with for a time. Confidence may be felt in the continued richness of the lode just so far and so deep as the amygdaloid shall be found to continue, and there is nothing yet tending to show that it is to give place to any other belt of rock below.

The following table from the report is a statement of the mineral raised from the cliff mine, monthly, for the year ending Dec. 1, 1849."

	Ore suitable to ship in barrels as it comes from the mines—equal to 50 per cent. of pure copper.	Masses as they come from the mine—equal to 65 per cent. of pure copper.	Mineral to be stamped, estimated at 8 per cent. of pure copper.	Total No. lbs.
Dec. 1847	31,843	161,221	140,000	333,064
Jan. 1848	34,770	147,687	150,000	332,457
Feb. do	36,187	117,417	186,500	340,104
M'ch. do	50,585	146,936	358,500	556,021
April do	58,222	97,631	328,000	483,853
May do	33,981	102,155	311,000	447,136
June do	55,797	97,364	393,392	543,553
July do	41,280	59,633	309,000	409,913
Aug. do	42,374	65,062	490,500	597,936
Sep. do	35,574	47,490	508,500	591,564
Oct. do	30,667	73,731	390,000	494,401
Nov. do	38,207	93,522	314,000	445,729
	486,487 lbs	1,209,852	3,879,392	5,575,731

New York, July 19th, 1846.

I have to-day reached New York on my return from the mineral region of Lake Superior. During my absence I enjoyed favorable opportunities of visiting the principal mines, and am now prepared to continue the account of the operations up to the present time. But as a weekly description of one or two mines will slowly bring out the conclusions as to the consequence of this region, to which my observations have led me, I will here anticipate them, and state in general terms, my opinion of the

mines, trusting to the future details I shall give to sustain it.

The account of the Cliff Mine in the Journal of this week has introduced to the reader the best developed of these wonderful repositories of native copper; but excepting of this mine, few favorable results are known to the public. Other operations have generally been regarded as speculative or uncertain. But during the past three years, which have elapsed since I was at the Lake, other mines have been opened, which not only bid fair to produce, but actually show masses similar to those of the cliff mine, following each other along the course of the vein as in this mine. Quantities of native copper, in masses and in stamp work, have been extracted from veins, which three years since only showed upon the surface similar indications to those of the Cliff. A character is consequently given to a considerable number of other localities, which, when opened are not unlikely to prove also valuable mines. Their product being *metallic* copper instead of *ores*, and the abundance very great, the estimate of their value cannot but be extremely high when the most profitable mines worked in the world are often found to be mines of copper *ores*. I am prepared with data to show the range and extent of the region containing these veins so far as explored. The choice spots in it are limited, as one would infer they must be from their extraordinary richness; but their number, as I have convinced myself by explorations, extended over a considerable area of wild country, is sufficient to warrant me in expressing the opinion which I do with careful consideration, and with full knowledge that many veins seen at the surface will be found unproductive beneath, that the region is soon to be admitted as one of the richest and the most wonderful copper mining countries ever yet discovered—that its products are destined ere long to take the place of many other copper mines, which must in consequence be abandoned, unless new uses are found for supplies of the metal sufficient to keep up its present price.

Still even with our increased knowledge of its resources the prosecution of mining enterprises in the region will be attended with hazard; and unless directed by careful economy and good judgment, they will fail even in the choicest localities. And before a general knowledge is had and full confidence felt in some general principles of curious nature, which have already been discovered by the close observer as bearing upon the productiveness of the different veins, many works will no doubt be commenced, which will prove unsuccessful, and involve losses to no small amount. It is consequently a business extremely unsate, except to those who can afford to loose the capital they invest. By such rich prizes must be drawn, no doubt far exceeding any in immediate prospect in this so early period of the mines.

The articles on Iron have been interrupted for a time, but they will hereafter appear weekly, as before. The next number of the Journal will commence with the iron mines of Connecticut.

J. T. H.

Railway Economics—Permanent Way.

In last week's number we canvassed the question of permanent way at some length, having reserved for this the consideration of the most important head of the subject—the rail.

Engineering may, according to our views, be defined the economics of construction:—for chiefly in the saving of material can the work of the scientific engineer be distinguished from that of the random constructor. The true spirit of the profes-

sion we take to be an economic spirit; and therefore in dealing with the question under consideration, would begin by calling the attention of our brethren throughout the country to the fact that while wrought and cast iron fulfill very nearly the same conditions as materials for rails, *wrought iron is twice the cost of cast*. We will start in our reasonings from this premis.

A wrought iron rail, 36 lbs. to the yard, on the Liverpool and Manchester line in England, was found by Chevalier Pambour to have lost under a traffic of 600,000 tons distributed over a period of 21 months, a weight of only 18½ ozs. The wear per annum in this case was but 1-268 of the original weight; on the evidence of this fact, it would, to use the words of the chevalier, "require more than a hundred years to reduce the rail to half its original strength." If we assume that this particular rail was placed under the most favorable circumstances, that is to say that its full amount of wear was directly chargeable to friction alone, we must refer the great surplus above this wear found in the modern practice to the modern conditions of locomotion—to heavier engines and higher velocities.

All experience shows that stiffness in a rail is necessary to the full amount of its service. Weaken a bar below the required degree of stiffness, and you introduce, in addition to the friction, those other causes, that are distinguished in their effects from ordinary wear by the peculiarities included in the term "deterioration." The deflections arising from insufficient strength, while they do not actually break the malleable rail must materially lessen the cohesion of its particles; and therefore by admitting the laminae of the metal to spread under heavy loads, cause the surface of the rail to break up into scales. This effect must go on from the commencement in a progressive increase, seeing that every shock on the rail tends to increase the first injury done to the cohesion. These considerations lead directly to the adoption of a rail approximating as close as possible to absolute rigidity, both laterally and vertically. But besides these there are other grounds for such a conclusion. The traction on a good horizontal railway is found to be say 1-200 of the load; Now a deflection of $\frac{1}{4}$ of an inch at the middle point between the supports in a rail, supported at intervals of 33½ inches, will give an inclined plane of one in fifty; and consequently, involving, in addition to the traction on the level, the raising of a weight equal to 1-50th of the total loading, will require from the engine ascending it a power five times as great as that necessary to move the same load on the level. An engine therefore working on a rail so weak as to deflect even $\frac{1}{4}$ of an inch at the middle of a span of 33½ inches can do only 1-5th of the work it would do on a rail of sufficient strength. Indeed an engine moving at a high velocity will not follow the line of deflection; but at a certain point of it bound from side to side of the curve, striking the rail in its descent with a force equal to a proportion (varying with the incline) of the product of the weight and the velocity. Lecount in his treatise on railways instances an experiment in which a rail having a set of half an inch, being coated on the top with paint, was passed over by a heavy train, the paint remaining untouched by the wheels for some ten or twelve inches on each side of the lowest point of the rail. Here then is an amount of percussion that must not only crush the metal at the point of application; but also cause other percussions by starting the fastenings of the rail. In consideration of all these and other causes that are too clear to require description, *we are of*

opinion that the greater is the rigidity of a rail within the limits of easy transit, the more closely are the wear and tear reduced to the simple effects of rolling friction.

Now why is cast iron, seeing that it is only half the cost of malleable, not introduced more largely into railway tracks? Malleable iron certainly admits of a greater amount of deflection before its elasticity is destroyed; but we are inclined to think that this is questionable ground for the exclusion of cast iron. Rigidity in a rail has been shown absolutely necessary to keep the wear within proper limits—the limits of friction—and therefore as the only elasticity necessary in the case is that for obtaining easy transit, *the conditions of the most durable rail laid on wood fall within the elasticity of cast iron.*—The longitudinal bearer seems to us to possess no greater advantage than that of adapting the conditions of the rail to the properties of cast iron; for how indeed can it be imagined necessary for a rail resting on a continuous bearing of hard timber to admit of a greater deflection than 1-40 inch to the running foot, which is fixed as the working limit of deflection for cast iron? Wrought iron decomposes very rapidly when exposed to moisture; on the other hand, cast iron under the action of the weather endures for a long time. Wrought rails are something harder than malleable, and according to the experiments of Professor Barlow offer very nearly equal resistance to the wheels. It strikes us, however, that the crystalline particles of the cast iron are very apt to break up under the loads that would probably have the effect of rendering malleable iron only more malleable. On this latter score, together with that of the easier motion obtained by using the softer material, we are inclined to think malleable iron the better metal for presenting to the wheel of railway carriages. We have detailed our reasonings on the case here at full length, and proceed now to combine the conclusions drawn from them in a practical application.

The rail we obtain from the conditions arrived at is

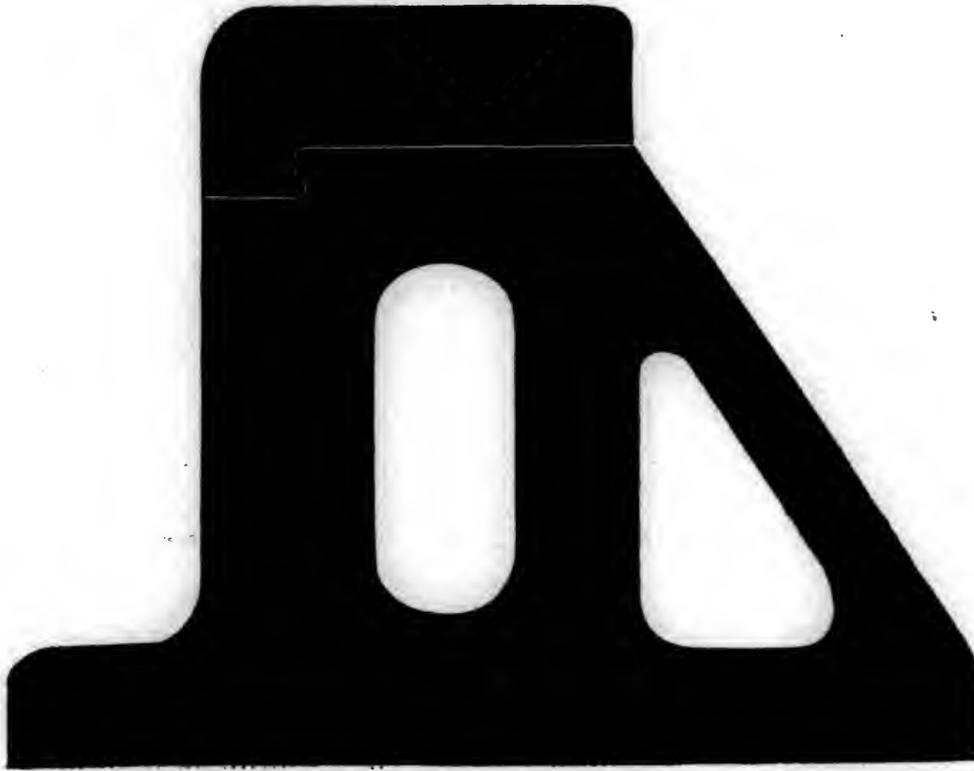
THE CHAIR RAIL.

This we describe in the following specification:

The chair-rail consists of two parts; the upper, a wrought bar to receive the wheel, the lower, a cast frame or chair to sustain the bar throughout its whole length. The rails break joint with the chairs; and are bound to them on the extreme side by iron dowels. The dowel used is peculiar—a dovetail in plan and a double dovetail in section. Before fastening the rail on the chain the dowel sits in a chamber larger than itself, and of a shape exactly similar, this chamber being for one-half its section within the rail for the other half within the casting. An arm with a slit or elongated hole in the top of it, projects from each dowel while sitting loosely in its chamber for a length sufficient to allow part of the slit to appear outside the rail. An iron wedge resting against the rail is driven into the slit of this arm; this forces out the dovetail farther into the chamber, draws the rail tight up both 'bed' and 'build' to the castings, and besides fixes the rail and casting together at all points in a manner perfectly immovable as long as the wedges are allowed to remain in the slits.

The chair or frame is fastened to the timbers by bolts made to alternate, these on the one side with those on the other in order to increase the steadiness by increasing the number of fixed points. The strutting on the exterior face of the casting is divided into a series of distinct struts, each a sufficient distance in the clear from the other to admit between them the bolts used for fastening that side of the rail to the

The Chair Rail,



timbers; but exactly opposite. these intervals or opens between the extern struts, other struts twice the width of these opens are cast on the inner side so that the strength of the rail may be equal, or very nearly so, at all points along its length. A slightly cylindrical end on each casting fits into a corresponding hollow on the end of the next one; this has the effect of preserving throughout the whole an unbroken evenness of surface. A heating of wood well creosoted and tarred perfectly water-tight at the ends is inserted into the hollows of the frame-chairs with the view of preserving the metal on the inside from the injury likely to result to it from damp or wet.

Vulcanised India rubber, compressed to one-eighth of an inch by a force equal to the maximum traction on the rails, is introduced between the ends of the castings in order to allow the iron sufficient play for expansion. The bolts on each side of the middle of a frame-chair as representing a point permanently fixed, are of considerably larger scantling than the others, and are driven home as tightly as possible on all sides. The holes receiving the bolts, except those receiving the middle pair, are all more or less elliptical in the direction of the expansion and contraction and receiving bolts that fit perfectly close laterally are packed well at the ends with vulcanised India rubber.

This rail seems to us to combine within itself considerable improvements in the present system of fastenings; but what is still more pertinent, it combines all the conditions obtained from the consideration of the theoretical full-service rail. The section given in illustration of our invention is intended to represent a 'chair-rail' of the same cost as

an ordinary 48 lb. rail, including the cost of chairs; whereas in point of strength it may probably be held to represent a wrought rail of the ordinary form weighing some 90 lbs. a yard.—The hollow bearer ensures an amount of strength considerably higher than a solid bearer of the same quantity of material—higher under certain conditions, by 40 p. ct. The hollow rails in use do not possess this advantage, seeing that the whole is not a continuous material in section. The cast part of this chairrail is expected to wear out several sets of the wrought part, making, while the first cost is considerably less and the wear reduced to the simple effects of friction, the relaying of the track a mere trifle in comparison with the loss sustained in replacing the present heavy rails after the small amount of service which oblige companies to dispose of them at some 50 per cent. under cost. A great deal might be said in recommendation of this rail; but as such remarks are unnecessary for the present only so far as they are calculated to bring the invention into fair working trial we prefer letting the rail stand here on its own merits without further remark than that it is a fair deduction from a theoretical speculation; which if it be not faulty in its premises must entitle the rail to an impartial trial from every intelligent Engineer who has honestly at heart the interest of his employers.

We claim under this modification of the rail the right to the dowel fastenings the rubber packing, for expansion and contraction, the combination of cast and wrought metal in rails, and the hollow form, however it may be diversified in either wrought or cast iron, in either chair or rail.

M. B. H.

Engineer of the Virginia & Tennessee R.R.

The announcement of the election of an Engineer in Chief, by the Board of Directors of the Virginia and Tennessee railroad, was made during our absence, in the last number of the Virginian. We avail ourselves of the first opportunity, on resuming our post, to bear cordial testimony—based upon long and intimate acquaintance, to the very great private and professional worth of the gentleman honored by the choice of the Directors. It would, where he is personally known, be not only supererogatory, but impertinent, in us to testify to the high sense of true honor, the sterling integrity, the amiable disposition and courteous manners, which have endeared Col. Garnett to a large circle of friends. In his profession, though comparatively young, he has had great experience and success, and, as the Engineer in Chief of several important works in the South, has acquired a high and well deserved reputation. Seven years ago, when that reputation was less established than it is at the present moment—without solicitation, or even a knowledge of the vacancy, on his part—he received from the Governor of Georgia the appointment of Chief Engineer of that State. His appointment as Engineer of the Hiwassee Rail Road, from a host of distinguished competitors for the honor, is a striking testimony to his professional merits. Circumstances, which reflect honor upon his character, led him lately to resign the office, and thus left him unemployed, and willing, we hope to accept the situation to which he is now called. We believe it would be difficult for our board to make a choice better calculated to inspire confidence in the great enterprise in hand. We say this not the less readily, in that our preferences were for another gentleman, whom, public opinion had designated as a prominent candidate, but who thought proper not to allow his name to be presented to the Board in connection with the office.

—Lynchburg Virginian.

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equip-ment.	Cost per mile.	Capital stock paid in.	Debts more than sur-plus.	Rating grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of div-idend in 1848.	Price of shares.	Remarks.
Atlantic and St. Lawrence	146	....	36	In prog-	\$.....	.....	.....	..	.....	.....	.....	.....	78 a 81	
Androscoggin & Kenneb.	55	....	6	In prog-	\$.....	.....	.....	..	.....	.....	.....	.....	70	
Albany and Schenectady.	167	....	167	\$1,606,196	100,000	.....	.....	..	.....	.....	.....	1 5-9	89	
Auburn and Rochester...	78	....	78	2,644,521	34,000	.....	.....	..	175,922	.....	.....	8	86a87	
Auburn and Syracuse...	26	....	26	1,125,886	43,300	.....	.....	..	454,721	.....	.....	2 9-10	80a81	
Attica and Buffalo.....	31	....	31	821,312	26,000	.....	.....	..	172,186	.....	.....	4	.....
Alleghany Portage	36	....	36	.....	.....	.....	.....	..	150,959	.....	.....	.....	.....	Leas'd to Western railroad.
Albany and W. Stockb...	38	....	39	1,924,701	50,000	.....	.....	..	.....	.....	.....	.....	.....
Annapolis and Elkridge..	21	....	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Bangor and Oldtown.....	11	....	11	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Boston and Lowell.....	25	1	27	2,013,687	73,200	1,800,000	.....	10 up, 30 down.	461,331	268,707	192,631	8	118	
Boston and Maine.....	7	5	79	3,571,832	45,000	3,249,804	249,715	47	511,627	264,534	247,891	8	103	
Boston and Worcester...	41	22	66	4,960,000	74,700	1,500,000	460,000	40	716,284	406,303	310,080	8	102	
Boston and Providence...	41	6	47	3,031,106	63,800	2,893,300	26,878	37	354,371	183,361	170,013	6	92	
Bost., Concord and Mont.	90	....	38	In prog-	\$.....	.....	.....	..	.....	.....	.....	.....	.....	82a85
Berkshire.....	21	....	21	600,000	28,500	.....	.....	..	.....	.....	.....	7	.....
Buffalo and Niagara.....	22	....	22	250,396	11,500	.....	.....	..	60,014	.....	.....	6 1-3	.....
Buffalo and Black Rock.	3	....	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Susqueh'a.	36	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Beaver Meadow.....	26	....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Buck Mountain.....	.....	....	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Ohio... }	.....	....	178	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Washington Branch. }	.....	....	31	13,136,940	61,900	.....	.....	..	1,468,828	805,530	663,196	.....	43 a 44	
Frederick Branch... }	.....	....	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Calais and Earing.....	3	....	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Concord.....	34	....	34	.....	.....	1,350,000	.....	..	311,326	180,699	130,639	.....	121	
Cheshire.....	54	....	54	2,584,143	48,000	1,453,379	1,140,764	60	.....	.....	.....	.....	67a67	
Connecticut and Passump.	115	....	40	.....	.....	.....	.....	..	.....	.....	.....	.....	79	
Connecticut River.....	50	2	52	1,589,184	30,500	1,234,970	426,013	32	165,242	95,658	69,583	8	96	
Cape Cod Branch.....	28	....	28	587,116	20,900	343,000	217,395	40	.....	.....	.....	.....	62	
Corning and Blossburgh..	.....	....	40	.....	.....	.....	.....	..	18,069	.....	.....	.....	.....
Cayuga and Susquehanna	29	....	29	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Amboy... }	61	....	96	3,200,000	33,000	.....	.....	..	.....	.....	.....	.....	140 a 142	
Trenton Branch... }	6	....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
New Brunswick Br.. }	29	....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Columbia.....	82	....	82	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Woodbury..	9	....	9	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Cumberland Valley.....	.....	....	52	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Carbondale & Honesdale.	26	....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Chesterfield.....	12	....	12	150,000	13,500	.....	.....	..	.....	.....	.....	.....	.....
City Point.....	9	....	9	195,867	15,919	.....	.....	..	.....	.....	.....	.....	.....
Central of Georgia.....	191	....	191	3,222,289	16,800	.....	.....	30	516,252	266,450	250,226	.....	80	
Central of New Jersey...	63	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Dorchester and Milton...	3	....	3	114,224	35,100	72,990	41,234	39	.....	.....	.....	.....	74	
Detroit and Pontiac.....	25	....	25	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Eastern.....	54	19	73	.....	.....	.....	.....	40	.....	.....	.....	8	103	
Essex (Salem to Law.)...	22	....	22	421,574	18,700	263,746	160,958	55	.....	.....	.....	.....	.....
Erie and Kalamazoo.....	33	....	33	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Fall River.....	42	....	42	1,145,982	27,300	1,050,000	83,177	45	184,344	109,390	74,953	7	84	
iteburgh.....	49	61	56	2,945,630	52,300	2,735,910	67,504	..	486,265	236,046	200,219	8	109	
Franklin.....	.....	....	22	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Greenville and Roanoke.	21	....	21	283,917	13,500	.....	.....	..	.....	.....	.....	.....	.....
Germantown Branch.....	6	....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	88 a 90	
Gaston and Raleigh.....	96	....	96	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Georgia (Augusta to A'ta)	171	....	.....	.....	.....	.....	.....	40	477,052	267,173	209,879	.....	121	
Athens Branch.....	39	210	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Harrisburg and Lancaster	37	....	37	1,183,257	31,979	609,550	573,707	49	121,350	37,386	83,963	6	96 a 97	
Hartford and New Haven	62	....	62	.....	.....	.....	.....	17	.....	.....	.....	.....	104 a 105	
Housatonic.....	74	....	74	.....	.....	.....	.....	..	.....	.....	.....	.....	87	
Hudson and Berkshire...	31	....	31	818,953	26,500	.....	.....	..	.....	.....	.....	.....	.....
Hazleton and Lehigh.....	10	....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Jackson and Brandon.....	13	....	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Lexington and W. Camb.	6	....	6	252,680	38,900	.....	.....	55	.....	.....	.....	.....	.....
Lowell and Lawrence....	12	....	12	283,248	22,650	.....	.....	45	.....	.....	.....	.....	85	
Long Island.....	98	....	98	2,173,646	22,100	.....	.....	..	.....	.....	.....	.....	21	
Lockport and Niagara...	23	....	23	221,000	9,700	.....	.....	..	.....	.....	.....	.....	.....
Lewiston.....	3	....	3	33,673	10,300	.....	.....	..	.....	.....	.....	.....	.....
Lykens Valley.....	16	....	16	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Little Schuylkill.....	23	....	23	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Louisa.....	50	....	50	474,137	9,482	.....	.....	..	.....	.....	.....	.....	.....
Lexington and Frankfort.	29	....	29	450,000	15,600	300,000	.....	61	50,000	30,000	10,000	.....	82a85	
Little Miami.....	84	....	84	1,513,402	18,000	.....	.....	..	.....	.....	.....	.....	.....
Machiasport.....	8	....	8	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Morris and Essex.....	.....	....	45	.....	.....	.....	.....	80	.....	.....	.....	.....	100	
Mauch Chunk and R. Run	36	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mine Hill & Sch. Haven.	25	....	25	.....	.....	.....	.....	..	.....	.....	.....	.....	136	
Mount Carbon.....	7	....	7	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mt. Carbon & Pt. Carbon	2	....	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mill Creek.....	6	....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Montgomery & W. Point	67	....	67	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

AMERICAN RAILROAD JOURNAL.

Saturday, July 21, 1849.

To the Mechanicians of the United States.

We propose, in the first place, to publish in this Journal *without any charge* full explanations of the crack engines turned out of such workshops as furnish us with the necessary number of plates, showing the details of the same; and we further propose if this appeal to the mechanical pride of America supply us with a sufficient number of extra copies of those plates to exchange with English journals for an equivalent number of similar plates furnished by them for the information of our readers. This scheme will give us means of showing the world the best specimens turned out by our workshops; and of showing ourselves the best and latest specimens from the workshops of Great Britain. This will make up in a great degree for the want of association amongst our practical men, and place them all in closer professional character. The exchange with drawings from English periodicals, is however to be a matter of treaty but before entering on it we must first learn how far our plan meet with the support of the machinists of this country.

The personal interests of manufacturers in having laid before the public the best models of their skill is so very evident that we feel some confidence in urging on them this proposal for the advancement of our country—a proposal, in which, by waving on our own part all interested considerations, we seek to call forth the self-sacrificing nationality of the country in the generous struggle we encourage for mechanical supremacy.

James River and Kanawha Company.

Our readers will see, by reference to our advertising columns, that this company are about to unite their canal with tide water at Richmond.—This is a work which has long been desirable, and must greatly increase the usefulness of the canal.

Railroad to the Pacific.

Mr. Whitney in his road proposes the construction of one of the greatest, if not the greatest work, ever attempted in any age. Experience does not furnish an example of a similar kind to serve as a guide in this. In the absence of any such guide, one great objection we have made to Mr. Whitney's plan is, that it does not contain any proper evidence of its practicability. The first step in the commencement of every railroad, as the basis of all future action, is to ascertain the physical difficulties to be encountered. These can only be determined from actual survey. The opinion of a person who has no experience as an engineer, nor of the working details of railways, is entitled to but little weight in these matters. The highest authority for most of the propositions laid down by Mr. W., are his own statements, which lack the necessary conditions to give them authoritative value. The practicability of his plan, therefore, is yet to be proved. All we contend for is, that this should be subjected to the ordinary tests by which the feasibility of any similar work is determined. If these tests decide in his favor, we will do all in our power to aid him. If against him, the sooner its impracticability is demonstrated, the better for himself and the public.

The objections we have thus far urged against the scheme relate to his estimate of its cost. These objections must be general in their nature, because we have only a general knowledge of the route.—We are furnished with no estimates in detail. The cost of other roads can furnish a criterion of cost of this, only so far as the circumstances of each

agree. We cannot see that Mr. Whitney's road has any advantage over any other well built road in this country, except in the cost of grading. By this we mean that the route proposed by him will require less excavation than an average of our roads. But we by no means admit that even this item will cost him less than the average cost of the grading of roads in the old states, for reasons, which, we think, must be apparent to all. On the other hand, every other item that makes up the expense of a road, must cost him vastly more than any road yet built. Nearly the whole of his route runs through an unsettled country. Can he transport from the older states all the material for his road at any reasonable expense and any reasonable time? We believe this to be impossible. The world is full of failures of works, attempted where the conditions necessary for their success did not exist when they were commenced. A manufacturer in New England will make money, when by pursuing the same business in any other part of the country he would certainly fail. The reason of this is perfectly plain. In the one case, whatever he requires to carry on his business is furnished at call. In other parts of the country he must be at the expense of educating his workman, and of preparing all his material at his own expense. Why did so many of the Western States a few years since suffer such disastrous failures in their attempts at internal improvements? Certainly not for the want of sufficient money to have ensured success to undertakings of equal magnitude in the older states. What has Illinois or Mississippi to show for the immense amount of their state debts? Nothing. They commenced their works before they had reached the conditions necessary to success—before they had sufficient population to furnish labor or skill to direct them. These states offer much better facilities for railroad construction than the route over the prairies. In Illinois, immense sums were expended by the state upon lines of road which have been utterly abandoned. Here we witness not the failure of an individual, but a state. When she commenced her works, she enjoyed unlimited credit, and every one supposed her schemes practicable.—But they turned out to be of the most visionary kind. And, so signal was her failure, that she repudiated her former policy, and all connection with works of internal improvement. Since her disasters, some twelve years have elapsed, during which time her population has nearly quadrupled. Her people are now feeling that they possess some of the elements necessary to success in undertaking public works. Companies are now recommencing the construction of railroads in every part of the state, which are progressing as fast as means can legitimately be obtained, and the ability and settlement of the country justify their construction. It cannot be doubted but that if Illinois had postponed her works of internal improvement ten years she would have accomplished vastly more than she has done. Time is the great element to be respected in undertaking public works in the west. It is time alone that can give the conditions essential to success. Mr. Whitney must surmount all these difficulties which have proved insuperable to states which possessed vastly greater facilities for those works than his route possesses. They had a sparse population, unbounded means, and an abundance of material for the superstruction of their roads at hand. All these he leaves at the commencement. Every succeeding mile costs more than the first. In addition therefore to the increased expense of his road from lack of inhabitants along its line, which every one

will readily appreciate, he must incur the expense of transporting all the material necessary for his road, for building the houses and fences of settlers, for every thing, in fact, which they must use or wear; and in the outset, food for their subsistence. Transportation over his road, adopting the average of New England roads, will cost 17½ mills per ton per mile. How much this will add to the cost of a road extending even to the stone used, we leave to people to judge for themselves.

But it may well be questioned whether so long as we have immense tracks of wooded land well situated for sale, people can be induced to go 500 miles into a prairie, even the on line of a railroad, where they will be compelled to purchase and transport this distance, every particle of wood they use for fuel, for agricultural purposes, and for building; to say nothing of the other necessities of life, which they would be obliged to obtain in the same way. Wood is an article of first necessity in the economy of life, and settlements never can go far beyond its line.—It can be easily cultivated, however, but it requires some twenty years to give it sufficient size for use. The settlement of that part of the route over fertile lands therefore, can only proceed so fast as wood can easily be obtained for the use of the inhabitants either from the native or cultivated forests.

Mr. Whitney asserts that the settlement of the country and the road must proceed with equal steps. In reference to this connection he says:

"Now an entire wilderness, it becomes absolutely necessary to connect the settlement of the country on the line with the construction of the work, being impossible without it."

The road therefore cannot cross the prairies till they are fitted in some degree for settlement by introduction of wood upon them. Even if it were possible to push the settlements in advance of this over the fertile districts, he admits that there is about 800 miles of his road of poor land not fit for cultivation, and consequently uninhabitable except by Nomadic tribes. Thus taking all his statements as proved, they involve a contradiction on their very face, and the very argument he lays before the public in support of his plan contains his admissions of its impossibility.

Mechanical Agents.

STEAM.

In last week's number was furnished a table and rule for ascertaining the elastic force of steam at its several degrees of temperature, both intended to apply to steam in contact with water or as it is called saturated steam. We will now go into the elastic force of steam when *not* in contact with its water of generation, and for this purpose take leave to explain in the first instance the phenomena and laws of *latent heat*.

Some bodies require a greater amount of heat than others to raise their temperature to a certain point out the thermometer, this property of bodies being termed their *capacity of heat*. The heat given out, or rather the effective heat employed to raise such bodies to a given temperature, consists therefore of two parts: the heat which is made evident to us by the thermometer, or *specific heat* and that which is chargeable to the absorbing power of the body or *latent heat*; and which, unlike the *specific heat*, cannot be made directly evident to our senses. To illustrate this more fully: water placed in an open vessel on a fire begins to give out steam when its temperature, assumed to have been originally 20°, is increased to 100°; and though the 80° of heat acquired be acquired in suppose 15 minutes, we find that no further increase goes on while the steam is

allowed to pass out of the vessel. From this it is evident that the steam escaping carries with it the heat given out above this point by the heating surface; and as by closing the vessel the heat is retained, increasing at the same rate for every 15 minutes after it reached 100°, while the thermometer fails to give a temperature corresponding to such increase the difference establishes clearly the principle and amount of latent heat. Latent heat is measured in the same way as specific or apparent heat—in terms of an unit whose value is the heat necessary to raise the temperature of a given quantity of water one degree. Dr. Ure's experiments give results that form an average of many others, and seem from the manner of conducting them something more trustworthy than the rest: these show the total amount of heat necessary to evaporate water under the pressure of one atmosphere or 14.75 lbs. avoirdupoise to the square inch to be 637.5. The total heat required to evaporate a given quantity of water is found to be different under different pressures of the steam to be generated; and as this furnishes the means of fixing the area of heating surface in steam engines to produce a certain amount of vapor at a certain pressure it may be useful to go into the question at some length.

Practical men generally calculate the area of heating surface according to the Law of Watt, that is to say that the amount of heat necessary to evaporate a pound of water is the same under all pressures; but though this may be found to lead to no serious error in practice, we had better, as Watt's law is not true, furnish a means of closer approximation. M. Regnault has deduced from a series of very careful experiments a formula for the total amount of heat necessary to convert a pound of water into saturated steam at a given pressure, and as the two first terms of his expression give an approximation to the truth sufficiently exact in practice he adopts the following form:

$$H = A + B T$$

Where H is the total heat, T the apparent heat or temperature, A and B constant coefficients found by experiment to be, the first 606.5, the second 0.305 for degrees on the Centigrade thermometer. To put this rule into an expression still more popular:—To the constant quantity 606½ add 3.05 for every 10 degrees of the temperature corresponding to the given pressure, and the sum will give the total heat necessary to convert a certain quantity of water into steam of that pressure. As a more convenient reference we copy the following table of results calculated by M. Regnault from the foregoing rule:

Heat required to convert water in's saturated steam at different pressures.

Temperature of saturated steam.	Total heat in Centigrade degrees.
100	637.0
110	640.0
120	643.1
130	646.1
140	649.2
150	652.2
160	655.3
170	658.3
180	661.4
190	664.4
200	667.5

The only remark necessary to be added in illustration of the above table is simply that the difference between the two columns—between the total and the apparent heat—is of course the amount to be charged to the head of latent heat.

Steam in contact with its water of generation increases in elastic force with the increase of its density and of its temperature, but in steam removed

from its water of generation the density always remaining constant, the increase of its elastic force arises simply from its increase of temperature. According to the law of Mariotte (see remarks on the diving-bell in the Journal for June 30th) steam is found to expand for every degree of heat 1-459th of its original bulk.

M. B. H.

For the American Railroad Journal.

Steele & Middleton's Compound Bridge Rail.

Without intending to partake in any discourse which may arise on the merits of different plans of railway superstructure, or desiring to intrude my views on the public, I take this occasion of correcting some of the mis-understandings which M. B. H. seems to have as to the general arrangement of the Compound Bridge Rail.

It is not the intention to use Chairs, necessary as they may be to most plans of track, they are evils, and should not be used except to correct other evils of a more serious character.—Neither is it intended to use Longitudinal bearings, but simply to spike the rails down with common hook head spikes to cross sleepers notched half an inch deep to receive their base, and resting on thorough ballast at intervals of 2½ feet.—This is a sufficient answer to all objections as to gauge; rails notched into cross sleepers do not loose their gauge, the difficulties in that respect being confined to other arrangements. Probably rivets will prove better than screws for fastening the several parts of the rail together, it is therefore proposed to use them made of half inch round iron, passing horizontally through the centre at intervals of four feet, these can be tightened up as frequently as occasion may require, or it may be that practice will point to some better fastening.

As regards lateral strength, if the front or Z shaped piece is turned on its side and considered as a beam to resist cross strain, it will be found stronger than many H. rails which answer a good purpose; but we get a large increase of strength by bolting a second piece to it, and thus from a combination similar to a built girder, its power therefore to resist the transverse action of Machinery cannot be doubted and the objection is supposed to be to the joints which, if compared with any of the usual joint fastenings will be found to exceed them in security; in fact the joint cannot become deranged without the T piece or one half the rivets in the bar first being destroyed.

Some objections is made to the new arrangement of the lamina in the metal, owing to the irregularity of the shape. If we examine the lamina of the ordinary bridge rail we shall find they are curved on the top, forming a series of arches against the tread of the wheels, of about 90 degrees, crossing the vertical sides of the rail at angles of about 45° and again reversing their curve to pass into the base; and it is this arch shaped lamina on the top which gives the bridge rail its peculiar wearing property. It will be at once seen that the position of the lamina of the Z piece will nearly correspond to that of the bridge rail and thus possesses to a large extent its valuable characteristics.

The Z is not a new shape for rails, as is generally known it has been many years in successful use in Maryland though differently arranged, and the supposed difficulties as to the upsetting process, and the imperfect fitting of the several parts of the rail are also there being tested by practice, the only true guide to railway tracks.

J. D. S.

The above communication is laid before the public with a view to full justice in the case of Messrs. Steele & Middleton's compound bridge rail; and as we do not think it necessary to add any remark of our own in this place on the subject, we will simply

leave the question as it stands now before the public. We thank "J. D. S." very sincerely for having received our remarks in their proper spirit; and for helping out by this defence of his ingenious invention our views for the promotion of candid discussion on the several questions occurring in the progress of mechanical improvements.

In discussing the question of permanent way our own attention has been directed this week to an improvement in rails; and as we lay the result of our labors in the case before the public, beg leave to express the pleasure with which we shall publish any remarks on the subject from J. D. S., or any other gentleman who like him, appreciating the advantages of such discussion, can enter into their proper spirit.

M. B. H.

Maine

The following gentlemen were chosen officers of the Androscoggin railroad on Tuesday last:—

William Kilbourne of Auburn, President; John Gilmore of Leeds, Treasurer; Ozias Milleet, of Leeds, Clerk.

Directors—William Kilbourne, Auburn; Ensign Otis, Leeds; Giddings Lane, Leeds; David Benjamin, East Livermore; Ezekiel Treat, East Livermore; Elisha Keys, Jay; William Calden, Wilton.

Vermont and Massachusetts Railroad.

The mortgage bonds of the Vermont and Massachusetts Railroad Company, bearing interest at six per cent, to the amount of \$300,000 were put up at auction on Saturday last, by Brown & Sons. The whole amount of the company's debt was stated at \$1,100,000 and the security at about \$,000,000.—The road now earns \$13,000 a month, and this will be largely increased by its prospective trade. The conditions of the sale were 25 per cent. upon par, payable July 19. and 25 per cent. in two, four and six months—with interest from July 1. The first sale was \$10,000 at 88 per cent. after a brisk bidding. Lots were then taken, one of \$85,000, then of from \$20,000 to \$5,000, and from thence to 1000 at 87 per cent. About \$230,000 of the par issued were taken at that price, and offers of 86½ were made and rejected. Perhaps the whole might of been sold had it been known beforehand that the price was to be restricted.

Improvements in Manufacturing Metallic Tubes.

Mr. J. O. Yorke has just patented a process by which he proposes to cast iron or steel tubes in thick short lengths, which are afterwards to be rolled out to the requisite thickness by being placed upon a mandrel of rather less diameter than the bore of the intended tubes, and passed while in a heated state between a pair of rollers furnished with a number of grooves on their peripheries, which are of gradually decreasing diameter. Or, the short tubes may be slid on to a fixed mandril, which is supported in the grooves of a series of pairs of rollers, and made at those parts which are the grooves thicker than elsewhere, but not quite equal to the diameter, of the bore of the intended tube. The diameter of the grooves of each pair of rollers decrease gradually till the last, which is equal to that of the exterior circumference of the tube. The thick tube is slid up to the first pair of rollers, which seizes hold of it, partially compresses it, and passes it on to the next pair, which does the same, and so on through the series. At each succeeding operation the tube is shifted one fourth round, in order that the roller may act upon different portions of the tube successively. The thick short iron tubes may be

formed of bars with bevelled edges, bent round a rod, and welded together when on the mandril by the action of the first pair of rollers. The patentee proposes, lastly, to change the form of the flues in tubular boilers, from a circular into an oblong or rectangular one, by drawing them while hot, through a die-plate, which shall have the effect of pressing the sides together, and consequently of decreasing their area without decreasing their heating surface.—*Claims:* 1. The mode, or modes, of manufacturing iron and steel tubes, by rolling or pressing thick short cylinders of these metals upon a straight mandril, between a pair of grooved rollers.—2. The mode, or modes, of manufacturing iron and steel tubes by rolling or pressing thick short cylinders of these metals over and upon a stationary mandril, between a series of pairs of grooved rollers.—3. The mode of decreasing the area without decreasing the surface of flues in tubular furnaces.

Georgia.

The following is a list of the cotton factories in this state, copied from the Macon Journal:

Planters'	Factory in	Upson County.
Waynman's	do	do
Thomaston	do	do
Flint River	do	do
Columbus	do	Muscogee
Howard	do	do
Coweta	do	do
Carter's	do	do
Winter's	do	do
Augusta	do	Richmond
Richmond	do	do
Bellville	do	do
Princeton	do	Clarke
Athens	do	do
Georgia	do	do
Scull Shoals	do	Greene
Curtwright	do	do
Broad River	do	Elbert
Beaver Dam	do	do
Anthony's Shoals	do	do
Cedar Shoals	do	Newton
Newton	do	do
Roswell	do	Cobb
Nickojack	do	do
Rockmills	do	Warren
Shoals of Ogeechee	do	do
Sweet Water	do	Campbell
Milledgeville	do	Baldwin
Planters'	do	Butts
Eatonton	do	Putnam
Troup	do	Troup
McDonough	do	Henry
High Shoals	do	Morgan
Bowen's	do	Carroll
Trion	do	Chattooga
Houston	do	Houston

In addition to the above, the requisite amount of stock has been subscribed for one factory in Macon, one in Augusta, one in Warren, one in Morgan, one in Gwinnett, and one in Monroe. Others have, no doubt, been spoken of, with which we are unacquainted, and which may be in operation in the course of the present year.

State Road—The Tunnel.

This Road, is rapidly progressing towards the Tennessee River. Georgia is to be the first Atlantic State, among many rivals, to reach by a continuous line of Railway, the navigable waters of the Tennessee River. The State road extends from Atlanta to Chattanooga on the Tennessee River, 138 miles. We are indebted to the Augusta Chronicle for the following statement, of its present condition After speaking of the difficulties encountered on the work of Tunneling, it goes on to say;

All these and many more impediments will be surmounted, and the commerce of the great agricultural State of Tennessee and not a little of that of the upper Valley of the Mississippi, will soon pass under Tunnel Mountain, and begin to pay millions of tribute to Georgia enterprise and Georgia Statesmanship. Between the Tunnel and Chattanooga there are eleven considerable bridges, seven of which are framed and ready to rise, and four in a state of forwardness. Only seven miles of the road require to have the wood work placed upon it, which is ready. A dozen teams are hauling railroad iron over the mountain, and it will soon rest on the timber prepared to receive it. This done, a locomotive will be hauled by teams over the mountain, and run from the west aperture of the Tunnel to the Tennessee river.—By the first of November the common highway travel between Knoxville and Augusta will not exceed half a mile. *We can steam five hundred miles from this city into about as fine a farming country as can be found on the continent, in the course of four months from this time.*

By going down instead of up the Tennessee river, land travel from Chattanooga to St. Louis, Chicago, Buffalo and Montreal, is only encountered at Muscle Shoals in north Alabama. The completion of the railroad Nashville will command for our benefit the trade and travel of the Cumberland river, and make it but a step to Illinois and Missouri.

The Public Works of England.

NO. II.—CANALS.

It may seem somewhat strange, that while canals of the greatest magnitude had been undertaken on the continent, England contented herself with scouring and deepening her rivers until the middle of the last century. The necessity, it must be owned, was not so stringent as in France. Yet the development of commerce in this country, long before the time we have mentioned, was sufficient to render almost necessary some better means of inland navigation than those afforded by our natural water-course. It is that the great southern towns, lying as they did either on large rivers or by the sea, did not require canals to the same extent as the cities of the northern and midland districts. As soon, therefore, as industry and enterprise had begun to assume importance in those parts of the island, the idea of forming canals to the various centres of manufactures followed as a matter of course; and in the year 1720 we find the first definite proposal for the execution of one of these important undertakings ever made in this kingdom. At the estuaries of the Aire and the Ribble, had attracted the attention of the enterprising men of Yorkshire and Lancashire. Various schemes were set on foot for carrying this project into execution, which resulted in an Act being obtained, in 1720, for the undertaking which has since ripened into the LEEDS AND LIVERPOOL CANAL.

Before however any practical progress was made towards the completion of this scheme, the Duke of BRIDGWATER commenced the execution of his own magnificent canal, under the supervision of Mr. Brindley. All other projectors now appear to have held back undone in the way of inland navigation between 1737 and 1761, during which 24 years the Bridgwater Canal was being carried through every obstacle and discouragement, by the indomitable genius of its engineer, to a triumphant completion. The history of that great work is too well known to be repeated here; but the more than doubts expressed concerning it, and the prophetic warnings of inevitable failure which were uttered on all sides during its progress, prove how little was at that time understood in this country respecting that class of undertakings; and they prove, too, how extremely slow was the first growth amongst us of that very enterprise which were afterwards destined to work out into such splendid development. The canal cost 220,000.—an enormous sum at that time, and from the purse of a single individual. It is said that the duke of Bridgwater had to live for many years upon 400l. a year, in order to pay for it. The recompense has been no less remarkable. Long since the annual income netted by means of the canal was valued at 130,000l., and notwithstanding the completion of a whole network of railways through the district it traverses, that return, it is believed, is at present considerably exceeded.

One single canal was commenced during the interval above-mentioned; and which, having been completed before the duke's, has the honour of being the first work of the kind executed in England. This was the Sankey Canal, running from the mouth of the Sankey Brook, in the Mersey, to St. Helen's. It is however little more than an improved edition of the long used-river navigation, as the brook is all along a feeder to the canal, which was by the side of it. Its length is not more than 12 miles, the fall about 78 feet, with eight single locks and two double ones, so that this first of our canal enterprise was no great work. Mr. John Eyes, of Liverpool, was the engineer.

The opening of the Bridgwater Canal gave a new impetus to this branch of enterprise. The Louth Canal got its Act in 1763, little more than a year after the opening of the Bridgwater. The greater part of this canal is on a continuous level, very little above the sea, running from the Humber, near Tetney Haven, to the River Ludd. The length is but 14 miles, and the original estimate 16,500l. It was so defectively constructed, notwithstanding the facilities of the country, that the whole affair, after 28,000l. above the estimate had been raised on loan, was assigned to a single man, Mr. Chaplin, to manage in his own way. This was the result of a too stringent economy, in starting. It took a long time to get public companies to understand their own interest. The Louth Canal is now a useful work, as far as it goes, and very beneficial to the town of Louth and the neighbourhood.

The next canal attempted—in fact, the third opened in the country—was, like the Bridgwater Canal the speculation of a single man in 1764, Sir J. H. Duval cut a canal through the solid rock, for the purpose of connecting Hartlepool Harbour, in the county of Durham with the sea. The canal is about 300 yards long. The next canal was likewise a private undertaking, projected and executed by a single man. Mr. J. Rymer made a canal from his coal and lime works to the tideway in Kedvelly Harbour. He obtained his act in 1766. Long after in 1822, a company undertook to improve and extend the canal, construct tramroads in connection with it, &c., from which resulted the present Kidvelly Canal, with its branches and adjuncts.

Thus, out of the four canals first executed, three were strictly private. In 1766 the first really important public canal was commenced, the Staffordshire and Worcestershire. This work was engineered by Brindley himself, to proceed from the severn, at Stourport, to the Trent and Mersey navigation, near Haywood, in Staffordshire. Its rise is considerable, as upon the top level it runs for 16 miles at a height of 294 feet above the severn at Stourport, and of 352 feet above low water mark at Runcorn. In length it is almost 47 miles, and it cost 112,000l. including a variety of accessory expenses in clearing away shoals from the bed of the Severn. The trade on this canal is immense.

The Trent and Mersey canal was commenced in 1766. It was suggested by the Duke of Bridgwater, with whose water communication it is at one point connected, and was executed up to the time of his death by Mr. Brindley. The original estimate was 130,000l., but it cost 334,000l. Little wonder for it comprises 127 aqueducts and culverts—one of the former over the River Dove being very extensive—91 locks, and 6 tunnels. The famous Harecastle tunnel, 2880 yards long, is situated on the summit level of this canal, whose total length is 93 miles.

The next undertaking in chronological order is one of the noblest works in the kingdom. The Forth and Clyde canal was begun in 1768. This canal, commencing in the Forth at Grangemouth harbour, passes within 2 miles of Glasgow, and thence into the Clyde, being the first realised attempt at connecting the two great seas of our island. Its length is 35 miles, and the greatest rise 155 feet. By the recent improvements it has undergone, sea-borne craft, drawing 10 feet water, are able to navigate through it, between the Irish Sea and the German Ocean. The locks are 74 feet long by 20 wide; they are 39 in number. On its course are 33 drawbridges 10 large aqueducts, and 33 smaller ones. Among its many reservoirs is one that covers 70 acres, with a depth of 22 feet at the sluice. The first idea of this undertaking dates as far back as the time of Charles II.—that monarch having taken preparatory measures for cutting a channel in the same direction for

the passage of Ships of war. The design was calculated to cost 500,000., but was far too magnificent for the impoverished exchequer of the Stuarts. In 1723 a fresh survey and estimate was made by a good engineer, Mr. Gordon, but nothing more was done until 1764, when Lord Napier employed Mr. Maskell to make a report, the result of which was, that the celebrated Smeaton was engaged to undertake the work according to the present plan. Sundry difficulties as usual, arose—the chief being the enormous enhancement of the cost. The estimates fixed this at 147,337l., but when this had been expended, and between 70,000l. and 80,000l. additional borrowed, the projectors found that only about half the length had been, though with much rapidity, completed. Disputes then occurred with the engineer, amidst which the works stood still, but being presently recommenced, the canal was brought to within 6 miles of the Clyde, when its further progress was again stayed by the want of funds. An Act, passed in 1784, alleviated this difficulty, by enabling the proprietors to borrow money from the Scotch Barons of Exchequer, out of the forfeited estates, and with this assistance the work was completed in 1790. The whole stock amounted at last to 519 840l.—considerably beyond the sum estimated by Charles II. for his ship canal, and which, if mentioned at the beginning, would have stifled the project in its birth.

As a collateral assistance to the navigation of the Forth, the Borrowstownness Canal was commenced in the same year with the Forth and Clyde. It is a level canal, about 7 miles long, and cost 21,000l., the original estimate having been 5000l. In the same year Brindley commenced the Coventry Canal, running from the Trent and Mersey to Coventry. The project appeared a failure for some time, as the requisite capital was not forthcoming. But the Trent and Mersey Company took the matter up in 1782, and the work was begun in earnest. It was finished in 1790, and forms with the Ashby-de-la-Zouch and Oxford Canals, which communicate with it, the longest canal line in England, being upwards of 70 miles, exclusive of branches. The length of the Coventry Canal is somewhat short of 38 miles, with very few locks, and a level at the highest of 81 ft. The expense was about 90,000l. Brindley's great object was to connect, by canal navigation, the ports of London, Liverpool, and Hull. The last link in this great chain was that grand undertaking, for the time, the Oxford Canal. This work was commenced in 1769, beginning from the Coventry canal at Longford, and extending to the Thames at Oxford. The whole capital authorised to be raised for this purpose was upwards of 300,000l.—the original estimate being 178,648l. The length is 80 miles, carried at the summit level at the height of 3874 feet above the level of the sea. It has three aqueducts the one at Brinklow nearly 300 feet long, and two tunnels the longest at Feeny Compton, being 3564 feet. The level, at its commencement at the Coventry Canal, is not less than 74 feet above the surface water of that channel, and rises from thence to the summit level about 75 feet. On the whole, this is one of the most important canals in the kingdom, as forming the connecting link between the inland navigation of the northern and southern districts.

Ohio and Pennsylvania Railroad.

The ceremony of breaking ground, on this great work took place on the fourth instant, at the point of crossing, on the State line.

The number of citizens of both states present was very large, and the ceremonies took place in a beautiful grove. The meeting was organized by the appointment of Hon. George Darsie, of Pennsylvania, as President; Hon. D. K. Carter, of Ohio, and Hon. R. R. Reed, of Pennsylvania, and Alfred Wright, Esq., of Ohio, Secretaries.

Addresses were delivered by Hon. George Darsie, Hon. D. K. Carter, and Solomon W. Roberts, Esq., Chief Engineer, of the Railroad Company, and the meeting resolved to aid in pressing forward the road to final completion.

The president of the company, Colonel William, Robinson, Jr., of Pittsburg, and the chief engineer then proceeded to break ground, in the presence of

the board of directors, at the exact point of crossing the line between the States of Ohio and Pennsylvania, which had been previously ascertained by an accurate survey.

We have received the speech of Mr. Roberts, the chief engineer of this road. We regret that our limits will allow us to give only brief extracts from it. It breathes a spirit in harmony with the greatness of the work; and if we may receive it as representing the feelings and intelligence of those interested in the road, it gives full assurance of success.

In speaking of the route and the means already provided, he says:

"Our line commences at the twin cities of Pittsburgh and Allegheny, the metropolis of Western Pennsylvania, to which, the magnitude and diversity of their iron manufactures have given the name of the Birmingham of America. They now have an aggregate population of about 70,000, which is rapidly increasing, and, I think, that for *untiring industry*, they are not surpassed by any other people. As yet they have no railroad, but they have adopted ours as the *Great Western railroad of Pittsburg*—and it will be the direct road to their best customers, running through the heart of the tier of States west of Pennsylvania, and connecting Pittsburg with Cleveland, Chicago, St. Louis and Cincinnati.

The city of Pittsburg has subscribed \$200,000 to the stock in its corporate capacity;—Allegheny city has subscribed an equal amount; and individual Pittsburgers about 225,000; making \$625,000 already subscribed in and about Pittsburg, which is applicable to the 48 miles of road in Pennsylvania. The amount subscribed up to this time in Ohio is about \$400,000.

From Pittsburg, our line is traced along and near the northern bank of the Ohio river to the mouth of Big Beaver, a distance of 25 miles. Thence passing thro' the boroughs of Rochester and New Brighton, and in the immediate vicinity of several other towns, containing an aggregate population of about 10,000, and admirably suited for manufacturing purposes, the railroad crosses the Big Beaver three miles and a half from its mouth, and begins to ascend to the summit with a maximum grade in no case exceeding 47 1/2 feet to the mile. The summit, at Clarke's, is about 12 miles from the mouth of the Beaver and the railroad at the summit cut will be 350 feet above high water mark in the Ohio river at that point. Our summit is much lower and more easily reached than others to the south of it.

Descending westward from the summit, with a somewhat lighter grade than that on its eastern side, we reach the valley of the Little Beaver; and thence to the State line near Palestine, we have light work, on a route which will afford convenient connection with Newcastle, and other towns to the north of us. Our curvature is moderate, and in no case with a less radius than 1000 feet. Of course we shall be able to run locomotives at high velocities, which is an essential characteristic of modern railroads.

By an elaborate series of surveys we have ascertained that the valley of the Big Beaver affords the best point of divergence for a rail-

road to leave the Ohio river, to reach the table lands of Ohio in the direction of Massillon and the west, and also for the shortest connection with Cleveland. The summit is lower, the distance shorter, and the country more favorable than on the more southerly routes. We avoid bridging the Ohio river, and by the intersection with the Cleveland railroad near Mount Union, the distance from Pittsburg to Cleveland will be about 134 miles; bringing those cities within six hours of each other.

The 23 miles of road, for which the contracts are about to be allotted, have been very carefully located; and the line has been traced upon the ground with great skill by Mr. Edward Warner, the resident engineer of the eastern division. Time has been taken to do the business thoroughly well, and so as to make sure of getting the best ground.

No money is so well expended by a railroad company, as that which is spent in obtaining the best possible final location; and no policy is so bad as that which, exemplifying the old adage, that "the most haste is the worst speed," takes its cue from the popular impatience, determines important questions without due examination, and finds, perhaps, after hundreds of thousands of dollars have been expended, that the whole of the money has been laid out in the wrong place.

We have carefully avoided this rock on which so many public works in this country have split, and yet we have made good progress. On the 11th of April, 1848, our charter was obtained in Pennsylvania—on the 11th of July our surveys were begun, and now, in less than a year from that time, we begin the construction of a railroad with a million of dollars subscribed to the stock of the company.

It is the intention of the directors to push the work westward to Mansfield, as fast as the means can be provided, and, for the means to grade and bridge the road, we look to the people of the towns and the country through which it will pass, and who will be most benefited by its completion.

The Company intends to pay for the work as it progresses; and this can only be done by promptness on the part of the Stockholders, in paying up their instalments, which is absolutely essential to the success of the enterprise. Their money will be expended in the country for labour, materials and supplies; and will be restored again to circulate in the community by which it was raised.—The work will be left at low prices and must be paid for in cash, that the labourer, who is worthy of his hire, may not be disappointed.

The route is by Beaver, Salem, Canton, Massillon, and Wooster, to Mansfield; and, on reaching Mansfield by our "back bone line" of 165 miles, we shall be enabled to connect with three lines running towards Lake Erie, and three towards Cincinnati, pouring in their tributes to our grand trunk.

At or near Mansfield we shall connect with the roads now in progress of construction to Chicago, on Lake Michigan, and St. Louis on the Mississippi; which are the proposed starting points of the vast lines projected

across the continent to the Pacific ocean.

When our road is fully completed to Mansfield, and has become fully consolidated, we expect to be able to run our first class trains through between Mansfield and Pittsburgh in but little over six hours. It is the intention of the Columbus and Pittsburgh railroad company to construct their road from Columbus by Mount Vernon in Knox county, which is the geographical centre of Ohio, and to unite it with our road west of Wooster. This will give us the best connection with Cincinnati, running through the richest part of Ohio, and with a string of towns along the whole line, the distance between Pittsburgh and Cincinnati being about 330 miles; which, with heavy iron rails and good locomotives, can readily be run in fifteen hours including all necessary stoppages.

We must run at high velocities to compete with the northern "lake short line," which is our real rival. We have the advantage of a shorter distance, a better country, a larger local population, and an abundance of bituminous and canal coal.

Twenty two years have elapsed since the first railway in Pennsylvania was constructed upon which I came down with the first train of cars.—Connected ever since with the internal improvement of my native state, it is with pride and pleasure that I take part in the commencement of a work, which will make her the great thoroughfare of the Union, and build up the future fortunes of her Eastern as well as of her Western metropolis.

But let us ever remember that it is the men that constitute the State; and that in the moral influences of internal improvements we may see their most valuable characteristics. Show me a country the internal communications of which are neglected, and you show me a country barbarous or approaching to barbarism. Show me one on the contrary, whose highways are in a state of high improvement, and there I shall see a corresponding development of commercial facilities and commercial power, and a similar extension of the means of social happiness.

Men's ignorance of each other makes them jealous of each other, as isolation produces selfishness. But as we facilitate their means of intercourse, we draw them together by ten thousand ties of intercourse and affection. Thus, as time and expense are the measure of distance, our railroads are a most powerful means of drawing together our whole population in bonds of brotherhood.

Let us then do what we can both by example and precept to aid in the construction, and prompt completion of these great national highways.

This, which is the birth day of our favourite railroad, which is to unite the eastern land of past history, with the western land of future hope, is also the birth day of our beloved country. That country whose star spangled banner, now waving before us, is the best emblem of the high and heavenly aims with which it was founded. That country which from being the last among the nations of the earth, has become in the life time of some who now hear me, the pattern of them all."

At Palestine, on Wednesday evening, the board of directors made the following allotment of the contracts:

Section No. 25—	P. Crowley & Son.
" 26—	Samuel Adams & Co.
" 27—	Flood & Lonergan.
" 28—	Thomas Scott.
" 29—	C. Cherry.
" 30—	Rhoads & Shugart.
" 31—	Blake & O'Sullivan.
" 32—	James S. Stuart.
" 33—	J. & P. Fenton.
" 34—	Groves & Co.
" 35—	Funkhouser & Co.
" 36—	Martin & Brothers.
" 37—	McKown & Mellwain.
" 38—	Henry Drum & Co.
" 39—	Young & Patton.
" 40—	Kelly & Sawkey.
" 41—	" " "
" 42—	W. W. Bell & Co.
" 43—	A. McDowell & Co.
" 44—	" " "

The whole number of proposals received was about 1000, and the work has been let at prices somewhat below the estimate of the engineer.

Section No. 25 is at Beaver Point, or Rochester; No. 28 is at New Brighton, and includes the masonry of the bridge across the Beaver; section No. 36 is at Clark's summit, and No. 44 is at the State line near Palestine.

In view of the construction of this road, the state of Pennsylvania is pushing forward her Central road with great energy to connect with the above road at Pittsburgh. The two roads united will form a remarkably direct route between the Atlantic and the west, and cannot fail to give a great increase of business to Philadelphia.

Eastern Railroad.

The annual meeting of this company took place in Boston on Monday last. We are indebted to the Boston Courier for an account of the proceedings, a part of which we present to our readers:

The report of the Directors after referring to the business generally as connected with the financial affairs of the road, states that the new branches taken together have not yielded an income equal to the dividend declared upon their capital, and that some loss has been incurred in operating the Essex Railroad. The company has every year since it has been in full operation, laid aside some of their profits to meet contingencies and depreciation. Their amount has fluctuated with different years, one year rising as high as \$36,919, and the last year being only \$19,710. Still the whole amount is now \$28,771. Besides this, a renewal fund was commenced in 1845, which has reached the amount of \$70,799, but has all been expended upon the road.

The Directors very prudently state that this large sum, which has been carried to the sinking and contingent funds—

"Is not to be considered as an addition to the value of the stock, although it is the actual surplus earnings of the road. It only stands as an equivalent to deterioration already incurred, or for contingencies to which the company is liable. To this amount may properly be added the net earnings of the teaming establishment, which amount since it was put in operation in 1844, to \$12,105 16."

The Directors take the ground, that the only just and true mode with regard to individuals, is to divide the real earnings, after making proper reservations for depreciation, &c., as to do otherwise, would be to deprive the present stockholder of his property, for the benefit of the future holder. They state that, acting on these principles, they in 1844 established the two funds, surplus and contingency to which additions have been made every year, including all the profits of their real estate and other property. The net surplus of the last financial year is \$7313 47, which, added to sinking fund, \$98,134 34, and contingent fund, \$25,123 55, deducting \$2790 60, charged to renewal account, leaves the \$128,771 70, before mentioned, as the actual funded surplus of the company.

The capital account shows the whole cost of road and property—including main road, Marblehead, Gloucester and Salisbury branches, equipment, E. Boston improvements, ferry and lands, stock in Portsmouth bridge, Grand Junction Railroad, Peaboscot Steam Navigation Company, Essex railroad &c.—total account are—Stock, \$2,150,000; State of Massachusetts, \$500,000; notes payable, \$227,745; dividend, \$106,324.

The receipts from 1,046,410 passengers have been \$388,800; from 47,552 tons of merchandise, \$61,018; mails, \$8,324; rents, \$22,271, &c. Total, \$490,066. The expenditures, including \$36,348 for interest on state script and loans, were \$218,343—making net income \$271,662.

The number of miles run was 265,440. Number of men employed, 214.

The rails, for nearly the whole distance between Boston and Salem, originally defective in form, and too light, have been replaced by new. 200 tons of iron have been purchased for the renewal of the residue, at £5 16s. in Wales, free on board. It is estimated that the cost of this renewal will be, less the value of the old iron, \$2000 per mile. About 2000 tons more will be required to complete the whole line of 40 miles.

The contract for running the Essex Railroad has ceased. The amount advanced to the Essex Railroad has been covered by their bonds, to the amount of \$65,861 33, and their notes for \$42,066 01, and there remains \$2922 44 balance on account. The whole is secured by a mortgage on the road, from the Junction to North-Danvers.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13 8-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.

2. For the construction of the connection of the Company's canal with the James River at Cartersville.— This work will consist of a timber dam across James river, the excavation of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.

3. For the construction of the connection of the Company's canal with the James river Near new Canton.— This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.

4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.

5. A wooden bridge across James river at Bent Creek 870 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23rd of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN,
Chief Engineer J. R. & K. Co.

Richmond, July 18, 1849. 3129

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New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
69 Broad street.
New York, June 1, 1849.

The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 1/2 by 1/2 Flat Bars.
25 Tons of 2 1/2 by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Separated—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Ame-
 rican iron, at their works at Jersey City, N. J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1½ to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES
 R imported to order, and constantly on hand, by
A. & G. RALSTON,
 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
 leghany county, Maryland, having recently pas-
 sed into the hands of new proprietors, are now prepar-
 ed, with increased facilities, to execute orders for any
 of the various patterns of Railroad Iron. Communi-
 cations addressed to either of the subscribers will have
 prompt attention. **J. F. WINSLOW, President**
 Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
 November 6, 1848.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by **WM. JESSOP & SONS,**
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex' Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.
 All fit to re-lay. For sale cheap by
PETTEE & MANN,
 228 South St., New York.
 May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE
 and Cables for Inclined Planes, Standing Ship
 Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the
 planes of the Portage railroad in Pennsylvania, on the
 Public Slips, on Ferries, and in Mines. The first rope
 put upon Plane No. 3, Portage railroad, has now run
 four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at
 Boonton, N. J., having been recently enlarged and put
 in good repair, the company are prepared to receive
 orders for Iron, which will be executed with dispatch;
 and they warrant their iron equal in quality and finish
 to any in this country.
 ½ Round and square, to 6 inches.
 ½ Flat " " " " " "
 Ovals, half-ovals and half-round.
 Hoop, band and scroll iron.
 Nail plates, superior charcoal Horse shoe,
 Iron, sheet and Boiler iron.
 Tire iron for locomotives.
 Railroad spikes.
 Pig iron of superior quality for chilling.
 do, for foundry purposes.
 For sale by **JOHN F. MACKIE,**
 85 & 87 Broad Street,
 Sole agent for the New Jersey Iron Co,
 June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
 contract for the delivery of English Railroad Iron
 of favorite brands, during the Spring. They also re-
 ceive orders for the importation of Pig, Bar, Sheet, etc.
 Iron. **THOMAS B. SANDS & CO.,**
 22 South William street,
 New York.
 February 3, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
 take orders for Railroad Iron to be made at their
 Phenix Iron Works, situated on the Schuylkill River,
 near this city, and at their Safe Harbor Iron Works,
 situated in Lancaster County, on the Susquehanna
 river; which two establishments are now turning out
 upwards of 1800 tons of finished rails per month.
 Companies desirous of contracting will be promptly
 supplied with rails of any required pattern, and of the
 very best quality.
REEVES, BUCK & CO.,
 45 North Water St., Philadelphia.
 March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad
 Iron at a fixed price, to be made of any required
 ordinary section, and of approved stamp.
 They are generally prepared to contract for the de-
 livery of Railroad Iron, Pig, Bar and Sheet Iron—or
 to take orders for the same—all of favorite brands, and
 on the usual terms. **ILLIUS & MAKIN,**
 41 Broad street.
 March 29, 1849. 3m.13

**American Pig, Bloom and
 Boiler Iron.**

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra* strength; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hilles* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
 American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. A-
 gents for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests,
 Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 100 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " " "
 50 " Catoctin " " "
 250 " Chikiswalungo " " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x ½ Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 64 South street
 New York.

PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.—The Albany Iron Works
 have always on hand, of their own manufacture, a
 large assortment of Railroad, Ship and Boat Spikes
 from 2 to 12 inches in length, and of any form of head
 From the excellence of the material always used in
 their manufacture, and their very general use for rail-
 roads and other purposes in this country, the manu-
 facturers have no hesitation in warranting them fully
 equal to the best spikes in market, both as to quality
 and appearance. All orders addressed to the subscrib-
 ers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
 Albany Iron and Nail Works, Troy, N. Y.
 The above Spikes may be had at *Watson's*, of
 Erastus Corning & Co Albany; Meritt & Co., New
 York; E. Pratt & Bro., of Ed. Metz, Md.

**LAP—WELDED
 WROUGHT IRON TUBES**

FOR
TUBULAR BOILERS,
 FROM 1 1-2 TO 8 INCHES DIAMETER.
 These are the ONLY Tubes of the same quality
 and manufacture as those so extensively used in
 England, Scotland, France and Germany, for Lo-
 comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
 28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick
 Hudson, from London, made by Billingsley, Mial
 & Co., and superior to anything of the kind manufac-
 tured in England. For sale by **G. T. SNOW,**
 109 Water Street, New York.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 23 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 24 feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5 1/2 Pine street, New York,

Sole Agents for the New England States and State of New York. ly14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in this order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a15 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyler & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR

Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

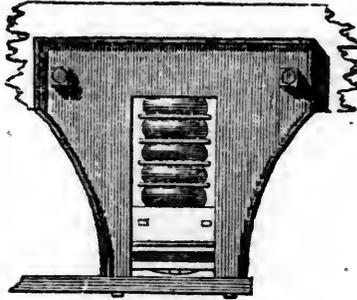
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton. May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by extraneous statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupying but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. ly25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

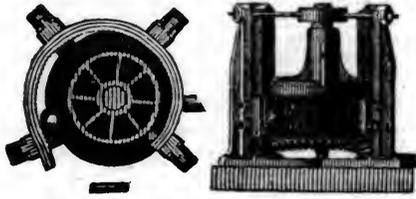
2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

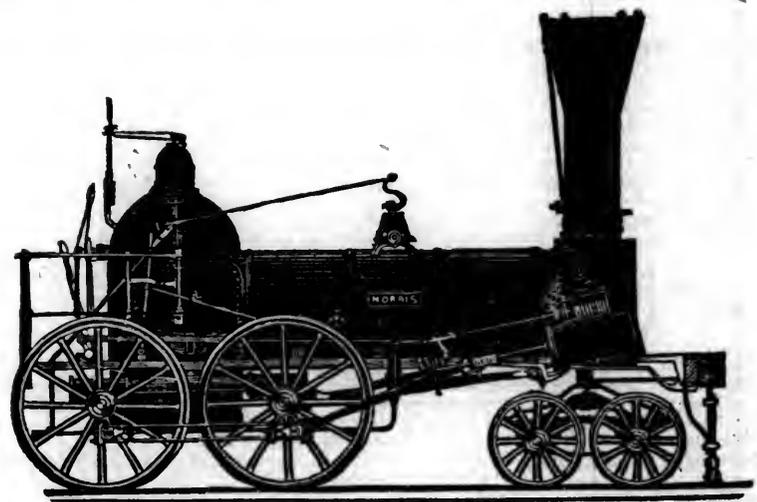
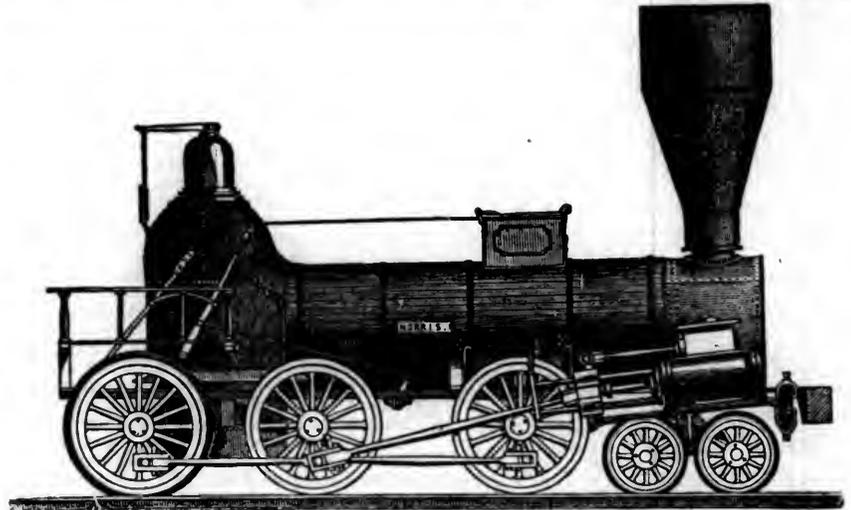
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also *Tenders, Wheels, Axles*, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving *Cotton, Woollen, or other Mills*, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.
Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York, having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc.—and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

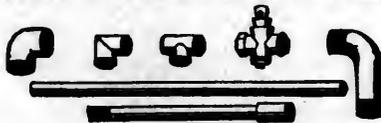
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|-------------------------|---|
| Charles Cook, | } Canal Commissioners of the State of New York. |
| Nelson J. Beach, | |
| Jacob Hinds, | } Engineer of the Bridges for the Albany Basin. |
| Willard Smith, Esq., | |
| Messrs. Stone & Harris, | } Railroad Bridge Builders, Springfield, Mass. |
| Mr. Wm. Howe, | |
| Mr. S. Whipple, | } Engineer & Bridge Builder, Utica, N. Y. |
| January 1, 1849. | |

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

FASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS.
Warehouse B. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

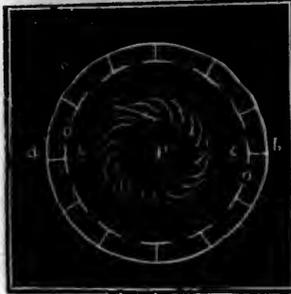
THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.
ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron. Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.
P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

FRENCH & BAIRD'S Patent Spark Arrester.



TO THOSE INTERESTED IN RAILROADS.
Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both Passenger and Freight Engines, and have been brought to such a state of perfection, that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust, they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase, or obtain further information in regard to their merits.

R. L. Stevens, president Camden and Amboy railroad company; Rich'd Peters, sup't Georgia railroad, Augusta, Ga.; G. A. Nicolls, sup't Reading railroad, Reading, Pa.; W. E. Morris, pres't Philadelphia, Germantown and Norristown railroad company, Philad.; E. B. Dudley, pres't W. and R. railroad co., Wilmington, N. C.; Col. Jas. Gadsden, pres't S. Carolina railroad co., Charleston, S. C.; W. C. Walker, agent V. and J. railroad, Vicksburg, Miss.; R. S. Van Rensselaer, sup't Hart. and N. H. railroad; W. R. McKee, sup't Lexington and Ohio railroad; T. L. Smith, sup't

N. Jersey railroad and transp. co.; J. Elliott, sup't M. P., Philadel. and Wilm. railroad; J. O. Sterns, sup't Elizabethtown and Somerville railroad; R. R. Cuyler, pres't Central railroad, Savannah, Ga.; J. D. Gray, sup't Macon, (Ga.) railroad; J. H. Cleveland, sup't of Southern railroad, Monroe, Mich.; M. F. Crittenden, sup't mo. power Central railroad, Detroit, Mich.; G. B. Fisk, pres't Long Island railroad, Brooklyn, L. I.

Orders for these chimneys and arresters, addressed to the subscribers, care of Baldwin and Whitney, of Philadelphia, will be promptly executed. The subscribers will dispose of single rights, or rights for one or more States on reasonable terms.
FRENCH & BAIRD.

Philadelphia, Pa., April 6, 1844.
The letters in the figures refer to the article given in the Journal of June, 1844.

Improvement for Lessening Friction on Railroads.

THE Improvement sometime since perfected for lessening the friction on rails, cars and engines, having been fairly tested, and found to possess all the advantages anticipated, is now presented to the notice of parties connected with railroad companies.

The article used is India-rubber, chemically combined with a metallic substance, in such a manner as to give it a remarkable degree of strength and durability, and the peculiar quality of not being affected by abrasion, or the extremes of either heat or cold.

The advantages derived from its application are briefly as follows:

- 1st, A sensible lessening of friction on the rails, and of wear and tear to the machinery of the locomotives and cars.
- 2d, A general benefit to the whole superstructure of the road, by the trains passing with an easier and less jarring action.
- 3d, A greater degree of comfort to the passengers, owing to the exemption from the usual loud and annoying rattling of the cars and engines.
- 4th, An increased speed to the trains, with the same power, arising from the uniform steadiness and decrease of friction to the rails, cars, etc.

And lastly, a material saving in the annual expenditure for repairs.

A drawing, illustrating the application of India-rubber to this purpose, will be found in the American Railroad Journal, under date of May 26, 1849.

The annexed certificate, among others in the hands of the patentee, will explain the nature of this improvement.

"J. ELNATHAN SMITH, Esq.,

Dear Sir: In relating the New Orleans and Carrollton railroad, I applied Vulcanized India-rubber in the Chairs, under the joints of the rails, of 1-10 of an inch thick, with the happiest result. The road thus laid has been in constant daily use since August last, and I cannot perceive the least deterioration. The rubber acts admirably as a wedge, in the way I use it, as well as a perfect preventive of the battering down of the ends of the rails. It also makes the road unusually smooth—for in riding over it I have not been able to detect the joints; and I have had the assertion of several observers of such matters to the same effect. We are delighted with it here, and think it a very important simple, and cheap acquisition in the permanent maintenance of railroads.

The annexed sketch of the chair I use, will give an idea how the rubber acts as a wedge. They weigh 13 lbs. and are 7 inches square—are accurately cast to one size, and when in their places, ready for the rails, I place a piece of the rubber 1-10 of an inch thick thereon. The width of the base of the rail, and the length of the chair is 3 1/2 by 7 inches. The rail is then forced in sideways, which, owing to there being but 1-16 of an inch space for 1-10 inch thickness of rubber, requires considerable pressure; consequently, the elasticity keeps the rail tight up to the clip of the chair A. I have closely observed the joints when the engine passed over them, but could not detect any depression of the rails separate from each other.

I find that the cost for the rubber will be about 7 cts. per joint, which for 21 feet rails, will be about \$35 per mile, exclusive of the patent right.

The rubber I use is of excellent quality, and made in pieces of about 20 to 30 yards long, and 25 inches wide, (1-10 of inch thick,) and weighs about 4 lbs. to the yard in length. I cut 7 pieces in the width, consequently 7 inches in length makes 7 pieces or 7 yards, weighing about 28 lbs., will give 252 pieces, or half a mile of road with 21 feet rails. I am respectfully yours,

JOHN HAMPSON,
Eng. New Orleans and Carrollton Railroad.
New Orleans, March 14, 1849.
Orders received and full information by
J. ELNATHAN SMITH, Patentee,
22 John street,
New York, May 26, 1849.

Fuller's Patent India-Rubber Springs.

THERE can now be no ground of opposition whatever to these Springs. The Commissioner of Patents has not only rejected the application for a Patent for a similar Spring, but a Patent has just been granted for an entirely new species of India Rubber, the quality of which can be surpassed by no other kind, as the experiments which have lately been publicly made, have fully proved. No extremes of heat or cold can effect it, nor will any amount of pressure permanently alter its shape. This Patent refutes the statement of the "New England Car Company" as to their sole right to use India Rubber.

The Spring (composed by alternate layers of India Rubber Discs and Metal Plates) is superior to any other form of Spring, for several reasons: It is the lightest, the most simple and most durable—there being less friction in this than in other kind; it can be regulated to any extent desired. A less quantity of Rubber is required in this form to make a good spring than in any other because each disc or ring of India Rubber is firmly supported by metal plates, and forms in itself a distinct spring—nor is any spiral spring required. The Patentee is consequently able to supply efficient springs at a less cost than any other parties can do. Purchasers are guaranteed in the use of these springs.

The New England Car Company have no right to make an India-rubber Spring with a Bolt through the centre. All companies using such a spring are liable to an action.

Fuller's spring has been used nearly four years with complete success. It is applicable equally to Passenger and Freight Cars, to Locomotives and Tenders.—Bumpers and Draw Springs are always kept on hand, which merely require screwing to a car. It has lately been applied also to several kinds of Machines.

Action will be brought against all persons infringing upon these patents.

The subscriber will show Models and Drawings of the various modes of application to Cars, Machines, Omnibuses, &c. G. M. KNEVITT, Agent.

Principal office, No. 33 Broadway, New York.
Branch office, Messrs. James Lee & Co.'s, No. 18 India Wharf, Boston.

Mr. Hale, the President of the Boston and Worcester Railroad, wrote an article concerning Fuller's

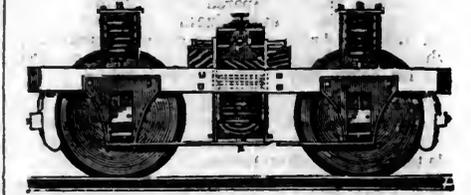
Springs. The "New England Car Company" take the liberty of publishing that article, omitting, however, a very important part; it is therefore given in full now, and the portion omitted by the New England Car Company is printed in italics, that the public may judge the manner in which this "company" pervert Mr. Hale's meaning.

[From the Boston Advertiser of the 7th June].

INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful elasticity and durability of India rubber, renders this material applicable, we are hardly aware of one, in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the Newton special train of the Boston and Worcester railroad.—It is there used not only for the springs on which the car rests, but for the springs attached to the draw bar, at each end of the car, to prevent any jar on the sudden commencement, or interruption of the motion of the car. For both these purposes it seems to be admirably adapted, and we do not learn that during that period in which it has been used, any defect has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring we have seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is also simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months in which we have seen the springs in operation, there is no apparent wear or diminution of its efficiency. Each spring is composed of several circular layers of rings of India rubber, a thin metallic plate of the same size being interposed between each of the layers. From the simplicity of its form, it cannot be expensive, and it admits of being made more or less elastic almost at pleasure. *The invention, we understand, was first patented in England, where it has been introduced into general use on several of the principal railroads, and we have no doubt it will come into very extensive use in this country. The patent for this invention, we understand, has been granted to Mr. W. C. Fuller, in England and France, and also in this country. Mr. Knevitt, of New York, is the agent for the patentee in the United States, and he has established a branch office for the supply of the article in this city, as may be learned from an advertisement in another column of this paper.*"

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE IRON RIDER BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, made under the above patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the RIDER BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE, Agent for the Company.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by IRVING VAN WART, 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Mr. Hale:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most of the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 99 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS. }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.
14tf

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by H. B. TEBBETTS,
No. 5 1/2 Pine St., New York.
May 12, 1849. 1m19

RAILROADS.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement.—1849.

Accommodation Trains daily (Sundays excepted.)
Leave Norwich at 7 a.m., and 12 m.
Leave Worcester at 10 1/2 a.m., and 4 1/2 p.m., connecting with the trains of the Boston and Worcester, Providence and Worcester, Worcester and Nashua and Western railroads.
A train leaves Pomfret at 6 a.m. for Norwich.
Leave Norwich at 5 p.m. for Pomfret.
New York & Boston Line. Railroad & Steamers. Leave New York and Boston daily, Sundays excepted, at 5 p.m.—At New York from pier No. 18, North River.—At Boston from corner Beach and Albany streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.
Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6 1/2 a.m., from Norwich at 9 1/2 a.m.
July 5, 1849. S. H. P. LEE, Jr., Sup't.

EASTERN RAILROAD, Spring and Summer Arrangement. On and after Thursday, March 15, '49.

Trains will leave Eastern Railroad Depot, Eastern Avenue, Commercial-street, Boston, daily, (Sundays excepted.)
For Lynn, 7, 10 a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Salem, 7, 10 a.m., 12, 2 1/2, 3, 4 1/2, 5 1/2, 7, p.m.
Manchester, 10 a.m., 3, 5 1/2 p.m.
Gloucester, 10 a.m., 3, 5 1/2 p.m.
Newburyport, 7 a.m., 2 1/2, 4 1/2, 7, p.m.
Portsmouth, 7 a.m., 2 1/2, 4 1/2, p.m.
Portland, Me., 7 a.m., 2 1/2, p.m.

And for Boston,
From Portland, 7 1/2 a.m., 3 p.m.
Portsmouth, 7, 9 1/2 a.m., 5 1/2 p.m.
Newburyport, 6, 7 1/2, 10 1/2 a.m., 6*, p.m.
Gloucester, 7 a.m., 2, 5 1/2 p.m.
Manchester, 7 1/2 a.m., 2 1/2, 5 1/2 p.m.,
Salem, 7, 8*, 9*, 10 1/2, 11-40*, a.m., 2 1/2, 6*, 7* p.m.
Lynn, 7 1/2, 8 1/2*, 9 1/2*, 10 1/2, 11-55*, a.m., 3, 6 1/2*, 7 1/2*, p.m.

* Or on their arrival from the East.

MARBLEHEAD BRANCH.

Trains leave
Marblehead for Salem, 6 1/2, 8 1/2, 10 1/2, 11-25, a.m.
2 1/2, 4 1/2, 5 1/2, p.m.
Salem for Marblehead, 7 1/2, 9 1/2, 10 1/2 a.m., 12 1/2, 3 1/2, 5 1/2, 6 1/2, p.m.

GLOUCESTER BRANCH.

Trains leave
Salem for Manchester at 10 1/2 a.m., 3 1/2, 6 1/2 p.m.
Salem for Gloucester at 10 1/2 a.m., 3 1/2, 6 1/2, p.m.
Trains leave
Gloucester for Salem at 7 a.m., 2, 5 1/2 p.m.
Manchester for Salem at 7 1/2 a.m., 2 1/2, 5 1/2, p.m.
Freight trains each way daily. Office 17 Merchants' Row, Boston.
Feb. 3. JOHN KINSMAN, Superintendent.

BOSTON AND MAINE RAILROAD.

Spring Arrangement, 1849.

Outward Trains from Boston
For Portland at 6 1/2 a.m. and 2 1/2 p.m.
For Rochester at 6 1/2 a.m., 2 1/2 p.m.
For Great Falls at 6 1/2 a.m., 2 1/2, 4 1/2 p.m.
For Haverhill at 6 1/2 and 12 m., 2 1/2, 4 1/2 p.m.
For Lawrence at 6 1/2, 9 a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2 p.m.
For Reading 6 1/2, 9 a.m., 12 m., 2 1/2, 4 1/2, 6, 7 1/2, 9 1/2* p.m.

Inward trains for Boston
From Portland at 7 1/2 a.m., 3 p.m.
From Rochester at 9 a.m., 4 1/2 p.m.
From Great Falls at 6 1/2, 9 1/2 a.m., 4 1/2 p.m.
From Haverhill at 7, 8 1/2 11 a.m., 3, 6 1/2 p.m.
From Lawrence at 6, 7 1/2, 8 1/2, 11 1/2 a.m., 1 1/2, 3 1/2, 7 p.m.
From Reading at 6 1/2, 7 1/2, 9 a.m., 12 m., 2, 3 1/2, 6, 7 1/2 p.m.

MEDFORD BRANCH TRAINS.
Leave Boston at 7, 9 1/2 a.m., 12 1/2, 2 1/2, 5 1/2, 6 1/2, 9 1/2* p.m.
Leave Medford at 6 1/2, 8, 10 1/2 a.m., 2, 4, 5 1/2, 6 1/2, p.m.

* On Thursdays, 2 hours; on Saturdays, 1 hour later.
CHAS. MINOT, Super't.
Boston, March 27 1849.

BOSTON & LOWELL RAILROAD.

Passenger trains run as follows, viz:
Express Trains.
Leave Boston at 7 1/2 a.m., 12 m. and 5 p.m.
Leave Lowell at 8 a.m., 12 m. and 4 55 p.m.—or on the arrival of the train from Nashua.
Accommodation Trains.
Leave Boston at 7 5 and 9 1/2 a.m., 2 1/2, 4 1/2 & 6 1/2 p.m.
Leave Lowell at 7 and 10 a.m., 2, 5 and 6 p.m.
Woburn Branch Trains.
Leave Woburn Centre at 6, 7, 9, 10 a.m., 1 1/2 and 4 1/2 p.m.
Leave Boston at 8, 11 1/2 a.m., 3, 5 1/2 and 7 p.m.
On Saturdays, the last train leaves at 8 instead of 7 p.m.
The trains from Boston at 7 1/2 a.m., and 5 p.m., and from Lowell at 4 55 p.m., do not stop at Way Stations. The trains from Lowell at 8 a.m. and from Boston and Lowell at 12 m., stop at no way station except Woburn Watering Place, and there only for Upper Railroad Passengers.
WALDO HIGGINSON,
Agent Boston and Lowell Railroad Co.
Boston March 5, 1849. 22tf.

ESSEX RAILROAD—SALEM to LAWRENCE, through Danvers, New Mills, North Danvers, Middleton, and North Andover.
On and after Thursday, March 15, 1849, trains leave daily (Sundays excepted,) Eastern Railroad Depot, Washington-st.
Salem for South Danvers at 8 a.m., 12.45, 3.45, 6.30, p.m.
Salem for North Danvers at 8 a.m., 12.45, 3.45, p.m.
Salem for Lawrence, 8 a.m., 3.45, p.m.
" North Andover 8 a.m., 3.45, p.m.
" Middleton 8 a.m., 3.45, p.m.
South Danvers for Salem at 6.45, 10.15, a.m., 2.15, 5.45, p.m.
North Danvers " 10 a.m., 2.54, p.m.
Middleton " 9.45 a.m., 5.15, p.m.
North Andover " 9.20 a.m., 5.05, p.m.
Lawrence " 9.15 a.m., 5, p.m.
JOHN KINSMAN, Superintendent.
Salem, Oct. 2, 1848.

BOSTON AND PROVIDENCE RAILROAD.

On and after MONDAY, APRIL 2d, the
Trains will run as follows:—
Steamboat Train—Leave Boston at 5 pm Leaves Providence on the arrival of the train from Stonington.
Accommodation Trains—Leave Boston at 8 a.m., and 4 pm. Leave Providence at 8 1/2 a.m., and 4, pm.
Dedham Trains—Leave Boston at 8 1/2 a.m., 12 m., 3 1/2, 6 1/2, and 10 1/2 pm. Leave Dedham at 7 1/2, a.m., 2 1/2, 5, and 8 pm.
Stoughton Trains—Leave Boston at 1 a.m., and 5 1/2 pm. Leave Stoughton at 11 1/2 a.m., and 3 1/2 pm.
Freight Trains—Leave Boston at 11 a.m., and 6 pm. Leave Providence at 4 a.m., and 7.40 a.m.
On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5 1/2, and 10 1/2 pm. Leave Dedham at 8, 10 1/2, a.m., 1 1/2, 4 1/2, and 9 pm.
WM. RAYMOND LEE, Sup't.

FITCHBURG RAILROAD.

On and after Monday, April 23d, 1849, Trains will run as follows:
Express Train.
Leaves Boston at 7 1/2 a.m.; Fitchburg at 3 55 p.m. or upon arrival of the trains from the upper roads.
Accommodation Up Trains.
For Groton, West Townsend and Fitchburg, 6 50 and 11 a.m. and 3 40 p.m.
Concord, 6 50 and 11 a.m., 3 40 and 7 p.m.
Waltham, 6 50, 7 35, 10 and 11 a.m., 1 45, 3 25, 3 40 and 7 p.m.
Fresh Pond, Mount Auburn and Watertown, 9 a.m., 12 m. and 2 20 and 7 15 p.m.
West Cambridge and Lexington, 9 30 a.m., 2 30 and 6 30 p.m.
Down Trains.
From Fitchburg, 7 50, 11 55 a.m. and 4 40 p.m.
West Townsend, 7 30, 11 55 a.m. and 4 40 p.m.
Groton; 8 20 a.m., 12 30 and 5 15 p.m.
Concord, 6 25 and 9 a.m., 1 10 and 5 55 p.m.
Waltham, 6 50, 8 15, 9 25 and 11 a.m., 1 35, 2 35, 4 30 and 6 20 p.m.
West Cambridge and Lexington, 7 and 11 15 a.m. and 4 45 p.m.
Fresh Pond, Mount Auburn and Watertown, 7 15 and 10 a.m., 1 30 and 4 30 p.m.
The 6 50 a.m. up train will not stop at Stony Brook, Lincoln and Lunenburg.
The 11 a.m. up train will not stop at Weston and West Acton.
The 3 40 p.m. up train will not stop at Charlestown Porters, West Cambridge and Lunenburg.
The morning train down will not stop at Lunenburg and Lincoln.
The evening train down will not stop at Lunenburg and Stony Brook.
S. M. FELTON, Superintendent.
Boston, April 21, 1849. 22tf

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

NEW YORK AND ERIE RAILROAD. EXTENDED TO OWEGO.

On and after the 1st June, the trains will run as follows, daily, excepting Sundays: For Passengers—Through trains will leave New York for Owego by steamboat, from the Duane-st. pier, at 7½ o'clock, A.M. and 5 o'clock, P.M. stopping at Ramapo Station, Chester, Goshen, Middletown, Otisville, Port Jervis and all the way stations west of the last-named place; and will leave Owego on and after the 4th June, at 6 A.M. and 7 P.M.; and Binghamton, on and after the 1st June, at 7 A.M. and 8 P.M. arriving in New York at 7½ P.M. and 8½ A.M. stopping at all the way stations between Owego and Port Jervis; and, east of Port Jervis, at Otisville, Middletown, Goshen, Chester, Ramapo Station and Spring Valley. Way Trains for Port Jervis and all the intermediate stations, will leave New York, by steamboat Thomas Powell, from Duane-st. pier, at 7½ A.M. and 4 P.M.; and will leave Port Jervis at 6 A.M. and 4 P.M. Milk Trains—A train leaves Otisville at 5½ A.M. arriving in New York about 11. The afternoon mtlk is taken by the train leaving Port Jervis at 4 o'clock P.M. and arriving in New York about midnight. Freight—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Owego every morning at 6 o'clock; and another will leave Port Jervis, as usual, every morning at 8 o'clock, with market freight, &c. JAS P. KIRKWOOD, Superintendent. May 30, 1849.

NEW YORK & HARLEM RAILROAD, DAILY. WINTER ARRANGEMENT.

On and after December 1st, 1848, the Cars will run as follows, until further notice:—

Trains will leave the City Hall, New York, for Harlem and Morrisiana at 7, 9, 9.30, 11, am. 12 m., 2, 4, 4.15, 5.30, pm.

Trains will leave the City Hall, New York, for Fordham and Williams' Bridge, at 7.30 and 9.30 am., 12 m., 2, 4.15, 5.30 pm.

Trains will leave the City Hall, New York, for Hunt's Bridge, Underhill's and Hart's Corners, at 9.30 am., 4.15 pm.

Trains will leave the City Hall, New York, for Tuckahoe and White Plains, at 7.30 and 9.30 am., 3 and 4.15 pm.

Trains will leave Davis' Brook, Pleasantville, Chapequa, Mount Kisko, Bedford, Mechanicsville, Purdy's and Croton Falls, at 7.30 and 9.30 am., 3 pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave Morrisiana and Harlem at 7.20, 8, 8.50, 10 am., 12m., 1.35, 3, 3.45, 5, 5.35 pm.

Fordham and Williams' Bridge at 7, 8.30, 9.50 am., 1.15, 3.25, 5.20 pm.

Hunt's Bridge at 8.20 am., 3.18 pm.

Underhill's Road at 8.10 am., 3.08 pm.

Tuckahoe at 8.05, 9.30 am., 3.05, 5 pm.

Hart's Corners at 7.55 am., 2.52 pm.

White Plains at 7.45, 9.10 am., 2.45, 4.40 pm.

Davis' Brook at 9 am., 2.35, 4.30 pm.

Pleasantville at 8.49 am., 2.20, 4.19 pm.

Mount Kisko at 8.30 am., 2, 4 pm.

Bedford at 8.25 am., 1.55, 3.55 pm.

Mechanicsville at 8.15 am., 1.45, 3.45 pm.

Purdy's at 8.05 am., 1.35, 3.35 pm.

Croton Falls, at 8 am., 1.30, 3.30 pm.

The trains for Harlem and Morrisiana leaving City Hall at 7, 9, 9.30, 11, 12, 2, 4, 4.15, 5.30, and from Morrisiana and Harlem at 7.20, 8, 10, 11, 1.35, 3, 3.45, and 5 o'clock, will land and receive passengers at 27th st., 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th, and 132d streets.

The 7.30 am., and 3 pm. Trains from New York to Croton Falls, and the 8 am. Train from Croton Falls will not stop between White Plains and New York, except at Tuckahoe, Williams' Bridge and Fordham.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 32d street.

Freight Trains leave New York at 6 am. and 1 pm.: leave Croton Falls at 7 am. and 2.30 pm., Sundays excepted.

NOTICE—On Sundays the 7 am. to Harlem and Morrisiana, returning at 8 o'clock, and the 7.30 am. to Croton Falls, returning 1.30 pm., will be omitted, and the 7 am. from Williams Bridge will leave at 7.40

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinthe, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at	- - -	7 am.
Leaving Montreal at	- - -	3 pm.
" "	- - -	10 am.
" "	- - -	6 pm.

THOMAS STEERS, Secretary. May 31, 1849.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at	- - -	9 am. and 3½ pm.
Arrive at	- - -	9 am. and 6½ pm.
Leave York at	- - -	5 am. and 3 pm.
Arrive at	- - -	12½ pm. & 8 pm.
Leave York for Columbia at	- - -	1½ pm. & 8 am.
Leave Columbia for York at	- - -	8 am. & 2 pm.

Fare to York	- - -	\$1 50
" Wrightsville	- - -	2 00
" Columbia	- - -	2 12½

Way points in proportion. PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - \$9
Or via Lancaster by railroad - 10
Through tickets to Harrisburg or Gettysburg - 3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - 5½ pm.
Returning, leaves Owing's Mills at - 7 am.
D. C. H. BORDLEY, Sup't.
31 ly Ticket Office, 63 North st.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 23
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile. Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton. F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

CINCINNATI & SANDUSKY.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A. M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P. M. Passengers take tea at Springfield, and leaves for Sandusky at 9½ P. M.

RETURNING—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2½ P. M. Stop for tea at Morrow, and arrives at Cincinnati, at 8½ P. M.

Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7½ A. M. next morning, and proceed directly on in the boats.

Passengers for Columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M., Train.

The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock, pm. Train from Cincinnati.

Fare from Cincinnati to Xenia	- - -	\$1 90
Do do Springfield	- - -	2 50
Do do Sandusky City	- - -	6 50
Do do Buffalo	- - -	10 00
Do do Columbus	- - -	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

BALTIMORE AND OHIO RAILROAD, MAIN STEM.

The Train carrying the Great Western Mail leaves Baltimore every morning at 7½, and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harper's Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harper's Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia, and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between these points \$7, and 4 cents per mile for less distances.—Fare through to Wheeling \$11, and time about 36 hours, to Pittsburgh \$10, and time about 32 hours.—Through tickets from Philadelphia to Wheeling \$13, to Pittsburgh \$12. Extra train daily, except Sundays, from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M., and 5 P. M., and 12 at night from Baltimore, and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington, and the Relay House. Fare \$1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. \$13 y 1

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement. April 1st, 1849.—Fare \$3.

Leave Philadelphia 8½ am., and 10 pm.

Leave Baltimore 9 am., and 8 pm.

Sunday—Leave Philadelphia at 10 pm.

" " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.

" " " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.

Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line.

Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm. Fare \$3.—Second class, \$2. N.B.—Extra baggage charged for. I. R. TRIMBLE, Gen. Supt.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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SECOND QUARTO SERIES, VOL. V., No. 30]

SATURDAY, JULY 28, 1849.

[WHOLE No. 692, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*

M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 54 WALL STREET, NEW YORK.

Saturday, July 28, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 386.

CONNECTICUT.

No less than ten furnaces in Litchfield county have been for the greater part, or entirely supplied with ore from the "Ore Hill" Mine of Salisbury.— Besides these ten, which are still in operation, others not now in existence, have drawn from the same source, and also one in New York State. This hill is situated about six miles west from the Housatonic railroad, and within a quarter of a mile of the New York State Line;—it covers several acres of ground, and nearly the whole surface of it has been dug over for ore. Mica and talcose slates are seen on the slope bounding the bed on the east, west and north sides. In the last direction the ground rises for a long distance, and in the alternating beds of slates a bed of limestone has been opened at several points along the NW. and SE. direction, whose dip towards the SW. must carry it near the ore bed.

The bed itself is a vast deposit of ochres, clays and hematite. The ore lies in irregular shaped masses in the other materials, tending, however, to the form of strata conformable to the adjacent rocks. The whole hill has been more or less dug over, and

where the ore was most abundant and of the best quality, there the most extensive excavations have been made. It is formed of several varieties, much of it of very choice character, admirably adapted for the manufacture of forge pig iron of the best quality. The Salisbury iron has long been famous for its excellent character for forge iron, and even now its reputation for making the most malleable and toughest bar iron has never been surpassed by iron made from any other mines. This is no doubt in part owing to the care with which the ores are selected. The mine is owned by a company of individuals, who sell the ores to the furnaces at a stipulated price, which is the same whatever ore is taken; and as the purchaser selects his own, of course none but the best goes from the mine. This price was originally forty-two cents per ton in the mine; it has gone on increasing, till now the duty is the extraordinary sum of one dollar and twenty-five cents. For this price the purchaser has the choice of the mine, and the consequence is that a great deal of good ore is rejected, and only that taken which is known to be of the very best quality.— The expense of mining is of course greater here than at other mines of similar character in consequence of this system; it is rated at one dollar and three-quarters per ton. For the same reason, too, the mine has been nearly exhausted, at least above convenient drainage, and a long adit of several hundred yards was commenced in 1847 in the meadow to the south, to drain some fifty feet or so lower than the old workings. This will be of no small consequence in diminishing the expenses of mining, being laid out in the most thorough manner; and even when steam engines may hereafter be put on to work the mine still deeper, this adit will always prove a judicious expenditure in diminishing the height of the water. The best of the Salisbury ore is fibrous and massive hematite of a reddish color, frequently a glossy black on the outside, some specimens mamillary and botryoidal, and some with long pendant stalactites of oxide of iron of great lustre and beauty. These forms appear to be due to the action of water percolating through the seams, carrying the oxide of iron in solution from one place and depositing it in another. In the northeastern part of the mine are large heaps of a dark colored ore which seem to be rejected, that much resemble the highly prized carbonate of iron, though of a different color from that found in the Stockbridge bed in Massachusetts. It is very probable much of

the ore now neglected at this mine may hereafter be found valuable.

It is estimated that for the last fifty years, from 250,000 to 300,000 tons of ore have been taken from the ore hill—at least 5000 tons per annum, thus affording a revenue at the present duty, from a few acres of ground, of over \$6,000. No mine of gold or silver or copper ever wrought in the United States has yielded such a result. The best quality of the Salisbury iron is made with cold blast, and its actual cost delivered on the railroad averages no less than \$30 to the ton. The furnaces running with hot blast consume about fifty bushels less to the ton of iron, and make nearly double as much iron in the same time. The cold blast iron is unsurpassed for the manufacture of chain cables, gun barrels, tires for driving wheels, and other articles requiring great strength.

Chalfield's ore bed, a quarter of a mile southeast from the ore hill, seems to be a continuation of the same deposit, being on the line of the strike of the strata, and affording ore of similar character.— The quantity, however, does not appear to be so great, though several thousand tons have been extracted. It occurs in mica slate like the ore hill bed. It is a valuable deposit.

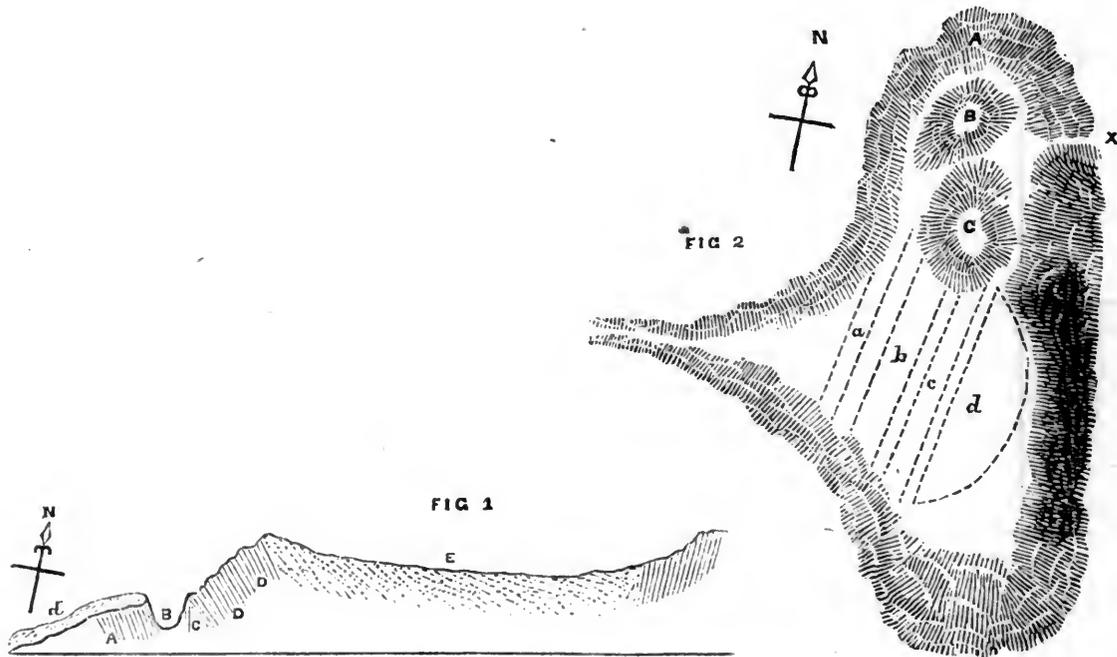
A bed of great promise has lately been opened one mile to the northwest of the Salisbury bed in the town of Northeast in Dutchess County, N. York. This too may possibly be a continuation of the same deposit—I shall describe it when treating of the furnaces in their range in the State of New York. This too is a bed of great importance.

There are other beds of minor importance in Salisbury, which turn out at times a considerable amount of ore. Davis' bed is the only one that will require particular notice. This is two miles and a half to the northeast of the Salisbury bed. The ore is of good quality, but expensive to raise from the low situation of the mine. It is principally "wash ore," much mixed with clay.

The ten furnaces that are principally dependent upon the Salisbury ore bed are four in Salisbury; two in North Canaan; two in South Canaan; and two in Cornwall, one of the last named, however, having recently passed into the hands of C. C. Alger, Esq., of Stockbridge, is now supplied with ore from the bed belonging to the Stockbridge Iron Co.

I will give a short description of the character of each of these furnaces and their operations. None of these are near the ore bed, but are built where

Cross Section of the Western Slope of the Kent Ore-bed.



there is convenient water power and the most accessible supplies of fuel. All are along the line of the Housatonic valley within a few miles of the Housatonic railroad.

Chapinville Furnace, situated seven miles to the northeast of the ore bed, was built in 1827. It is 28 feet high and 7 feet across the boshes. Driven by water power. Ore costs—dirty, \$1 25; mining, \$1 75, transportation, \$1—\$4 per ton; charcoal \$6 50 per 100 bushels. Makes for about eight months in the year three and a quarter tons per day, or 800 tons per annum. Cost of transportation to the railroad is one dollar per ton; three dollars more to New York. Making cold blast iron, the consumption of charcoal is estimated at no less than 200 bushels to the ton.

Joyer's Furnace, is the same distance to the north of the ore bed, was built in 1847, is only 24 feet high, and makes three tons per day. It is cold blast and water power. Cost of materials and transportation hardly varies from that of the Chapinville Furnace.

Mt. Rigu Furnace, four miles north from the ore bed, has been built nearly forty years, is 28 ft high, cold blast and is run by water power. Salisbury ore costs \$3 84, charcoal \$6; makes 3 tons of iron a day, other expenses like those above. Is in blast only about six months in the year.

Limerock Furnace, five miles from the ore bed, is about 20 years old; cold blast; water power; ore costs \$4; charcoal \$6 50; yields three tons.

The two furnaces in North Canaan are *Adams' Furnace* and *Beckley's Furnace*. They are eleven miles from the ore bed. The former is about twelve years old, and cold blast; yields 3½ tons per day;—the latter is just built, and with hot air pipes. The cost of the Salisbury ore at these furnaces is \$4 75 per ton; charcoal \$6; both water power.

The two furnaces in South Canaan are *Church & Scoville's Furnace*, and one belonging to *Hunt, Ly-*

man & Co. These are about the same distance from the Salisbury ore bed as the North Canaan Furnaces. The expenses of ore and coal are the same. The former furnace is four years old; cold blast; makes 3½ tons, and is three miles from the Canaan Falls railroad depot. The latter was built in 1848, and is five miles from the same depot. It is 32 feet high with hot air pipes.

Cornwall Iron Co. Furnace was built about 14 years since; is only a quarter of a mile from the railroad; it makes about three tons of cold blast iron a day at a cost for material varying little from those above. To both the Cornwall Furnaces charcoal is sometimes offered at 5 instead of \$6 the hundred bushels.

Cornwall Bridge Furnace was run until the year 1847 at a similar expense for materials with the furnace last described. It was then purchased by C. C. Alger, Esq., of Massachusetts, and supplied with ore from the bed in West Stockbridge, a distance of forty miles at a cost of \$3 per ton.—The furnace is half a mile from the railroad; makes cold blast iron, and yields 6 tons per day.

In Sharon, the next town south of Salisbury, on the west side of Housatonic river, are two furnaces and an ore bed of some importance, called the Indian Pond ore bed. This bed is thus described by Prof. Chas. V. Shepard in his Report on the Geological Survey of Connecticut, 1837.

"The Indian Pond ore bed is situated on the east side of Indian Pond, and directly at the base of a high ridge of mica slate. Its distance from the pond is about sixty rods, and its elevation above it forty or fifty feet. The ore forms a distinctly stratified mass, whose layers correspond in direction and dip to those of the adjoining rock, inclining 45° to the east. A considerable accumulation of diluvium is piled against the bed. The ore is less abundant than at Salisbury. Frequently the strata is too lean to justify explorations, in which case the

workmen omit to remove such portions and follow the ore in directions where it is richer. About two thousand tons of ore are annually raised from this deposit at an expense of one dollar and a half per ton.—The iron yielded by this ore is less malleable than that of Salisbury, and is principally used for castings." Prof. W. W. Mather states that limestone forms the west and mica slate the east boundary of this bed.

The Sharon Valley Furnace, built some twenty years, is principally supplied from this bed, the furnace company owning the mine. The distance from the mine to the furnace is two miles and a half. The American ore bed in New York State is about ten miles distant, and some ore is hauled from this to mix with the Indian Pond ore. The expense of the ores is estimated at \$2 25 per ton at the furnace. Charcoal costs about \$7 50 per hundred bushels. This furnace was run with cold blast until about three years since when hot air pipes were put in. It is 35 feet high; water power. Iron made is suitable for castings but not for forge iron.

Weed's Furnace, in Sharon, is a small furnace only about twenty feet high, built in 1845. Its proportions and construction are not good, and it has not been successful. It has been supplied with ore from the Amenia and Northeast ore beds, both over the line in New York. The cost of the ore is estimated at \$2 50 per ton; charcoal \$7 50.

In the town of Kent, on the east side of the Housatonic, are three furnaces and the Kent ore bed. This mine is five miles southeast from the village, four miles east from the Housatonic river and two miles from the railroad. Not having visited it myself, I am indebted to Prof. Shepard's Report, already cited, for the following description and plans of the mine:

"It is situated on the western declivity of a low mountain near its base. In length the mountain is about three miles, and in height two hundred feet.

Its length corresponds with the edge of stratification in the vicinity, which do not differ essentially from north by east. Annexed is a cross section of the western slope of the elevation, passing directly across the ore bed.

A. (Fig. 1.) decomposed micaceous gneiss, called by the workmen "grey fuller's earth." Its dip is between 60° and 80° east. It is covered with a thin covering of diluvium. B. Ore bed. This mine is at present (1837) in such an uncleared and neglected condition as completely to conceal the position of the bed. Considerable information, however, was derived from several intelligent miners, who were formerly engaged in its exploration.— From their statements it appears that the ore is situated in a number of nearly parallel veins (beds,) whose direction and dip are nearly coincident with that of the grey fuller's earth, A. Between the beds several feet of grey fuller's earth are interposed.— They state moreover that the fuller's earth, where in contact with the bed of ore, possesses an indurated texture, and has consequently received from them the name of "shell." A ground plan view will render intelligible the direction of these beds, as well as the general figure of the pit, which has been formed in excavating the mine. See fig. 2. A (fig. 2.) Surrounding banks of loose earth, clay and rock. B. and C. Oval elevations or cones of loose earthy materials. D. Bed of stream (generally dry,) over which the water flows that carries out the earth and stone from the bed, and in which the ore is washed. The water employed for this purpose is collected in a depression, E, (fig. 1,) just above the top of the bed, and is let on at X, where a dam and gate are situated. It is only during a short season in the spring and autumn, that they have the command of water adequate to the operation. During a full supply the mine is inundated forty or fifty times in a day. By this means the loose materials, including masses of rock above a foot in diameter are swept through the whole length of the drain for a distance of thirty rods into the low ground.— The height of the inclined plane forming the bed of the stream is about sixty feet. a. Drain vein. b. Chocolate vein. c. Blue Swamp vein. d. Anvil ledge. The chocolate vein was worked from 70 to 100 feet in length, and about twelve in width. The drain vein had nearly the same width. At present all the beds indicated in the sketch with the exception of the anvil ledge are covered up by the rubbish which has washed down from the banks. Indeed, the working at this place has almost wholly ceased from the depth at which the ore lies, and the danger apprehended from the sliding down of the eastern wall, which overlies the bed in a frightful manner, presenting a nearly vertical front of loose shelly materials, sixty or seventy feet in height. Several slips in this great bank have actually taken place, during which at least a quarter of an acre of rock and earth have been in motion at once, and have given rise to large sinks and chasms on the surface. But one hundred and fifty tons of ore were raised at this place last year; and this was obtained by picking up pieces that had washed out of the banks, and by partial adits, called "burrows" by the workmen, carried horizontally into the banks of grey fuller's earth in the direction of the beds. In farther explanation of the bed, the following references to fig. 1 are added:

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Much of the ore afforded by the anvil ledge, much of which is still accessible, is the variety called by the furnace men "frost ore." It is an iron-breccid, consisting of fragments of quartz and ferruginous jasper, cemented together by limonite, (hydrate of iron or hematite) "the aggregate being filled with cavities lined more or less with minute crystals of transparent quartz. Several unsuccessful attempts have been made to reduce it in furnaces, but it has only yielded an inferior kind of cast iron. A different mode of treatment in respect to the kind and quantity of flux might be attended with better results. The subject justly merits attention, as thousands of tons of this variety might be raised at a trifling expense. This last described can only be wrought by mixing in small proportion with the least siliceous hematites, and the flux of these must contain but little silex. These highly siliceous mixtures can seldom be managed without great trouble in the blast furnace, and when other ores can be obtained, it is always best to reject them.— Since the above extract was published the Kent ore bed has turned out again large supplies of good hematite, which is used by two of the Kent furnaces and by the Washington Furnace in New Milford. The duty charged is half a dollar per ton.

The Kent ore bed appears to have been worked at quite a remote period. The ore was formerly packed by Indians on their backs from the mine to the various forges in leathern bags. About twenty years since there were sixteen forges in Kent, and the neighboring towns, which worked this ore; at present there are only two, the process of smelting in blast furnaces being found so much more economical than the conversion on the small scale of the ore to malleable iron in the forge fire. Magnetic iron ore from a vein in the town of Southeast, Putnam County, New York, was formerly brought a distance of twenty or thirty miles to mix with the Kent ore. H.

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Copper Ores of Lake Superior.

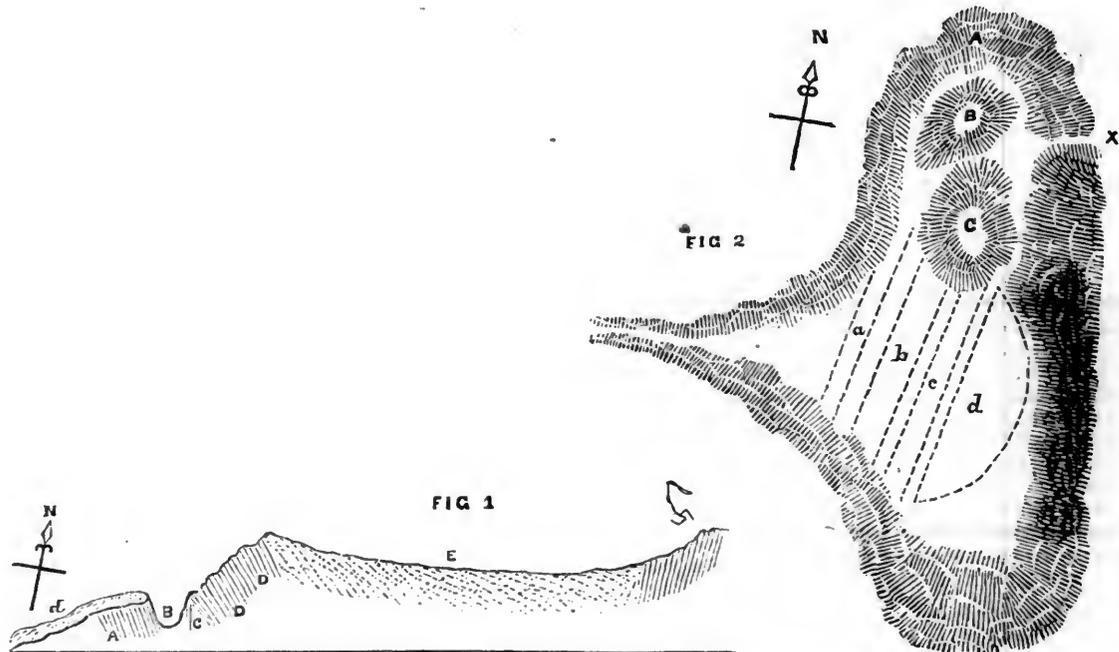
Continued from page 434.

NORTH AMERICAN MINE.

The range of trap-rock, in which lies the Cliff mine, described in the last number of the Journal, continues with great regularity its course towards the southwest, only interrupted here and there by a few transverse breaks and depressions in which are generally found veins containing copper. But being exposed in the greenstone trap only, their value in the amygdaloid beneath, where alone they will contain workable quantities of metal, remains in most instances undetermined. The North American mining tract is along a portion of this ridge, half a mile southwest from the Cliff mine, and by the road three and a half miles from the lake. A remarkable break here traverses the ridge, and a number of laumontite and quartz veins were discovered in the southeast face of the cliff several rods north east of it. These veins were never very promising, as to size and regularity, and would hardly have warranted exploration except for their proximity to the Cliff mine, and the general resemblance in position and composition to the vein as originally found there, which subsequently proved so productive. For two years from the 11th December, 1815, mining operations were prosecuted on them with little success; and the probability is the location would have been abandoned, but for the determined resolution and perseverance of the agent of the company, John Bacon, Esq. In the summer of 1847 some bowlders of copper, found in the large gap, called attention to this point; and explorations were here commenced in search of the vein. In the centre of the break shafts and underground levels failed to strike it: but it was finally found clinging to the amygdaloid high up in the eastern wall of the break. Here, near the surface, is proved to be so rich in copper, that the company were greatly encouraged to prosecute the work; but a shaft carried down in the vein passed almost directly into a barren portion of it; and then leaving the vein nothing more was known of it, until a cross cut at the depth of 95 feet, opened it again in December, 1847, where it was rich in stamp-work. From that time operations have been directed to proving the vein in depth and length, and opening it so that a large force can be put to work stopping and removing ore from many points. Two shafts have been sunk—one 215 feet deep, and the other 155 feet, and levels have been extended at the depths of 95 feet, and 215 feet—the upper two 225 feet in length on the lode. The bottom level at present is over 70 feet long, and two parties of miners are driving it north and south. An adit level carries off the water 35 feet below the surface. The quantity of this is not great except near the surface. One horse-whim, working two hours in the twenty-four, raises it all to the level.

The lode consists of the minerals, quartz, laumontite, chlorite, calc spar and prehnite with copper in coarse grains, strings and lumps intermixed, forming in many places a rich stamp work; in others the gangue is barren of copper and the vein may be worked many yards without producing anything of value. The rich spots and the barren spots seem to alternate in a stratiform arrangement, their underlay or dip being the same as that of the amygdaloid, which the vein traverses. The same peculiarity was observed at the Cliff mine. Understanding this, the barren portions, when proved by working around them, need never be stopped out. Masses of pure copper are found standing edgewise in the vein; their greatest weight does not exceed two or three tons. About 15 tons in all of these masses have

Cross Section of the Western Slope of the Kent Ore-bed.



there is convenient water power and the most accessible supplies of fuel. All are along the line of the Housatonic valley within a few miles of the Housatonic railroad.

Chapinville Furnace, situated seven miles to the northeast of the ore bed, was built in 1827. It is 28 feet high and 7 feet across the boshes. Driven by water power. Ore costs—duty, \$1.25; mining, \$1.75, transportation, \$1-\$4 per ton; charcoal \$6.50 per 100 bushels. Makes for about eight months in the year three and a quarter tons per day, or 800 tons per annum. Cost of transportation to the railroad is one dollar per ton; three dollars more to New York. Making cold blast iron, the consumption of charcoal is estimated at no less than 200 bushels to the ton.

Joyer's Furnace, is the same distance to the north of the ore bed, was built in 1847, is only 24 feet high, and makes three tons per day. It is cold blast and water power. Cost of materials and transportation hardly varies from that of the Chapinville Furnace.

Mt. Rigu Furnace, four miles north from the ore bed, has been built nearly forty years, is 28 ft high, cold blast and is run by water power. Salisbury ore costs \$3.84, charcoal \$6; makes 3 tons of iron a day, other expenses like those above. Is in blast only about six months in the year.

Limerock Furnace, five miles from the ore bed, is about 20 years old; cold blast; water power; ore costs \$4; charcoal \$6.50; yields three tons.

The two furnaces in North Canaan are *Adams' Furnace* and *Beckley's Furnace*. They are eleven miles from the ore bed. The former is about twelve years old, and cold blast; yields 3½ tons per day;—the latter is just built, and with hot air pipes. The cost of the Salisbury ore at these furnaces is \$4.75 per ton; charcoal \$6; both water power.

The two furnaces in South Canaan are *Church & Scoville's Furnace*, and one belonging to *Hunt, Ly-*

man & Co. These are about the same distance from the Salisbury ore bed as the North Canaan Furnaces. The expenses of ore and coal are the same. The former furnace is four years old; cold blast; makes 3½ tons, and is three miles from the Canaan Falls railroad depot. The latter was built in 1848, and is five miles from the same depot. It is 32 feet high with hot air pipes.

Cornwall Iron Co. Furnace was built about 14 years since; is only a quarter of a mile from the railroad; it makes about three tons of cold blast iron a day at a cost for material varying little from those above. To both the Cornwall Furnaces charcoal is sometimes offered at 5 instead of \$6 the hundred bushels.

Cornwall Bridge Furnace was run until the year 1847 at a similar expense for materials with the furnace last described. It was then purchased by C. C. Alger, Esq., of Massachusetts, and supplied with ore from the bed in West Stockbridge, a distance of forty miles at a cost of \$3 per ton.—The furnace is half a mile from the railroad; makes cold blast iron, and yields 6 tons per day.

In *Sharon*, the next town south of Salisbury, on the west side of Housatonic river, are two furnaces and an ore bed of some importance, called the Indian Pond ore bed. This bed is thus described by Prof. Chas. V. Shepard in his Report on the Geological Survey of Connecticut, 1837.

"The Indian Pond ore bed is situated on the east side of Indian Pond, and directly at the base of a high ridge of mica slate. Its distance from the pond is about sixty rods, and its elevation above it forty or fifty feet. The ore forms a distinctly stratified mass, whose layers correspond in direction and dip to those of the adjoining rock, inclining 45° to the east. A considerable accumulation of diluvium is piled against the bed. The ore is less abundant than at Salisbury. Frequently the strata is too lean to justify explorations, in which case the

workmen omit to remove such portions and follow the ore in directions where it is richer. About two thousand tons of ore are annually raised from this deposit at an expense of one dollar and a half per ton. The iron yielded by this ore is less malleable than that of Salisbury, and is principally used for castings." Prof. W. W. Mather states that limestone forms the west and mica slate the east boundary of this bed.

The Sharon Valley Furnace, built some twenty years, is principally supplied from this bed, the furnace company owning the mine. The distance from the mine to the furnace is two miles and a half. The American ore bed in New York State is about ten miles distant, and some ore is hauled from this to mix with the Indian Pond ore. The expense of the ores is estimated at \$2.25 per ton at the furnace. Charcoal costs about \$7.50 per hundred bushels. This furnace was run with cold blast until about three years since when hot air pipes were put in. It is 35 feet high; water power. Iron made is suitable for castings but not for forge iron.

Weed's Furnace, in Sharon, is a small furnace only about twenty feet high, built in 1845. Its proportions and construction are not good, and it has not been successful. It has been supplied with ore from the *Amenia* and *Northeast* ore beds, both over the line in New York. The cost of the ore is estimated at \$2.50 per ton; charcoal \$7.50.

In the town of *Kent*, on the east side of the Housatonic, are three furnaces and the *Kent ore bed*. This mine is five miles southeast from the village, four miles east from the Housatonic river and two miles from the railroad. Not having visited it myself, I am indebted to Prof. Shepard's Report, already cited, for the following description and plans of the mine:

"It is situated on the western declivity of a low mountain near its base. In length the mountain is about three miles, and in height two hundred feet.

Its length corresponds with the edge of stratification in the vicinity, which do not differ essentially from north by east. Annexed is a cross section of the western slope of the elevation, passing directly across the ore bed.

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Copper Ores of Lake Superior.

Continued from page 434.

NORTH AMERICAN MINE.

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been extracted. The average thickness of this lode is not more than one foot, and though sometimes thinning out to less than half this width, it is never found, I believe, of more than two feet thickness.—It has furnished of stamp work about 700 tons, of quality not inferior to the stamp work of the Cliff mine, and the supply is now rapidly increasing—there being 24 miners below engaged in "stopping backs," including those driving the bottom levels.

A steam engine has been put up this summer to drive the stamps. There are eight of these, each weighing—the heads 350 lbs., the shafts and iron work about 150 lbs.; their lift 12 inches. It is estimated they will stamp about ten tons of stone a day. The machinery is of the most efficient character and well arranged.

The expenditures up to the present time have been about \$45,000; of which about \$10,000 were for exploring at various points before striking the main lode. The remainder has been for surface work, as building houses and roads, and clearing land, for mining, and for the purchase of the engine and 800 acres of land.

The mine is properly regarded now as having assumed a decided character, and must well reward the outlay made upon it. Its success, for which the whole credit is due to the perseverance of Mr. Bacon, is of no small consequence to the whole region—for with the most insignificant show originally to encourage mining operations, the veins of quartz, laumontite, and chlorite in the greenstone being proved to lead to rich veins in the amygdaloid, precisely as at the Cliff mine, a character is given to a multitude of other points presenting similar features scattered throughout the country, which others will hereafter take up and prosecute with confidence and success.

ALBION AND MEDORA.

Next to the North American Mine, a mile further on, on the same ridge, are the veins of the Albion and Medora companies. These companies have now been consolidated into one. Operations were commenced at this tract about the same time as on the North American; and during the summer of 1846 I had an opportunity of witnessing their progress for some time. The outward show of their veins was similar to that of the Cliff and N. A. mines, and was generally regarded much more promising than that of the latter. In position on the ridge, and in mineral composition there was no essential difference in the veins of all these mines as seen in the greenstone trap; excepting only on the top of the ridge, the vein called the Medora afforded solid sheets of a metallic substance, which I found to be composed of copper and arsenic, associated with a small portion of sulphur, perhaps what is described under the name of "white copper."—It is the only substance of the kind I have seen in the country. At the base of the cliff the feeders, struck in search of the vein, contain copper but none of this compound. The amygdaloid here lies much deeper than on the exterior of the ridge eastward. The veins have never yet been proved in this rock. To do this the Albion vein requires an expenditure of from 1,000 to \$2,000 in running up an adit from the swamp to the rock—a distance of 480 feet; from the east of which, 72 feet below the surface, as proved by some experimental workings, a shaft may be carried down on the vein in the amygdaloid. The promise of the vein richly warrants this expenditure. So of the Medora, which may be proved with considerably less expense; the adit being already completed. At present nothing is doing at these mines. A quarter section of land

(160 acres) is secured by purchase of the government at the maximum price of \$5 per acre—this tract covers all the veins.

On the exterior of this range of trap to the east of the Cliff mine are found the mines of the late *Lake Superior Company* of Boston, now the *Phoenix Company*, on Eagle river, the *Copper Falls Company*, the *North Western Company*, and the *North West Mining Company*—a description of which will be given in the order in which they are named. H.

Crevasse.

The occurrence of a new crevasse at Point Coupee on the Mississippi, leads us to offer some remarks on the subject of crevasse generally. The volume of the Mississippi is so immense that people are apt to look on the task of filling up breaches in its embankments as almost hopeless: we may therefore give more correct views on the subject by showing the actual amount of force to be overcome in the case.

The depth of the Mississippi has nothing to do with the amount of rush through a crevasse in its levee: neither indeed has the width of that river.—The velocity of the water passing through the breach is also calculated to give an erroneous idea of the power exerted. The impact of the stream on any surface that may be opposed to it directly, is simply the weight of a column of water having that surface for its base and the mean height of the head corresponding to the velocity for its altitude.—The proof of this is clear enough: the pressure of that altitude had met from the levee previous to the breach an equivalent of resistance; and this resistance being simply that necessary to hold in *equalibrio* a certain tendency to motion, the motion resulting from the withdrawal of the resistance is therefore neither more or less than this pressure. Now as water presses equally in every direction, one foot exerting laterally a force equal to a column six inches high, two feet a force equal to a column twelve inches high, and so on in arithmetical progression, the total impact on a dam resisting the stream through a crevasse is equal to the weight of a column of water having that dam for its base and half the depth of the water at the face of the dam for its altitude.

The following will, we should think, be found an effective means of stopping crevasse:—First where the depth as in the existing crevasse at Point Coupee is not greater than five feet, let two ringbolts of best wrought iron be secured by a nut and washer to the face of a pile planed and straightened on one of its sides; these ringbolts to be so placed that when the pile shall have been driven to the depth required, the lower bolt will have reached the bottom of the channel while the upper shall remain some twelve inches above the water. Forge a collar and screw-thread on one end of a wrought iron jagged bar of such a length that when the collar is screwed home to the under side of the upper ringbolt, the other end of the bar shall be a few inches below the lower ringbolt. One bar of this description is to be bound on firmly to each side of a sheet of strong canvass so that the top of the canvass fits up to the collar; and, being bound along the bar to within a few inches of the point, the tail of the canvass, extending for five or six feet beyond this, is to be loaded with narrow strips of lead sewn on to the canvass vertically. This tail will lie closely to the indentations of the bottom. A pile driver may then be brought along side; and (the bars of the sheeting being fastened into the ringbolts by the collar and screw-nut,) the piles may be driven into position.—Another sheet may then be sunk on another pair of

piles, the inside pile of the last sheet making a close joint with the outside pile of the first; and so on pair after pair until the chasm be closed up. In order to save the sides of the crevasse, it would be well to commence the operation by spreading canvass or a few sheet piles around them: the canvass of the dam should always be sunk width for width at each side, so that the closing width shall be in the middle.

Secondly, Where the depth is more than five feet we would suggest the following: Take two piles, (straightened as in the above case, or if necessary ploughed and tongued on the edges,) and mount on each an iron bar with ringbolts, as before described, except that in this case the necks of the ringbolts must project from the pile a sufficient length to leave a clear space between the pile and the bar of from three to six or eight inches, as may be required.—In this space fit over two piles a timber sheeting of the necessary scantling, leaving it room vertically to play without straining with any inequality in the driving of the piles. When the piles have been driven into position, close up the joints of the sheeting by driving wedges between the ringbolts and the upper batten of the sheeting. It would be well to attach to the lower timber of the sheeting a tail of canvass loaded as in the former instance, and if found practicable light sheeting piles of some three feet long. In this last case the lower timber must be secured to the piles in a manner to resist upward pressure. If there should be any tendency in the sheeting to slip endwise out of its place, it had better be held by wooden kees resting against the insides of the piles. Piles sheeted in this way to the required depth may be sunk pair after pair at each side until the chasm is closed; always taking care that the sides of the crevasse for some six or eight feet at each side of the dam be protected by sheeting piles. It may be found necessary to sheet the piles on the inside as well as the outside. For this purpose a number of wrought iron screw-bolts should be fitted into each pile, the head resting on a wrought iron plate at the outside and the screw point projecting beyond the inside for the necessary length. When the piles have been driven home, sheeting may be secured to them on the inside, always placing a washer under the nut. As each tier of inside sheeting is bolted on, the bottom being cleared out for ten or twelve inches, tough clay well puddled, is to be beaten in between the sheetings. In greater depths than nine or ten feet, an additional row of piles would be necessary, these to be driven first and secured by waling pieces to the outside row.

When the dam is made across the chasm the embankment is to be carried up in the usual way, and proportioned in the ratio of the force exerted against its several parts. The minimum force is at the water line, the increase going on in an arithmetical progression until the force becomes a maximum at the bottom. This defines the inside slope of an embankment resting against piles as a slope of one to one. The specific gravity of earthwork may be taken at one-third more than that of water; and therefore this embankment is more than an equivalent for the resistance of the water at its face; but the difficulty of making it perfectly water-tight coupled with that property of water by which a vertical film, ever so thin, insinuating itself into the body of the embankment, exerts the same pressure on the portion within it as the total pressure on the face of the dam, requires that a wall of tough clay, free from vegetable matter, well rammed and thoroughly puddled, be carried up from the foundation

to the top of the dam for at least two or three feet thick. The inner slope of the dam, determined by of course the angle of friction of the material employed will contain within it the theoretical slope of one to one, and may be made in practice to commence at such a distance inside the puddling as to offer a resistance equal to whatever multiple of the pressure of the water may be considered without the limits of safety in each particular case.

In proportioning the materials for the measures proposed above, it is necessary to add only an illustration of the principles already pointed out for the calculation of the pressures exacted: and when these pressures are ascertained in any case, the scantling may be fixed by the usual formulae for the strength of wrought iron and of timber. As to the strength of canvass we can say nothing further than that we have ourselves used it with great advantage in a longitudinal dam while excavating a shoal under 4½ feet running water. This was probably the first use of canvass in a tank: we are not aware of any other facts as to the strength of that material. Two piles sheeted across and seven feet from out to out when driven, will sustain in a current due to an head of ten feet a pressure equal to 9½ tons nearly: 7 multiplied by 10 gives a base of 70 feet; and 5 ft. (half the depth) being the height of the column acting on this base gives a body of 350 cubic feet; and this body taken at 62½ lbs. to the cubic foot is equal to a pressure or weight of 21,875 lbs. The pressure on the foot next the bottom is as follows: a column of 9½ feet on a base (7 by 1) of 7 square feet giving 66½ cube feet, shows a total loading of 4156 lbs. or less than two tons. M. B. H.

The Public Works of England.

NO. II.—CANALS.
Continued from page 453.

In the 20 years that followed, up to 1790, the number of canals executed in the country was 17—few of them of equal importance with the preceding.—Brindley projected the Chesterfield Canal in 1769; it was carried on under his direction and that of his brother-in-law, Mr. Henshall, till its completion in 1776, at a cost of 150,000*l.* Its length is 46 miles, with 65 locks, and one very extensive tunnel, 2350 yards long near Harthill. Mr. Grundy had proposed another plan, which would have saved 5 miles, and between 20,000*l.* and 30,000*l.*, but Brindley's experience was preferred. The undertaking was a very successful one; but the most important of Brindley's latter suggestions was the Ellesmere and Chester Canal. The famous aqueduct is over the Dee is on this canal carried at height of 125 feet above its bed, on 19 pairs of stone pillars, 52 feet apart. Several others of the great specimens of canal works in the kingdom were of his undertaking. It runs from Ellesmere Port to the Montgomery canal, a distance of 61 miles, with numberless collateral branches.—During the progress of this canal the greatest possible difficulty was experienced in raising the money. The shares at one time were sold at 1 per cent. of their original value. The whole cost was nearly 400,000*l.*

The Thames and Severn Canal, another of Brindley's projects, was commenced in 1783. The longest of the tunnels—the Tarleton Tunnel—is on this canal; it is 2½ miles long. It runs from Stroud to Cirencester, with a length somewhat above 30 miles. The original estimate for the work was 190,000*l.* the actual cost above 500,000*l.*; one of the largest excesses in canal history—and the more strange as there are no branches. It has 40 locks. A union between the Thames and Severn, by means of the Avon, was another of Charles II.'s projects.

The other canals executed during the period alluded to were the Basingstoke, about 40 miles long, cost about 186,000*l.*; the Erewash, running from the Trent to Langley-bridge, about 12 miles, cost 23,000*l.*; the Cromford, from the Erewash to Cromford, 18 miles, on which are one or two of our finest aqueducts, cost 86,000*l.*; the Bradford, 3 miles long, cost 9000*l.*; the Dudley, of which the original plan was

a length of 13 miles, at a cost of 12,000*l.*, but the expense of cuts and connecting branches amounted to some where about 150,000*l.* additional; the Market Weighton, 11 miles long; the Andover 22½ mile-long, cost 65,000*l.*; the St. Columb, 6 miles long; the Shropshire, a canal of 7 miles from the furnace at Coalbrook Dale to the Severn; the Stourbridge, and three private canals—one executed by Sir J. Ramsden, near Huddersfield, another by Sir N. Gresley, near Newcastle-under-Lyme, and the third by Lord Thanet, a short affair, near Skipton Castle.

After 1790 a violent impetus was given to canal speculations. Between that date and 1795 no less than 43 canals were planned, and acts relative to 15 new undertakings were passed in 1793—the largest number of any year in history. The dates of the first Acts, relative to two of the most important undertakings in the kingdom, the Grand Junction and the Kennet and Avon, belong to this period, being passed, the one in 1793, and the other in 1794. The first of these, one of the most spirited enterprises of the kind, begins at the Oxford Canal, near Braunston to the Thames, at Brenford—a course of 90 miles. The undertaking was the last step in Brindley's grand plan of inland communication through out the country. We had attained already a complete water connection between Liverpool, Hull, and London; but the old river communication, with its tortuous course and manifold disadvantages, still existed in a most important part, that between Oxford and London; and it was to make the canal communication complete that Lord Rockingham, in 1792, employed Mr. Baines to make the survey for the present canal. The first estimate was 600,000*l.*; but, as usual, cuts and extensions require the raising of a further sum of 550,000*l.*, making this one of the most extensive undertakings in the kingdom; the length is above 90 miles. There are 93 locks and two tunnels, with several deep cuttings; one near Rulbourne 3 miles long and 30 feet deep for the greater part of the way. There are, besides several embankments—in fact, this, on the whole, came nearer to modern railway enterprise than any work previous to the commencement of the iron age.—From the summit level at Tring to Harefield-park, a distance of about 21 miles, there is a fall of about 300 feet—the height of the summit part being 380 feet above the Thames at Linehouse. The Paddington branch, which is a continuation of the Grand Junction is 34 miles quite level; the water-course for 20 miles, from Paddington to Uxbridge, requiring but a single lock. The greater part of this canal was completed in about 10 years.

The Kennet and Avon Canal—The most important water link between the west and east of the southern counties in England, was commenced in 1794. It runs from the Avon, at Bath, to the Kennet, at Newburn; and, as the former river runs on to Bristol, and the latter to the Thames, a communication is effected between Bristol and London; in fact, between the Irish Channel and German Ocean. It completes moreover the water circuit from the northern districts round the island, and passes through or near several of the most important towns in the south. The original estimate was 570,000*l.*; but a further sum of 702,000*l.* was required to be raised under four successive Acts, to complete the undertaking. The engineering difficulties were in some parts very great. In Somerset and Wiltshire, the country through which it passes is very rugged. At one place near Devizes, a fall occurs of 239 feet in 2½ miles, requiring 29 locks. The length is 57 miles, and the whole rise 210 feet, with 31 locks, and the fall 404½ feet, with 48 locks. The expense per mile (22,315*l.*) makes this one of the most costly canals in the kingdom. As a property this undertaking has been most injured by the Great Western Railway. The company were only enabled to compete with the railroad for the carriage of heavy goods by charging half their prices when they enjoyed the monopoly. The railway at first professed only to carry light goods, and thus disarmed the opposition of the canal, but it has ended, as might have been anticipated, in carrying every thing. One or two of the aqueducts on the canal are of beautiful structure, the Dundas aqueduct especially, which is situated about four miles from Bath.

The number of the works now undertaken prevented the commencement of new designs, and besides the continental disturbances began to be

seriously felt. From 1795, to the end of the century, only four canals were commenced—the Grand Western, the Dorset and Somerset, the Newcastle Junction, and the Aberdeenshire. All these, though very useful works, were but of secondary importance. The first named running from the Exe to Taunton, cost about 330,000*l.*—the length is about 35 miles.—The second was never executed, the third is a very trifling affair, and the fourth only goes to the length of 19 miles: 36 canals have been commenced in the present century, the principal of which are the Regent's and the Caledonia. The larger undertakings were often abandoned; at least in their chief points, which was the case with the Bridgewater and Taunton. The Caledonia, as will be seen, does not pay at all. The Grand Surrey, the original subscription for which was 45,000*l.*, but which cost above 300,000*l.* additional, pays a very trifling per centage. The Edinburgh and Glasgow, the Macclesfield and the Grand Union, are the three other of most importance. Enterprise was, however, busy about the old lines—most of which received important improvements in this period.

All the undertakings here enumerated have been completed by private persons, either singly or in association. The only work actually undertaken by Government has been the Caledonian Canal. Watt first surveyed this line, but it was carried into execution by Telford. It cuts completely through the Scotch Islands, coming at the foot of Ben Nevis, and running through three Scotch Lakes to Inverness. The length of the whole is above 60 miles; but very little more than 23 of this is canal, the remainder being lakes. The original intention was to facilitate the transport of Baltic timber, but the traffic has turned out far below the original expectation. The cost to the Government has been above 1,000,000*l.*; and in 1842 the expenditure of wages and maintenance actually exceeded the receipts; the former being 2090*l.*, and the latter 2030*l.* We must add, indeed, 576*l.* of the charges are put down as extraordinary expenditure in building boat-houses, &c.; but, even so, the surplus would be very little above 500*l.* There are 28 locks on this canal, of which a chain of eight, called Neptune's staircase, alone cost 5000*l.* The works of the canal are of first-rate order, and the channel of enormous breadth and depth, as being intended for ship navigation. The width at top is 110 feet; at bottom, 50; depth, 20 feet; the locks 172 feet by 40. All this explains the cost, together with the nature of the country through which the canal passes; but it is an instance of the failure of Government undertakings, as far as mere profit is concerned. Vessels of upwards of 160 tons often pass the canal.—*Daily News.*

Institution of Civil Engineers.

JUNE 19—JOSHUA FIELD, Esq., (President) in the Chair.

The paper read was "On the Employment of High-pressure Steam, working expansively, in Marine Engines," by Mr. John Seaward, M. Inst. C. E.

This communication was described to be the substance of a reply, by the author, to some questions addressed to several eminent engineering firms, by the Hon. H. L. Corry, M.P., when secretary to the Admiralty. This reply was found to furnish so much useful information, and so completely to open the question of the advantage or disadvantage of using high-pressure steam, and of cutting off the steam at various portions of the stroke, that it was conceived it would be advantageously produced at the institution, in order that the subject should be fully discussed. Unfortunately, the absence of the principal members at the floating of the first tube of the Britannia-bridge frustrated the latter expectation, but the substance of the paper appeared to be fully appreciated.

The argument was so continuous that it would be difficult to do more than to give a faint idea of it, as the limits of this account would not suffice for an abstract of it. It first reviewed the mode of working marine engines for some years past, and noticed the gradual change that had occurred, particularly the tendency to use high-pressure steam, instead of that of a pressure of about 4 lbs. above the atmosphere. It then examined the system of cutting off the steam at the various parts of the stroke; and as, at the same time, a remarkable augmentation had occurred in the speed of the vessels,

which was naturally attributed to that cause, it inquired minutely into these several causes and effects, as well as the considerable reduction in the consumption of fuel which took place, enabling the vessels, consequently, to make longer voyages, or to carry less fuel for given distances.

In this examination, all the arguments for and against the use of high-pressure steam, and the presumed gain or loss of mechanical power in the use of the expansion principle in the cylinder, were canvassed at length; and the paper wound up with replies of the author to the three questions from the Admiralty, to this effect:—"The highest pressure of steam that we have, in any case, put upon a marine boiler of our own construction, was about 16 pounds to the square inch; but we are not inclined to repeat the experiment, as we feel assured that we can obtain equally good results with steam of a lower pressure—from 10 to 12 lbs. is the usual pressure we employ in the merchant service for engines and boilers of comparative small power. The steam pressure at present employed in the service is about 8 lbs. per square inch. We consider steam of this pressure to be well adapted to the exigencies of the service; and we believe it is calculated to secure all the important advantages of power, economy of weight and space, in a very eminent degree; these advantages will, in some respects, be slightly increased by augmenting the steam pressure to 10 or 12 lbs. to the square inch. We strongly recommend that the steam employed in the navy should not be of greater pressure than 10 lbs per square inch, or in extreme cases 12 lbs. to the square inch; any material increase to the latter pressure will be attended with considerable risk, without any adequate advantage."

In the discussions which ensued, these propositions were to a certain extent concurred with, but with limitations as to the introduction of other forms of boilers; and it was explained that the arguments of the paper were only applicable to condensing engines working expansively, and, therefore, left the question of the introduction of the use of high-pressure non-condensing engines quite untouched, and free for discussion at a future period.—*Min. Jour.*

On Gold, and Gold Mines.

BY WILLIAM BIRKMYRE.

No. 1.—General description of Gold.

This metal has been known from the earliest times, and, in consequence of its many valuable properties, has been held by the rudest, and by the most polished ages, in the highest estimation. It is the only metal of a yellow colour. There are, however, alloys of copper, and also some minerals—copper pyrites, iron pyrites, and yellow mica—which resemble gold in colour; but their presence at all times is easily detected by chemical tests.

The most prominent of the valuable properties of gold are—1. it is not tarnished by the action of air, coal-gas, water or the common acids, being far superior in this respect to silver, which soon tarnishes by burnt coal-gas and also by the sulphuric acid of its combustion; hence gold or gilt plate wears much longer than silver or silvered plate—a consequence of gold or gilt plate not requiring a tith of the polishing which silver demands.—2. It exceeds all other bodies in malleability; an ounce troy, which should contain 6 grs. of alloy of copper or silver, is daily converted by the goldbeaters into 1000 leaves, or 40 books of 25 leaves, each being 11 square inches; besides obtaining the above quantity of perfect leaves, there are usually about half an ounce of cuttings. It has been ascertained that gold can be beaten to the 1-492000th of an inch in thickness, 1 grain being, therefore, extended to 100 square inches; it is then so

thin as to be transparent to the eye, yielding to it a green colour, which is also true when gold forms a thin coating on glass on being precipitated from some of its solutions.—3. Its ductility is such that one grain can be drawn to 500 feet, so that its diameter is only 1-4545th of an inch, which is sufficiently small for astronomical purposes; but most of the so-called gold wire is merely silver gilt, and when used for lace and embroidery, is seldom finer than the 1-500th of an inch in thickness.

—4. It excels all other bodies in conducting heat; for if gold be estimated at 100, iron is but 37, lead only 18, and porcelain 1.

The above described-properties of gold, joined to its scarcity in the dark ages, were the chief causes which stimulated a class of persons, known as alchemists, in fruitless attempts to discover what they termed the *philosopher's stone*, or the *elixir*, a substance to their minds sufficient to transmute the commoner metals, or, as they called them, the baser metals, into gold; but the notion almost ceased to be entertained towards the end of the seventeenth century, principally in consequence of the growing intelligence of the people, and also by reason of the great fall in the price of the precious metals, by the discovery of America in 1492. No chemist has been able to prove that this metal is a compound; hence it is universally admitted by them to be one of the 54 elementary bodies in nature.

Gold is found in greatest quantity among the sands of rivers, many of which have been famous in all ages for their golden sands; but none more than the Pactolus, in Asia Minor, from whose bed a considerable portion of the wealth of Cræsus was obtained. Much gold is now procured from mines in primitive rocks especially in Hungary and Brazil. When it occurs in sand the greater portion of this metal is separated simply by washing, without recourse to mercury; but if mined, a great part of the *gold ore* that at the present day is pulverized by stamps driven by water, then treated with mercury in revolving mills, the amalgam being afterwards washed and submitted to heat, by which the mercury is volatilized and condensed in a separate vessel, and in the best conducted establishments with a loss only of one-fourth of the mercury originally employed. The gold now remains freed of the mercury, but usually containing some silver, and occasionally palladium, these three metals being soluble in the quicksilver. There is but a trifling loss of mercury in the extraction of gold compared with that of silver; since the loss hitherto of mercury in the extraction of the latter metal, even in the best conducted amalgamation-works, is four times as great, being due principally to chemical action—the silver ores being generally compounds of sulphur and chlorine, while those of gold are almost invariably alloys, and hence with them the loss is chiefly mechanical.

In the native state gold is never found oxidated or combined with sulphur, like silver, copper, and iron, and, consequently wherever found it has always a metallic lustre; it rarely occurs absolutely pure, and is, therefore, generally found as an alloy. The purest specimens

have been discovered in local detritus, or gold sand, but even there it is very impure. Some specimens obtained from sand, and from mines 400 or 500 feet deep, are so unlike gold as to possess a black colour (the *auro preto* of the Portuguese), these contain but 9 per cent. of gold united with other metals, principally tellurium; other specimens are of a white colour (*auro branco* of the Portuguese), and contain about 30 per cent. of gold, combined with silver and palladium.

The metals found most frequently in native gold are silver, copper, and palladium. Gold is generally found in dust, grains, flakes; sometimes in crystals, more or less perfect. It is now obtained in greatest quantity in Russia and in Upper California; the former country last year probably produced £4,100,000, and the latter about half a million sterling; but as the discovery was only made in California the same year, the produce this year is likely to be vastly augmented. Of late years, great masses of gold have been found and recorded in different countries. One of the largest was discovered only 9 ft. beneath the surface of the ground, in the Ural Mountains of Russia, on 7th November, 1842; this mass weighed 96½ lbs. troy, and was, therefore, supposing it to contain 833 per cent. of alloy which is the amount in our gold coin, of the value of £4508. 19s. The next largest on record weighed 37 lbs. troy, and was picked up in Haiti, in 1502. A mass was found in 1821 in the United States, which weighed 33 lbs. Another prill, weighing 27 lbs., was picked up at Miask, in the Ural Mountains, where, in fact, many pieces have been discovered, which weighed from 10 lbs. to 17 lbs. nor have the English gold mining associations been unsuccessful this way. The Imperial Brazilian Association discovered, in 1832 at their mine, the Gongo Soco, a lump, which weighed 21 lbs. troy. The greatest specific gravity of a specimen of native gold is 19.099, which contained only 1.48 per cent. of impurity, consisting of silver, copper, and iron; it was brought from near Ekaterinburg, in the government of Perm, in Siberia.—Gold in the native state, and possessing nearly its yellow colour, may be of any specific gravity between 12.666 the lowest yet observed, and 19.3 the highest, which is that of pure gold when simply melted. It is well known to be after platinum, the heaviest body in nature; the specific gravity, 19.3, and yellow colour are almost sufficient evidence of the purity of any specimen of gold. The above specific gravity, of 12.666 clearly indicates that the native specimens must be contaminated with a large quantity of copper; for a mixture of equal parts by weight of silver and gold electrum has a greater specific gravity, and is nearly as white as tin. Many specimens of native gold, but, of course, very impure, have been found as low as 5.7. These possess a white colour, and contain only 30 per cent. of gold, united with 60 of tellurium and 10 of silver; they are generally found in Transylvania. The lustre of gold is inferior to steel, silver and mercury; its tenacity is less than iron, copper, platinum, and silver; as, in compari-

son, it has but one third the tenacity of iron, and one half that of copper; or a wire of .078 inch in diameter, will support but 150.07 lbs avoirdupois, without breaking.

The salts of this metal are fully as poisonous as the same compounds of silver.

Pure gold is soft, and not much harder than lead; so that coins made of it wear a great deal faster than when alloyed with copper or silver—hence the utility of these metals in coin.

The gold coins in France and the United States now contain 10 per cent of alloy; while those of this country, since 1604, only contain 8.33 per cent. The relative value to silver at present in this country is as 15.98 to 1; but owing to recent great discoveries, and also to political causes in the east of Europe, it is likely to fall greatly in value. The malleability and ductility of this metal are much impaired by antimony, lead, bismuth, and arsenic. Thus both properties are almost completely destroyed when gold is alloyed with 1.1920th part of its weight of antimony. When silver or copper are alloyed with gold, the alloy is lighter than the mean specific gravity; hence, unless Archimedes was aware of this fact, he must have taxed the goldsmith who made Hiero's crown with greater fraud than he perpetrated upon the King of Syracuse. There can be no doubt that when gold becomes more abundant very important improvements will be introduced into the arts, more particularly in all that relates to alloys, our knowledge of which being singularly defective.

Gold and copper melt at nearly the same heat; both are fused at 1102.2° Centigrade or 2016° of Fahrenheit's thermometer, while silver melts at 143° less of Fahrenheit.

The best solvents of gold are—mercury, and a mixture of nitric and muriatic acids, *aqua regia*. The former yields a product termed an *amalgam*, which, on being passed through leather, to free it of excess of mercury, leaves a white mortar-looking substance, containing 33.3 per cent of gold and 66.6 per cent of mercury. But the usual solvent of chemists is the *aqua regia*; the active ingredients of this compound acid are chlorine and a gas lately discovered by Dr. E. Davy, and called by him the chloronitrous. From numerous experiments of my own regarding this compound acid. I am led to believe that the chloro-nitrous gas, as well as chlorine, dissolves gold.

I find that chlorine combines with gold at a high as well as at a low temperature, so that the proposition made in 1841, and published in the *Transactions of the Society of Arts*, to assay alloys of gold by passing a current of chlorine gas over the gold alloy at a red heat, on the supposition that chlorine would only combine with the other metals at that heat, is not founded on accurate data. I found, on repeated experiments, that pure gold itself lost 4 per cent. of its weight on passing a current of chlorine over it, at a red heat, a loss much too great in such a simple matter as an assay of gold. It has indeed, been long suspected by chemists that

a portion of gold is volatilized as chloride when its chloride is submitted to heat, the result of the experiments just related go far to confirm the fact. Bromine and fluorine act readily upon gold. Though by far the greater part of the gold consumed in the arts, still retains its characteristic yellow color, unlike copper and zinc in this respect, yet a rapidly increasing quantity of gold is used in the art of coloring glass, in which its color is changed to a deep red. As "purple of Cassius" (oxide of gold and oxide of tin) it has been used in this way, for about 200 years, but of late it has been discovered that the solution of the metal in *aqua regia* equally imparts to glass the superb ruby color.

The combining equivalent is 199.2, and the symbol used by modern chemists to prevent circumlocution, *au* from the Latin *aurum*. The alchemists used to designate it *Sol.*—*Ib.*

Great Girder Bridge on the Manchester, Sheffield, and Lincolnshire.

THE important railway group named above is now rapidly approaching completion; and there appears no doubt that on the 16 of July the southern shores of the Humber on the east, and the Mersey on the west coast of England, will be directly connected by this complete group of lines, including Sheffield, Manchester, Lincolnshire, and Hull. The only work of magnitude remaining to be completed is the great bridge over the Trent at Gainsborough; and, by a curious coincidence, in the present week, and, if we mistake not, the very same day on which the Britainia Bridge was being fixed in its final resting-place, the last link of this great line of communication was being completed, and completed by an iron link of the same nature as the Britainia, though on a much smaller scale, and, in fact, one of the numerous progeny of which it is like to be the parent.

This last link of the great east and west group of railways is a bridge of similar character, but of smaller dimensions, which is now being moved over the River Trent at Gainsborough, by totally different and peculiar mechanical appliances, but intended to accomplish the same purposes. This bridge is called a *hollow girder bridge*, to distinguish it from the hollow tubular bridge, and is of the largest dimensions yet executed of that construction. It differs from the Britainia and Conway bridges in this respect, that instead of the trains running through the inside of the tube, the girders form the parapets of the bridge, and the roadway is supported by transverse wrought-iron hollow beams, also of the tubular construction.

This bridge has been designed by Mr. Fowler, the engineer of the line, and the girders are executed by Messrs. Fairbairn, of Manchester. The stonework consists of a centre pier and two handsome elliptical arches of 50 ft. span, terminating by substantial and appropriate land abutments. The masonry has been executed by Messrs. J. Stephenson and Co., the contractors of this part of the line. The iron part of the structure consists of two spans of 154 ft. each, which with the two land arches and abutments, give a total length of about 460 ft. The dimensions of

the principal girders are each 336 ft. long, 12 ft. high, and 3 ft. 1 in wide. The tops of the girders are formed of two cells, 18 in. wide and 12 in. deep, to resist compression, and the bottom of double-riveted plates, to resist tension. The girders are fixed securely on the middle pier; on the land abutments their ends are supported upon rollers resting on cast-iron plates, bedded into the masonry, to admit of expansion and contraction. On the outside of the girders are riveted two parallel lines of angle iron, in the form of an arch, which spring from the middle pier to the land abutments on each side, and give a symmetrical appearance to the structure. The weight of the iron-work in the bridge is as follows:—The two principal girders each, 150 tons = 300; transverse beams, 4 ft. asunder, 82; cast-iron, 10; total, 392; or about 400 tons. It was originally intended to have them constructed on a platform or scaffolding supported upon piles driven across the bed of the river; but the depth of the water, the nature of the ground, and the necessity of preserving the navigation open, render such a process inadmissible. Subsequently it was determined to construct them at one end of the embankment, and to haul them across upon rollers from one side of the river to the other; but much greater difficulties have been encountered than were originally contemplated, as the immense weight of the girders, when resting upon a comparatively few points of support, caused the embankment to settle, and much time and trouble were expended before it was sufficiently consolidated to bear the load.

The process of hauling the girders without any intermediate support, excepting a roller fixed upon piles at a few feet from the middle pier and last abutment, was a formidable undertaking. In this operation one end of the girder had to be suspended 120 feet before it received the auxiliary support. These operations were, however, successfully accomplished under the direction of Mr. Fowler, the engineer, and Mr. Fairbairn, the contractor; and the first girder now rests in its place, and is likely to remain as another monument of English engineering skill. The second girder, with all the ways and rollers fixed, is now ready for moving, and a few days will, no doubt, find it equally secure with the first; and in less than a month from this time we may confidently expect to witness railway trains passing over the bridge in perfect security, and to the great convenience and advantage of the immense agricultural and commercial population destined to be benefited by the completion of the Manchester, Sheffield, and Lincolnshire Railway.—*Railway Chronicle*.

Central Ohio Railroad.

In view of the very general desire to know the precise situation of this project at present, we take pleasure in laying before the public the following statement, for which we are indebted to Col. J. H. Sullivan, the President of the Company.

It is proposed to build first, that division of this work which lies between Zanesville and Columbus, for which subscriptions are now being made.

The estimates of the cost, are as follows: J. Knight Esq., says "the probable average cost of the graduation, masonry, and bridging of a width for two tracks, from

Zanesville to Columbus, would be \$5,000 per mile" which for 60 miles amounts to	\$300,000
Superstructure—Heavy rail and laying, by Capt. Childe's estimate—\$8,000 per mile for 65 miles including sidings	520,000
Depots, water stations, turn-tables &c., say	50,000
Locomotives, passengers, burden and gravel cars, outfit for the Road	80,000
Add for right of way and contingencies	27,000
	<hr/>
	\$977,000

It is assumed that, to provide for the rail amounting to

And the outfit of the Road amounting to	\$422,500
	80,000

And in the aggregate \$502,500
A loan could be effected on the Bonds of the Company. This amount then deducted from the gross cost, would leave but \$475,500, to be furnished by subscriptions to the stock of the Company.

To provide this fund, it was suggested that \$500,000 be raised in the three counties of Muskingum, Licking and Franklin, in the following proportions, viz: in Muskingum \$300,000; in Licking \$100,000 and in Franklin \$100,000.

We are pleased to learn that so far as Muskingum is concerned the question is settled. We have now a subscription list of \$175,000, which, with the law authorizing (upon a favourable vote) an additional subscription upon the part of the county of \$90,000, and upon the part of the town 20,000, brings us within \$15,000 of our complement. As some of our larger property holders have not yet subscribed, we are confident that their sense of what is due to the community in which they have made their wealth, will induce them to come forward promptly and foot up the last.

Feeling confident of this result a meeting of the Board of Directors is called for Friday next, when it is intended to recommend the organization of an Engineer corps for immediate service. The labour indicated for them will probably be the survey of all the routes between this and Columbus; and it is hoped that by the time the surveys are completed the whole of the stock required will be subscribed, so that a location of the line can be made and the letting of contracts had sufficiently early this fall to justify the opening of the work.

So far as the \$200,000 expected from Licking and Franklin is concerned, we have understood that the feeling in those counties is very kindly towards the enterprise, and as they have the ability to do their share, we cannot doubt of their ready co-operation.

Zanesville Courier.

AMERICAN RAILROAD JOURNAL.

Saturday, July 28, 1849.

St. Lawrence and Lake Champlain Canal.

At a meeting held in Troy on the 20th instant to take into consideration the project of uniting the waters of Lake Champlain and the St. Lawrence, by a ship canal of the same dimensions of the Welland and St. Lawrence Canals, Gen. Wool presided, and A. K. Hadley, Esq., acted as Secretary.

John Young, Esq., of Montreal, presented a memorandum of a survey of the proposed canal made by J. B. Mills, Esq., by order of the government of Canada. Leaving St. John as the southern terminus, it follows the line of the Chambly Canal to St. Therese, 8½ miles, thence it turns northwesterly, and strikes the St. Lawrence near the village of Caughnawaga.

The canal keeps the level of Lake Champlain till within three miles of the St. Lawrence, from which point it descends 29 feet by two locks to the river.

The whole length of the canal will be about 32 miles, and its estimated cost \$1,438,568.

Mr. Young presented the meeting with a long memorandum to show the amount of business that might be expected to pass over the canal if construc-

ted, which we deem unnecessary to give. We cannot doubt that a large amount of the produce of the west would take this route in preference to any other. The construction of this work would lead to the construction of a ship canal from the Hudson to Lake Champlain, so that vessels of 3000 barrels capacity could load at any Western lake port direct for New York city.

A committee consisting of Timothy Follett, of Burlington; G. L. Schuyler, G. M. Davidson, L. G. Cannon, Jonn T. Cooper, H. H. Russell, Gen. Wool, and James Titus, of the State of New York; and Nathan Rice, B. T. Reed, and John Howe of Boston, were appointed to visit the site of the proposed canal, and obtain all information relative thereto in their power; and the meeting adjourned till the 21st of August next to meet at the United States Hotel, Saratoga, to hear the report of the committee.

Baltimore.

We are indebted to a friend, for the following interesting facts, in regard to the improvements going on at Baltimore.

In the early part of this year, the "Baltimore and Ohio Railroad Co.," finished the construction of their branch road to "Locust Point," and also their extensive wharves now known as the "Locust Point Depot," This place situated on the South side of Baltimore harbor, immediately opposite "Fells Point," one of the oldest and most thickly populated parts of the city, may now be considered as the grand terminus of this great thoroughfare, destined, with its connections, in a short time to reach from the Atlantic to the Mississippi. It is already far advanced towards completion to the Ohio river. The cars have for a long time been in successful operation to Cumberland (179 miles.) The immense amount of freight collected upon the line, and destined to the seaboard, rendered it almost impossible for the company, with their old arrangements, to dispose of it; and as the coal trade grew in importance, and called for greater accommodation than the company were able to give, they with commendable zeal constructed and finished the Locust Point terminus, which, at no distant day will, I have no doubt, be the depository of all freight destined for a foreign market, or for transhipment to our own neighboring ports. The terminus is on the northern part of a peninsula formed by the harbor of Baltimore—another inlet called the Spring Garden—and the Patapsco river. This point was in the first instance the proper locale for the city; and would, from its natural advantages, have been so, but the owner of the ground utterly refused to sell any portion of it.

This great error is now about being corrected, as the property has fallen into the hands of parties able and anxious to develop its natural advantages.

The railroad wharf here is truly a great work.—It was constructed with cribs filled and sunk, leaving the depth of water along side 22 feet, and with its superstructure forms an imposing and slightly structure. The wharf lot has an area of about 8 acres, and has an accessible water front of 2000 feet.

The grounds are reached by means of numerous ground tracks, and the wharf by three tracks located on trestle work 14 feet high, arranged with coal shoots in such a manner that the coal is transferred directly from the cars to the hold of the vessel without the least handling. Several ships of 750 tons, have lately loaded at this place, destined for the Panama coast—the superior quality of the Cumberland coal and its cheapness, rendering it a desirable fuel and fully justifying that long voyage. There are generally from 15 to 20 vessels loading here, and

so great are the accommodations, that from 4 to 500 tons have been loaded in a vessel in a day.

The demand for this coal is constantly increasing, and the facilities at present afforded are scarcely sufficient to meet it. The great increase in the demand for this coal is not surprising, when we consider that it is entirely free from sulphur and weighs 84 pounds per bushel, and is found to be superior to any other fuel, for ocean navigation.

The wharves and their appurtenances reflect great credit upon the persons engaged in their location, and construction. This I was given to understand, was done entirely by the Officers of the Company, thus fully certifying to the capabilities of the Engineering Department of the road, the chief of which has been long and favourably known as an Engineer of high standing.

There are already upon the point several important Iron manufacturers or brass furnaces; the principal ones belonging to the Messrs. Ellicott.

These furnaces, notwithstanding the great depression of the Iron market, are weekly turning out a large amount of Iron, of a superior quality. On the North-west side of the terminus is a large square, adjoining the Messrs. Ellicott, at present being improved by some gentlemen, to me unknown. On the South side, are the extensive works of the Baltimore, and Cuba Copper Smelting company, now turning out \$250,000, worth of copper per year.—This Company is also at present busily engaged, in constructing extensive rolling mills, for the purpose of manufacturing copper into any shape that may be required. This is almost a new business in this county, and the traveller of leisure will be well repaid by a visit to these works.

They have also constructed a number of neat and substantial brick dwelling houses for the accommodation of their hands, as well as a new church to keep everything in order.

A Steam ferry is shortly to be put in operation, connecting this point directly with Baltimore city, at Fells Point, (and there connecting with the various omnibus lines to all parts of the city), the distance across the ferry being about ¼ a mile. This point, from its natural advantages, and near relation to the city, as well as its proximity to the iron ore regions, and the great cheapness of fuel, must in a short time become the manufacturing portion of Baltimore. The Cumberland coal is delivered here at \$3 70 per ton, and wood of the best quality from the Chesapeake bay at \$2 25 per cord. The supply of wood is as inexhaustible as the supply of coal; for the shores of the beautiful bay and its tributaries, from whence the supply is drawn, comprise an extent of 4,000 miles.

To this abundance of fuel, Baltimore is already indebted for much of her prosperity, and will also be indebted for her future prosperity as a manufacturing city. Should sufficient protection be afforded to the manufacturing iron interests, by our government, at the next session, we shall in a few years see Locust Point covered with extensive manufacturing, and with a busy population forming part of Baltimore city.

Macon and Western Railroad Company.

This company has declared a dividend payable on the first proximo, of \$2 50 per share. Its earnings for the past six months ending June 30 have been \$115,748. The latest sales of stock have been at \$50 per share.

For the future we shall insert our "Share Lists" monthly instead of weekly, as heretofore.

Railroads in want of a "Turn-Table," will find one advertised in our paper.

A Trip on the New England Railroads.
Vermont Central Railroad.

Boston, July 20, 1849.

Though not having "a stockholder's ticket," I was inclined to take the occasion of the annual meeting of the shareholders in the Vermont Central road on the 18th inst., for the purpose of visiting the renowned capital of Vermont. The strong interest excited by the event of the meeting, seemed to augur the display of some feeling on the occasion among the stockholders. There is no concealing the fact, that a strong feeling of jealousy towards those who have managed this road is growing up throughout the State of Vermont, though its shareholders, who mainly reside in Boston, seem to regard them with very different emotions.

Boston is aiming to extend an unbroken line of railway to the St. Lawrence river, at Ogdensburg, crossing the outlet of Lake Champlain by a bridge. The Legislature of Vermont declined the grant for this purpose principally through the influence of Burlington, and the friends of the Rutland and the Passumpsic roads. The Legislature of New York has adopted a similar policy. Business thrown upon Lake Champlain naturally reaches Burlington, the chief town upon the Vermont side, and something is likely to be deposited in the coffers of her people from the proceeds of this trade. Allow Boston to load her cars at Ogdensburg, and run them across Lake Champlain and Vermont, without transhipment or delay, and Burlington loses its importance at once. So also does Plattsburgh and Whitehall.

When the claims of the two rival lines to Burlington, the *Vermont Central* and the *Rutland* roads, were presented to the consideration of the Bostonians in 1845, many were surprised at the result of their efforts. The Central apparently outstripped its rival in the race, and seemed destined to extraordinary success; and it was confidently asserted that the entire line to Burlington would be opened for travel during the year 1847.

The *Vermont Central* has filled a more conspicuous place before the public for the last four years than any New England road, owing to a variety of causes too well known to need repetition. We read the earlier discussions carried on by the friends of these rival enterprises in the Boston papers in 1845, and have kept an eye upon their progress since.—Notwithstanding the discouragements thrown in the way of the Rutland road, the chances are that it will reach Burlington as soon as the Central can be completed to the same point. The stock of the Rutland road is worth some 75 dollars per share, and is principally held by the people upon its line; that of the Central is largely owned in Boston, and now sells for 46 and 47 dollars per share. The feeling in Boston favors the bridging of Lake Champlain.—The directors of the Rutland railroad have been opposed to this measure from the first. This fact explains the peculiar history of the two companies.

Leaving Boston at 7½ A.M. on the 17th, we found our train of 17 cars well loaded, and the number continued to increase by fresh accessions of shareholders till we reached Montpelier, some two hours or more behind the usual time.

I had never before passed by railway from Fitchburg to the mouth of White river. I was forcibly struck with the appearance of the work, so formidable was its character the whole distance. The Cheshire road especially excited admiration. Such long cuttings through the most obdurate rock formation, can no where else be found in New England. The sides of the rock were cut smoothly down, and

the water courses finished with solid masonry, giving it an air of thorough workmanship, which no other road in the country can boast.

On the Sullivan road we cross Sugar river near Claremont, on the top chord of a bridge ninety feet above the water; and from Windsor to the mouth of White river the work for a large portion of the distance is heavy and expensive.

From the mouth of White river to the Summit at Roxbury, the grade of the road is clearly perceived in the diminished speed of the train; and from the summit to Northfield, 6¼ miles, the descent is such that the force of gravity alone carries the train the whole distance. The whole ride from Fitchburg to Montpelier presents a succession of shifting scenes, more varied and beautiful than any route of equal length that I have travelled. Monadnock mountain and Kearsarge on the one side, and Ascutney on the other, swell up from the plain over which you are passing in majestic grandeur, while the narrow valley of the Connecticut, as you enter it at Westmoreland, seems to terminate abruptly by the sloping hill sides, which bound the prospect on every hand.

The cars on this line are all new, of modern finish, with footrests and high-back seats, contrasting favorably with the equipment on the Concord railroad. Narrow, poorly ventilated cars; with old fashioned low-back seats; destitute of foot rests, or the ordinary comforts required on the newly built roads, are still inflicted upon the travelling public between Concord and Boston. It is to be hoped that the completion of the new lines from Concord to Boston and Portsmouth will bring good manners and obliging conductors into more prominent use on the old 10 per cent. paying roads.

The meeting at Montpelier on the 18th was literally immense for such an occasion.

Gov. Paine, president of the company, took the chair, and E. P. Walton, Jr., Esq., of Montpelier, secretary of the company, read the reports of the directors and treasurer.

It appears by the statement of the treasurer, that the total amount standing to the credit of the company on his books is.....3,982,701 01

In this sum is included the
loan of 1847.....297,300 00
From which was realised..288,600 00

Leaving to be deducted..... 8,700 00
There is also included the
sum of interest credited to
the stockholders.....128,274,76

Making a deduction of..... 137,374 76

Leaving.....3,845,326 25

as the amount received from all sources by the company.

Of this sum there have been expended the following items, not properly chargeable to the cost of the road, viz:

Vermont and Canada railroad company.....	1,049 13
Winooski turnpike.....	18,000 00
Stock in Grand Junction railroad co.....	100,000 00
Fuel.....	11,833 53
Shop work.....	5,365 16
Running expenses.....	4,139 30
Interest.....	282,384 46
Do. on bonds.....	23,304 00
Cash deposits and stock in Boston and Providence railroad.....	73,437 32
	<hr/>
	519,512 90

Which being deducted from the amount of cash received, leaves 3,325,813 85, as the sum actually expended in the construction of the road to 1st inst.

It further appears from the treasurer's statement, that the debt of the company on the 1st instant consisted of

The loan of 1847.....	297,300 00
Notes payable.....	327,322 39
Outstanding bills.....	33,531 05
	<hr/>
	658,153 44

And that the assets were:

Assessments due on old stock.....	252,320 32
" " " new ".....	55,959 33
Cash in hand, deposits, and Boston and Providence R. R. stock.....	73,437 32
	<hr/>
	351,725 97

Leaving as debt of company.....276,427 47

To meet this debt and raise funds sufficient to complete the road, the directors on the 9th of July authorised the issue of new stock at 50 dollars per share, to the amount of one million dollars. If the directors had waited for the judgment of the stockholders in this matter, it would have prevented the completion of the road during the present year, and been a serious injury to the interests of the road and the public.

The railroad was opened for passenger travel between the White River Junction and Bethel, Vt.—a distance of 25 miles—on the 26 of June, 1848, and for freight on the 10th of July following. On the 7th September, cars were run to the summit in Roxbury, 46 miles, and to Northfield, 53 miles, on the 10th October, the same year. On the 13th of February, 1849, passenger cars were run, for the first time, from the White River Junction down to Windsor, Vt., 14 12 miles. On the 20 June, the road was opened for passengers to Montpelier, and the first locomotive entered the capital of Vermont on that day. The distance from Northfield to Montpelier is 10 miles. The whole length of the road now in operation, therefore, is 77 1-2 miles.

The Engineer reports that there is required to finish the road to Burlington, \$830,000, which will make the whole cost of the road, \$4 155 818 35, or \$35 795 per mile (116,1-10 miles), an excess of 5000 dollars a mile over the original estimate.

Of this excess, nearly one half is chargeable to land damages alone, of which \$182,465 has already been paid, including the purchase of the Winooski Turnpike; and there remains to be paid, \$49 636 42. This may seem a large amount; but the line of the road passes through the best meadow lands in the valleys of the Connecticut, White and Winooski rivers, and in several instances it has been deemed good economy to purchase farms, wood lands and other real estates rather than submit to unreasonable demands for right of way and depot grounds. From the sale of such portions of this property, as may not be wanted, ultimately, it is thought there may be realized 25 or 30 thousand dollars. Another item of increased expenses has been the superiority of the Bridges, which have exceeded the original cost by about 100,000 dollars.

The location of a portion of the road in the valley of the Winooski River has been altered since a portion of the grading was done. When the original location was made, it was deemed impracticable by the Engineer who located it, to turn the river from its old into a new channel. This opinion has been found to be erroneous. At one point the experiment has been already tried and found to be successful. To avoid the river, the original location was necessarily circuitous and undulating, and involved the expense of several heavy rock cuttings. The object of the new location, was to make a straighter, shorter and more level road. The expense of building the new will be no greater than that of finishing the old.

The grading, masonry and bridging on that portion of the road between Montpelier and Middlesex and Waterbury, is progressing vigorously to completion.—The rails will be laid to Middlesex early in the month of August, and to Waterbury in September next. Most of the work remaining unfinished on the line to Burlington has been relet since the first instant., on favourable terms for the company. The contractors are at work upon it, and the whole may be soon finished (with the exception of the two rock points around which a track may be temporarily laid) to the East end of the tunnel at Burlington.

The Business of the road, during the year ending June 30, was as follows:

Whole number of passengers.....	47,095
" " tons of freight.....	25,074

<i>Income.</i>	
From passengers, gross receipts	48 466 12
" Freight, " "	44 616 12
" Express, to June 1	528 34
	<hr/> \$93,610 58
<i>Expenses</i>	
Fuel, Oil and waste	6,812 66
Salaries, repairs of engines, and incidental expenses chargeable to passenger department.	9,459 69
Do. do. charg. to freight depart.	11,136 82
Gratuities and damages	75 00
	<hr/> 27,484 17
Net earnings	\$66,126 41
Which is 4 45-100ths per cent. upon the capital expended upon the portions of the road that have been operated.	
The Reports were accepted and ordered to be printed.	
On motion of Mr Nesmith, President of the Northern road, the time for stockholders to subscribe for new stock was extended to the first of August.	
The Company then proceeded to the election of Directors, when it was announced that Drs. Adams and White and Mr. Spaulding, declined being candidates for re-election. A committee was appointed to collect the votes for Directors, which made the following report.	
Whole number of votes	11,700
Of which Charles Paine, Northfield, had	10,951
James R. Langdon, Montpelier	11,327
John Peck, Burlington	11,162
Joseph Bell, Boston	11,530
Franklin Haven, do.	11,655
Thomas Gray, do.	11,287
Gardner Brewer, do.	11,426
The remaining votes were scattering. After the election was declared the meeting was dissolved.	
The directors of last year were Gov. Paine, R. G. Shaw of Boston, John Peck, Daniel White of Charlestown, Mass., Isaac Spaulding of Nashua, Horatio Adams of Waltham, and Isaiah Silver of Montpelier.	
I have taken the trouble to compare the reports of the present year with those of the last.	
The directors last year said, "the board entertain a confident expectation that the whole road will be completed at a cost within the sum of \$31,000 per mile: such also is the opinion of the engineers." (pp. 6, 7.) This would make the cost of the road (116 1-10 miles) about \$3,600,000.	
It will be seen above that the estimate of the engineer now calls for 4,155,813 35, or at the rate of 35,795 per mile.	
There was due on the old stock last year (19,966 shares) the sum of	\$259,882 50
This year the sums returned as due on same is	252,329 32
Showing collections amounting to ...	7,553 18
during the year.	
The debts of the company in 1848 were	668,748 00
Do., present year	658,153 44
Showing a reduction of debt of	10,594 56
The money received to July 1, 1849, is	3,845,326 25
Do., according to report of 1848.	2,331,039 50
Showing the receipts the past year ..	1,514,286 75
To realise this sum the past year a sale of shares has been resorted to. This course will bring the cost of this road up to a large nominal sum above the estimated cost. The directors do not state the number of shares issued.	
According to our calculation the road will stand as follows, viz:	
Old stock paid to July 1, 1848.	1,636,117 50
" " since	7,553 18
	<hr/> 1,643,670 68

Received by loans on notes, etc.	658,153 44
Leaving to be raised by sales of stock.	1,543,502 13
Amount received	3,855,326 25
Add to this sum, for loss on stock sold at 50 dollars per share	1,543,502 13
Add to this the sum required to complete it	830,000 00
Loss on stock	830,000 00
Capital stock required to complete the road will be	7,048,828 38
Of this sum 658,153 44 dollars is a debt which cannot be paid off in stock, except at the market price.	
Add to this sum	658,153 44
And the capital required to represent the cost of this road is	7,706,981 82
This estimate is based on the supposition that only 830,000 dollars more are required to finish the road, and that the old stock on which 252,329 33 is still due will not be realised.	
This will make the cost of the Central railroad equal to 66,000 dollars per mile, or about on a par with the cost of the Western railroad. VIATOR.	
<i>For the American Railroad Journal.</i>	
Iron Steam Boilers, vs. Copper Boilers.	
It has been for many years, and still is, the practice of scientific men, to recommend copper in preference to wrought iron, for boilers to heat water or other fluids, on the ground of the superior conducting power of the former over the latter metal; and it will doubtless appear strange to many, that a doctrine so well established should now for the first time (known to the writer,) meet with the most unqualified dissent. The superior conducting power of copper over iron admits of no doubt, and yet, upon this confessedly correct basis has been raised the most fallacious doctrine the whole range of scientific engineering of the present age can produce. It is scarcely possible to imagine the enormous amount of money wasted, and worse than wasted, in this country alone, by the use of copper instead of iron in the boilers of steamboats, to say nothing of locomotives. Four boilers were recently put into an United States steamer, which cost \$120,000, and weighed 140 tons, while iron ones, according to Prof. Renwick, would have cost only \$34,000, and have weighed only 82 tons; thus, in addition to the \$86,000 used first cost, there is an useless weight of 58 tons also.	
That such an enormous outlay should be sanctioned, may well excite surprise, founded, as it is, upon an engineering blunder, did we not remember another which kept its ground for some time in England, the much valued invention of Blenkinsop, in the early days of railroad engineering.*	
In the case with these and many other boilers, (more particularly government ones,) the heaviest dearest and weakest material is employed, for reasons, which, sooner or later, must appear, too childish to be entitled to notice.	
The experiments which have been made, proving that copper is a better conductor of heat than iron, are principally those of M. Brot, and M. Despretz. On a bar of each metal metal being plunged into a bath of mercury or of molten lead, it was found that although the temperature of each was of course almost if not absolutely identical, at the small	
* This invention consisted in placing cogs upon the rails and wheels, to get a foothold, as it were, having first assumed that the "bite" would not be sufficient to prevent the wheels going round without moving the carriage forward.	

lest appreciable distance from the bath, that the copper, being the best conductor of heat, kept it to itself, or would not readily part with it, while the iron was an inferior one in conducting power, in consequence of parting with it more rapidly; the term "good conductor" has therefore been applied, erroneously, because it was intended to convey the idea that it would convey or conduct the heat or caloric of the fire, through itself, into the water, on the other side; which does not apply the copper but to iron; which is confirmed by the facts which are well known, that the absorptive and radiative powers are always equal in the same metal, and are far greater in iron than in copper, while the latter metal is in the same ratio the best reflector; for, reflection is inversely as radiation, as proved by Leslie and others. The power of reflection then, appears to control that of radiation, &c., &c, confine the caloric within the metallic (copper) surfaces, or at least within that depth in which the power of reflection lies.

With these facts before us, together with others proving beyond a doubt that all other things being the same, more water is evaporated in the same space of time in iron than in copper boilers, with the same amount of fuel; it is not possible that the present absurd and fallacious arguments can stand another year; and their downfall must be hailed with pleasure by all who love the truth, and progress, and science, and will inevitably lead to the perfecting of boilers, made of that still most noble of all the metals, iron, glorious iron.

Copper being a better reflector than iron, is then, in consequence, inferior as an absorber of caloric, and for the same reason also as a radiator, but superior as a conductor, that is, as a retainer; for it appears that it is difficult for the caloric to get into copper, (as compared with iron,) and equally difficult to get out of it again when it has once got in, and therefore it expands within it, so that in a locomotive boiler, with copper tubes of a moderate length, the end of the tubes next the smoke box, may be conveying away the heat from the end next the furnace; a state of things which it behoves our railway engineers and directors to look after, as one of the elements of extravagance, in that most economical boiler: iron tubes of half the length would extract more of the caloric from the burning fuel, and it is only because they are of copper, that it is necessary to make them so long.

Iron absorbs heat so much more rapidly than copper, that many explosions have occurred which would not had copper been used; although this is admitted, it is a little too bad to praise copper for this also, that it will not let a boiler blow up, when every thing considered, it ought to blow up, if a good fire and a good medium through which to convey its caloric into the water, have any virtue in them. Copper cannot be a good medium thro' which to raise steam and a bad one to blow up with; that is rather too much, yet the argument means this if anything, nevertheless, it is admitted that this is not the ground on which any dependence can be placed, because, whenever such a catastrophe has happened it has arisen from a defective arrangement of the boiler—in fact, the greatest defect that can properly occur in the designing of a boiler; the want of a complete and thorough circulation of the water within it, on precisely the same principle as the circulation of hot water in pipes, for the purpose of warming buildings. No boiler of such a construction as here recommended ever blew up from the cause alluded to, as it is well known that water is a far better conductor of caloric than any

metal, in the proportion, (according to the experiments of Mr. Sparkes of England,) of about 26 to 10. T. A. R.

For the American Railroad Journal.
Alexandria and Baltimore.

In a trip recently made to the old dominion, (Virginia,) I took occasion to stop a few days in the good city or village of Alexandria. I found the people of that portion of the country fully alive to the great importance of railroad matters. The Virginians are truly waking up after a long rest, and with the help of a liberal policy adopted by the Legislature of Virginia at the last session, will soon be in the front rank of the internal improvement states. The inhabitants of Alexandria and its vicinity, participating in the general railway mania that at present prevails all over Virginia, and having secured the construction of the "Orange and Alexandria railroad," running from Alexandria to the Louisa railroad at Gordonsville, to which the state subscribed \$540,000, are again in the field holding meetings in the back country and endeavoring to urge forward the Alexandria and Valley railroad. This road to which the state also subscribed \$1,250,000, is intended to branch from the Orange and Alexandria railroad some distance from Alexandria, and to reach the Virginia Valley; (the garden of the United States,) by crossing the Blue ridge, through the "Menasses Gap" the only place where the formidable barrier can be crossed without a long and expensive tunnel. At this place however a railroad can cross with grades not to exceed 70 feet per mile—and perhaps less.

The spirit and energy at present prevailing in Alexandria will, if continued, ultimately succeed in bringing to that place her full share of the immense trade of the village and render her more prosperous than she was in her most palmy days.

The inhabitants of Washington and vicinity are apparently perfectly satisfied with their railroad to Baltimore; and a ditch or canal through the city.—This however is not the case with the Baltimoreans. They are urging forward their Baltimore and Ohio railroad towards the Ohio as rapidly as possible.—They have already pushed the Baltimore and Susquehanna, the York and Maryland line, and the Wrightsville, York and Gettysburgh railroads, which, with the York and Cumberland road now in course of construction, will give them two intersections with the great Pennsylvania Central railroad. They have also a direct railroad communication with Philadelphia on the north and Washington on the south.

Not content with these great railroad connections, they, (fully alive to the value of the trade of the mighty west, that they have long struggled for,) are now endeavoring to move the construction of a continuous line of railroad directly up the valley of the Susquehanna to Williamsport; there to connect with the Williamsport and Elmira railroad, (26 miles of which are already finished,) thus forming a direct communication with the New York and Erie railroad at Elmira. This connection when formed will give to Baltimore an advantage over New York in point of distance that the New Yorkers little think of—as by this route Baltimore is 55 miles nearer Lake Erie than New York. The distance from Baltimore to Elmira being but 248 miles, while the distance from New York to the same point is 303 miles. The people of Baltimore with this connection will I have no doubt divert a large portion of the trade and travel direct to Baltimore, that would otherwise flow to New York.

The Depot of the Baltimore and Ohio railroad is shortly to be changed to the present locomotive terminus, thus doing away with the enormous tax upon that company for horse power which is necessary now to bring their cars to the Pratt street depot.—This change when effected cannot fail to be of great advantage in a pecuniary point of view to the company. The Baltimore and Susquehanna railroad company are also about doing away with their horse power, which is at present required to bring their cars from the locomotive terminus at Bolton to the interior of the city and *vice versa*. They have procured from the city authorities permission to come into the city with locomotive engines, and have in consequence procured a large block of land lying almost in the heart of the city. This block they are fast covering with an immense freight and passenger depot (built cornerwise of the block,) which, when finished will be one of the largest and most imposing railroad structures in this country.

The building alone, I am informed, will cost about \$80,000, and is to be constructed of brick, granite and freestone. The company are also procuring an engine expressly to surmount the heavy grades in North st., which will transport all the cars, both freight and passenger, from the new terminus or depot, to the present locomotive terminus at Bolton—this engine to run backwards and forwards between Bolton and the depot only—thus avoiding entirely the present expensive horse power.

A spirit of energy prevails among all the business men of this city that is truly gratifying to observe. I have this day visited several of the machine shops in this city, the principal one being the old and widely-known locomotive establishment of Ross Winans, Esq., the extensive works of A. & W. Denmead & Son, the works of Messrs. Pool & Furgerson, and the Vulcan Works of Messrs. Murray and Hazlehurst. They have all apparently as much work on their hands as they can well attend to. This alone speaks volumes in favor of the prosperity of Baltimore. Among the various engines in course of construction at the different places, I noticed at the works of Messrs. Murray & Hazlehurst a pair of large oscillating engines for the new steamers to ply between this city and Charleston. These are I believe the first oscillating engines of large size ever constructed in this country. The cylinders are 74 inches and 10 feet stroke.

If they fully succeed, of which they have no doubt, these gentlemen will have the honor of constructing the first engines of this kind of large capacity ever built here. I also noticed at their works some large machinery being constructed for the new government steamer now building at Norfolk.

The various and almost innumerable forges and blast furnaces in and around the city look prosperous, and the basin and its vicinity look as if Baltimore had at least her share of the business of the Atlantic coast. R.

Improved Railway Wheels.

[Specification of a patent granted to William Wharton, Superintendent of the Carriage Department of the London and North Western Railway Station, Euston square for certain improvements in the construction of vehicles to be used on railways, or other roads and ways. Inrolled, June, '49]

The patentee, in his specification of these improvements, thus sets forth the nature of his invention: The first part of my invention of certain improvements in the construction of vehicles used on railways, or on other

roads or ways, consists in a new mode of constructing the wheels of such vehicles. The construction of the wheel is as follows:—Into the boss, or nave, the ends of curved wrought iron spokes are cast, or, in some cases, it may be found desirable to form the nave of wrought iron, the spokes are connected to a wooden felloe, and to the tire of the wheel, by countersunk bolts and nuts; and between each pair of spokes, wedge shaped pieces of metal are placed, and which are connected together by a bolt, passed through a hole formed therein—the lower extremity of the said bolt having a thread cut about it; a corresponding thread, or screw, being formed in the hole in the wedge, into which the bolt takes; and by turning round the said bolt in one direction, by means of a key, or spanner, placed upon the head of the bolt, the wedge shaped pieces will be made to approach towards each other, which will have the effect of compressing the curved sides of the spokes, and thereby cause that part of the spoke, which is in contact with the felloe, to be pressed forcibly against it; and such pressure will be transmitted from the felloe to the tire, and in this manner, and by these means, I form a solid and substantial wheel.

Another form of construction of wheel, to be applied to vehicles used on railways, consists in having the cast iron boss, or nave, of the wheel formed in two parts, the tire being connected to the boss, or nave, in the following manner:—The boss, or nave, has holes formed therein, through which bolts are passed, in a radial direction, from the centre of the wheel, the said bolts being employed for the purpose hereinafter mentioned, connected to the boss, or nave, of the wheel by countersunk bolts and nuts, passed through holes formed in the parts of the nave and block, the outer extremity of each of the blocks being securely connected to a ring of wrought iron formed with two flanges, by means of countersunk bolts, passed through holes formed in the tire, the ring and block; there is a hole formed through the center of each block and fitted with a short tube of metal, for the purpose of connecting these last mentioned parts together means of a split key passed thro' a hole in the end of the bolt. Wedge shaped pieces of metal are placed between each pair of wood blocks, and connected thereto, and to the boss, or nave, by a bolt and nut or the bolt may be either cast into the nave of the wheel, in which case, there would be a nut upon its other extremity, or the said bolt may be screwed into the nave of the wheel instead of passing through it, by turning round the bolt by means of a key, or spanner. The wedge shaped piece will be forcibly pressed against and between each pair of blocks, and as each of these wedges is successively tightened, it will be obvious that each block will be compressed. The grain, or fibre, of the wood blocks, must be placed radiating from the center of the wheel, and in this manner, and by these means, I form a solid and substantial wheel. It should be observed, that the wedges may be easily tightened from time to time by the means before described, should the shrink-

age of the wood blocks require it. Another form of construction of wheel is exhibited, which is only a modification of the wheel first described. In this case the wooden felloe is entirely dispensed with, the spokes being in close contact with the tire of the wheel, and connected thereto in a similar manner to the former wheel. Another part of my invention consists in constructing wheels upon the principle hereinbefore particularly described, with reference to wheels to be used on railways. The difference consists simply in making the tire of the wheel for common roads flat instead of flanged, and the nave must be formed to suit the axle upon which it is to be placed; in other respects, the arrangement and construction of the wheels are similar to those before described and represented.

Claims.—Firstly, the use and application of wedges, or wedged shaped pieces of metal, in combination with, and adapted to, curved or bent spokes of metal, in the manner and for the purpose hereinbefore particularly described (with reference to *figs 1, 2, 3, 8, 9, 10*, of the sheet of drawings annexed to the specification).—Secondly, I claim the application of wedges, or wedge shaped pieces of metal, in combination with blocks of wood, either of the form shown or hexagonal, arranged in the manner, and for the purpose hereinbefore particularly described (with reference to *figs. 4, 5, 6, 7*, of the sheet of drawings annexed to the specification).—*Min. Jour.*

Indiana.

Indianapolis and Bellefontaine Railroad Co.

The annual meeting of this company for choice of officers took place at Anderson on the 4th inst., at which Jeremiah Smith, William M. Way, Peter S. Miller, and David Heaston, from the county of Randolph; Jas. Truitt, Samuel P. Anthony, James L. Russey, and David Kilgore, from the county of Delaware; Allen Makepeace, William Sparks, Robert N. Williams, and James Gray, from the county of Madison; Thos. R. Noel, from the counties of Hamilton and Hancock; Robert R. Underhill, and O. H. Smith, from the county of Marion, were chosen directors.

Hon. Oliver H. Smith was re-elected president, James G. Jordan secretary, Austin W. Morris treasurer, and Thomas A. Morris engineer.

The executive committee elected for the year consists of Jeremiah Smith, R. N. Williams, Thos. R. Noel, R. R. Underhill, and James L. Russey.

Our readers will recollect that in our paper of the 7th instant we gave a detailed statement of the affairs of this road, taken from the first annual report of the president, made to the directors in March last. The progress made since that time will be seen in the address of the president to the directors at the late meeting, a portion of which we are happy to lay before our readers. He says:

"Having in March last published my first annual report, I deem it unnecessary on this occasion to go into a detailed statement of our affairs and prospects. It may however be proper to say generally, that since the date of my report, about four months, there have been added to our subscribers 560, making our present number 1880. Our cash subscriptions of general and special stock have increased \$64,000, and our land subscriptions \$13,500, making the addition to our subscriptions, since my last report, \$77,500, while our energetic stock solicitors are actively and successfully engaged in taking and closing stock.

The interest on the few bonds we have issued, has been punctually paid, and all our pecuniary arrangements have been faithfully discharged. Since my report, we have let the graduation of the first general section of twenty-seven miles, from Indianapolis to Pendleton and the contractors are rapidly progressing with the work. It is proper that I should say here, that I have deemed it proper to the success and harmony of the work, to discourage the use of spirituous liquors on the line, in the most decided terms—a policy which I desire to see rigidly enforced by the contractors. The contract prices of preparing this section for the superstructure are under \$1500 to the mile, including grubbing, grading, and all other work. This section will be ready for the superstructure this season, and we anticipate the final location of the whole line, and the letting of the clearing off the timber, and the grubbing of the other general sections, from Pendleton to the Ohio line, in the course of the summer and coming fall, payable out of the special stock, so that it is manifest that our present condition and prospects fully justify the universal confidence now felt, in the success of our great enterprise.

It may not be improper to say a word upon the character of our road, as compared with other roads of a like character in other States. In a table in the American Railroad Journal, I find the average of the highest grade of 31, American Road, to be 42½ feet to the mile. The average cost of construction and equipments of 65 given American Railroads is \$31, 751 per mile; our road with the heavy T rail, right of way, depots, and ample equipments, will not exceed 10,000 per mile, and still the annual dividends of those roads, so far as the are given average 7 1-3 per cent. on their immense cost. I see it published, that the average cost of construction and equipments of the English Railways, all with double tracks, is \$150,000 per mile; and yet these roads make 4½ per cent. annual dividends; if this be so, what must our work, unlimited in dividends, divide, when it shall be made, and our connection with the Eastern, Western, Southern, and other roads now in progress shall be completed.

Since, then, it is no longer a question that our road of 83 miles, is to be an important link in the most direct line of Railways from the Atlantic cities of Boston, New York, Philadelphia, and Baltimore, through the centre of this great valley, there remains no doubt whatever of the importance of the work, the ultimate value of the stocks, and of the propriety of constructing the road upon the most permanent gravel basis, and with the most substantial oak superstructure, and the heavy T rail, so as to ensure the utmost durability and capacity, and the highest rate of speed.

A railroad, "constructed upon the most permanent gravel basis, and with the most substantial oak superstructure, and a heavy T rail, so as to ensure the utmost durability and capacity, and the highest rate of speed," costing only \$10,000 per mile, must make an Englishman stare, who cannot get a charter thro' parliament for an equal sum, nor build a road for less than fifteen times as much money! Yet we can assure him that the estimates of the gentlemen connected with this road are probably within the mark. The cheapness with which railroads can be built in the west, will lead to their use there more universally than in any other part of the world. Every good agricultural section possessing a moderately dense population, has sufficient strength to build one, and they will soon become the ordinary means of transit both of travel and merchandise. For reasons to which we have often alluded, the roads in the west will be most economically built. We would here urge the great importance of roads securing in the outset ample accommodation for depots and stations, when it can easily be done at trifling expense. The neglect of this at the right time, and the enormous sums required for new purchases of land, made valuable by the roads themselves, to meet an increased business of companies, have seriously lessened the value of the stocks of many roads in the east.

As the year has more than half elapsed since our volume commenced, we shall esteem it a great favor if those indebted for their subscriptions for the current year will at once forward us the amount due.

In consequence of complaints that pamphlet postage is charged at some offices on our paper, we have been compelled to discontinue the stitching and trimming of it—which work we must turn over to our subscribers.

Our paper is chargeable only with newspaper postage.

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A TURN TABLE, thirty feet in diameter, made by Aldrich of Worcester, nearly new, and in good order, will be sold at a low price, enquire of

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July 28, 1849.

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AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13 8-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.

2. For the construction of the connection of the Company's canal with the James River at Cartersville.—This work will consist of a timber dam across James river, the excavation of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.

3. For the construction of the connection of the Company's canal with the James river Near new Canton.—This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.

4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.

5. A wooden bridge across James river at Bent Creek 870 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23rd of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN.

Chief Engineer J. R. & K. Co.
Richmond, July 18, 1849. 3129

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New York and Harlem Railroad Extension,
Croton Falls, N. Y.

Ford, James K.,
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Gzowski, Mr.,
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Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
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Holcomb, F. P.,
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June 8, 1849.

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To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyler & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

Large Pumps.

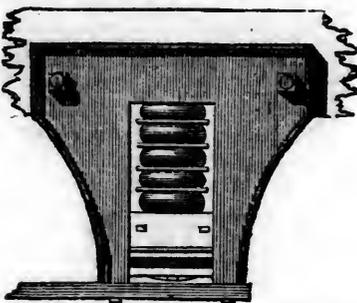
THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by separate statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber, which is used by Fuller & Co.

Fuller's springs are needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter: in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, VIZ:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

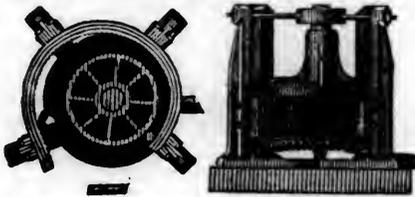
2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.
Price \$3, to be had of all the principal booksellers.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patent Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

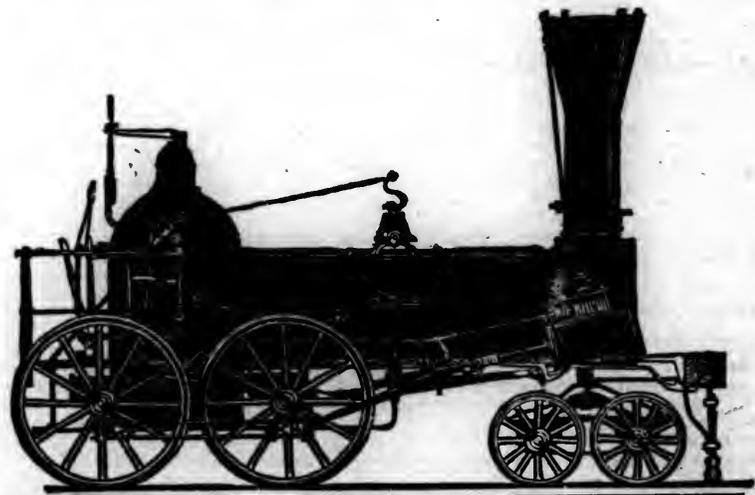
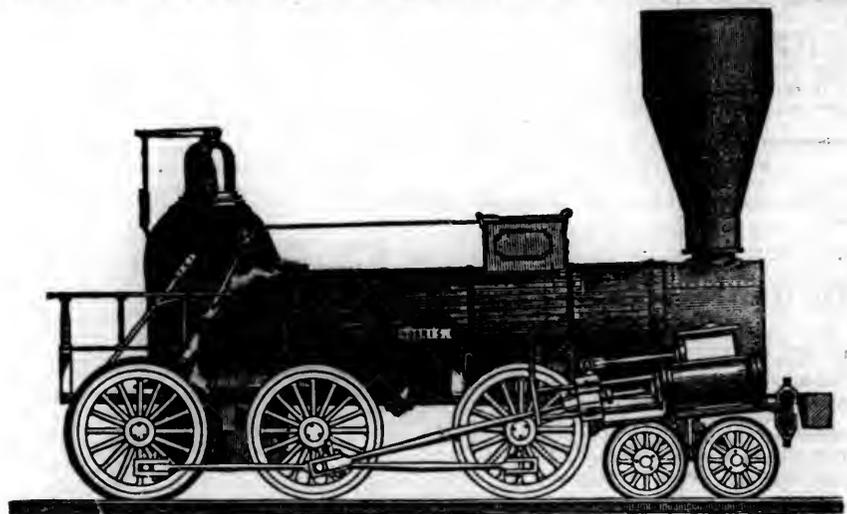
A. T.
Kensington, Philadelphia Co., }
March 12, 1849. }

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.*Cambridgeport, Mass., February 16th, 1849.***NORRIS' LOCOMOTIVE WORKS.**
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, August 4, 1849.

Iron Ores and the Iron Manufacture of the United States.

CONNECTICUT.

Continued from page 467.

Sand Plain Furnace—Stuart & Hopson's. This furnace has been lately rebuilt, supplied with hot blast pipes, and run with good success. It is situated on the Housatonic river near the railroad. It makes use of the Kent ore, some from the American ore bed, twelve miles distant, and has been supplied with some from Stockbridge, Mass., 48 miles by railroad. The average cost of the ore is about \$3 per ton, delivered. The Amenia ore costs \$3 25; charcoal costs about \$6. It makes more iron than the average yield of the Connecticut furnaces, in part from using hot blast, and in part from being skillfully run; and for the same reasons its consumption of coal is less than the average. The yield of the furnace is four and a half to five tons per day for eight months in the year; and the consumption of coal is estimated at 130 bushels.

Macedonia Furnace.—This is a small furnace, twenty-four feet high, built about 17 years since.—

It has lately been altered to hot blast. It uses ore from the Amenia bed at an expense of \$3 25 per ton and the Kent ore, which costs—for duty in the mine 50 cents; mining one dollar; and transportation one dollar—\$2 50; coal is from \$6 to \$6 50 per hundred bushels.

Bulls Bridge Furnace.—This was built two years after the Macedonian Furnace, but has been idle many years until lately. It is situated on the Housatonic two miles from the railroad. Its blast is partially heated only. It uses ore from Quaker Hill mine, New York, which is seven miles distant. The cost of the ore is about \$2 52; charcoal from \$6 to \$8. An experiment has lately been tried at this furnace to substitute anthracite for charcoal.—The disproportioned rates of transportation to and from the seaboard, which these lower furnaces are compelled to pay, operate greatly to their disadvantage, and to check further development of the mineral resources of the country. Companies making iron in Berkshire County, Mass., can actually ship it to New York for one dollar less per ton than is charged to these lower furnaces, which are from 50 to 60 miles nearer. The explanation is, that the Massachusetts companies have a choice of rates either to Hudson or to Boston, and therefore the Housatonic road must charge them low rates, or lose their business.

Waramough Furnace.—This is in Washington near the line of New Milford, six or eight miles east of Kent or seven from the railroad. This furnace was rebuilt in 1846 and supplied with a complete set of hot air pipes and other modern improvements. It is situated on a good water power, the outlet of a pond some three miles long. At the head of the pond are some magnetic ore veins, which however, have not proved of importance either for the quantity or quality of the ore.

The Kent ore bed is seven miles distant. The furnace pays \$1 75 for the ore at the bed, raised, and \$1 25 transportation. They have a perpetual lease of the Fuller ore bed, 4½ miles off, and pay for this ore a duty of half a dollar. The ore from this mine is considered of good character. It is used to some extent by the forges. There appears to be however, difficulties attending the mining of it in consequence of its low position. Another bed not much known is owned by this company only half a mile from the furnace. A great portion of their ore comes from Quaker Hill, New York, about 14 miles; and they have also purchased several tons of

the Stockbridge ore of Mass. The average expense of the ore at the furnace is not far from \$4. Woodland is perhaps more abundant in the vicinity of this furnace than of any other in Connecticut. Contracts for charcoal are made at \$5 75 and \$5 87 per hundred bushels. The furnace is 8 feet across the boshes, and 38 feet high, and is capable of making 5 tons of iron per day.

Veins of Spathic Iron in New Milford and Roxbury.—These veins occur about seven miles from the Washington Furnace, crossing the line of the two towns above named half a mile southwest from the Shepaug river. I have seen the two veins represented in the figure. Prof. Shepard speaks of a third, which I have not seen.*

The southern one of the veins is met with by the road side about 3¼ miles from the railroad or elevated land in ledges of a granitic character. The rock appears to be regularly stratified, dipping about 25° to the northeast. The vein here, as seen on the surface, is composed of quartz and the spathose proto-carbonate of iron mixed together. It is a similar ore to the white carbonate described as occurring with the hematites at the West Stockbridge ore bed, containing, when free from foreign matter, about 40 per cent. of iron, and 36 of carbonic acid, the remainder being oxygen, magnesia, lime and manganese, the three last in small proportions. After roasting, the percentage is much increased by the loss of the carbonic acid. At this locality the ore is found in a true rock vein associated with quartz, the whole thickness of the vein at the surface being three feet. Its position is vertical, and its course at right angles to the stratification of the granite in which it lies. This vein, I think, may be traced in the NW. and SE. direction near the road for more than a mile. It has not been worked.

The other vein, about half a mile farther to the NE., resembles the former and may be traced equally far. It has been worked to considerable extent by different companies, the first operations being commenced a hundred years ago. The object was silver, and large sums of money have been expended in sinking shafts and running adits in the expectation of opening a rich silver mine. I found the old workings filled with water, so that I could get no view of the mine. Professor Shepard speaks of

* Report on the Geological Survey of Connecticut, p. 31; also Silliman's Jour. vol xix.

Table of the Hematite Furnaces of Massachusetts, Connecticut and New York.

Number.	Furnaces.	Situation.	Distance to Railroad.	Blast.	Ore hauled. Miles.	Cost of 2½ tons of ore.	Cost of coal to ton of iron.	Cost of ore and coal to ton of iron.	Remarks.	
1	North Adams,	Berkshire county, Mass.	on railroad,	hot,	2½, 6, 15 & 22	\$7 00	\$8 25	\$15 25	Transportation of iron to Boston \$4, to Troy \$3.	
1	Cheshire,		on railroad,		½ m. & 1 m.	3 50	7 50	11 60	" " " "	
1	Lanesboro,		railroad 1½ m.	hot,	3½ & 4½	4 66	7 50	12 16	" " " 4 50 " 3 50.	
1	Richmond,		railroad 1 m.	hot,	1½	4 66	11 25	15 91	" " " 4 " 3 }	
1	Lenox,		on railroad, } R.R. 5½ mls. }	hot,	7½	6 46	10 50	16 96	" ore duty 37½ cents, costs \$2 per ton. } " " " 4 " 4 }	
2	Stockbridge,	Mass.	on railroad.	hot or } cold, }	7	4 33	10 50	14 83	Company owns the ore beds. Transportation to Boston \$4. Troy 3. New York 2 50.	
1	Van Deusenville,	Salisbury, Conn.	railroad ¼ m.	hot.	8	5 83	9 37	15 20	Transportation to Boston \$4 50, Troy 3, N. York 2 50.	
1	Chapinville,		to railroad \$1,	cold,	7	9 33	14 00	23 33		
1	Joyce's		" "	" "	cold,	7	9 33	14 00	23 33	
1	Mt. Riga,		" "	" "	cold,	4	8 96	12 00	20 96	
1	Limerock,		" "	" "	cold,	5	9 33	13 00	22 33	Transportation to New York \$3. All these furnaces principally supplied from the Salisbury ore bed, and pay the extraordinary duty, or ore-leave, of \$1 25 per ton of ore.
1	Adams,	N. Canaan, "		cold,	11	11 08	12 00	23 08		
1	Beckley's,	" "		hot,	11	11 08	9 00	20 08		
1	Church & Scovilles,	S. Canaan, "	railroad 3 mls.	cold,	11	11 08	12 00	23 08		
1	Hunt, Lyman & Co.	" "	railroad 5½ m.	hot,	10½	11 08	9 00	20 08		
1	Cornwall Iron Co.	Cornwall "	railroad ¼ m.	cold,	10½ & 12	11 08	11 00	22 08		
1	Cornwall Bridge,	" "	railroad ¼ m.	cold,	14 & 40	7 00	11 00	18 00	Owned by C. C. Alger, Esq., of Stockbridge, ore sent from West Stockbridge, Mass.	
1	Sharon Valley,	Sharon, "		hot,	3 & 10	5 25	11 25	16 50	Uses ore from Amenia and Indian Pond ore bed.	
1	Weeds,	" "		cold,	"	5 83	14 00	19 83		
1	Sand Plain,	Kent, "	near railroad.	hot,	12 & near.	7 58	9 00	16 58	Uses some ore from W. Stockbridge, 48 m.	
1	Stuart & Hopson, }									
1	Macadonia,	" "		hot,	10	6 70	9 75	16 45		
1	Bulls Bridge,	" "	railroad 2 m.	hot,	7	5 83	10 50	16 33	About using anthracite.	
1	Waramaugh,	Washington, Conn.	railroad 7 m.	hot,	4½ & 14	9 33	8 62	17 95		
1	Capake,	Columbia Co., N.Y.	to railroad \$1,	cold,	0	2 92	14 00	16 92		
1	Northeast,	Dutchess Co. "	railroad 7 m.	hot or } cold, }	0	3 50	10 50	14 00		
1	Amenia,	" "	Housatonic R. 7 miles, near Harlem R. R.	hot,	0	3 50	9 75	13 25		
1	Dover,	" "	Har. R.R. near	hot,	5 & 10	5 83	10 50	16 33		
1	Whites,	" "	" "	hot,	2 & 10	5 83	10 50	16 33		
1	Beekman,	" "	13 m. to Hudson river and railroad.	hot,	2	4 06	12 00	16 08		
1	Fishkill,	" "	13 m. to Hudson R. & RR	hot,	2	4 06	11 25	15 33		
1	Poughkeepsie,	" "	on Hudson river and R.R.	hot,	14	6 41	† 7 00	13 41	{ This furnace is now supplied in part with magnetic ores from the other side the Hudson, at a less cost than that of the hematite.	

* This is estimated at 150 bushels to the furnaces using the hot blast, and 200 to those blowing cold. † Anthracite.

the vein as being from six to eight feet in width.—What appears to be a continuation of this vein, seen on the surface some rods to the southeast, is there not more than two feet thick. At the old mine around the shaft, which is said to be 175 feet deep, are heaps of the sulphurets of iron, copper lead and zinc.

Could any large quantity of the pure ore be obtained free from the quartz gangue and these other matters, there is no doubt it would be a very valuable ore to mix with the hematites—but we have no satisfactory evidence of the thickness of the ore in the vein, over which, as Prof. Shepard remarks, the

white quartz frequently preponderates. I found some lumps of ore containing large seams of sulphuret of iron; if these should prove frequent they would much impair its value. At any rate, it will require careful sorting; and though well situated on elevated ground for mining without serious trouble from water, the expenses of following a vein of this kind in rock can hardly be repaid by a material, which, at the most, is worth on the surface only about \$2 50 per ton weight of some ten or twelve cubic feet. Prof. Shepard gives an interesting history of the mines, to which I would refer for further particu-

lars; he also describes the process of converting this variety of ore into steel in Germany, for which purpose it is there very extensively used. The best steel, however, is made from the magnetic ores, and the excellent varieties of these we have in this country, so well adapted to the manufacture of the best steel, remain strangely neglected.

The sixteen furnaces above described are all situated in Litchfield county. They average each one from 700 to 800 tons of iron per annum, or about 12,000 tons in all. Making iron generally of excellent quality, the manufacturers seem to have been contented with this advantage, and have failed

to keep pace with the improvements which have so greatly increased the yield at the furnaces in Massachusetts and other states. The expenses of the business are greater, too, in this state, principally from the high price of the ore, and in part from the largely continued consumption of fuel. Few of the hot blast furnaces make their iron at an expense less than twenty-five dollars, and to the cold blast furnaces this rarely falls short of thirty dollars delivered on the railroad. When to this is added the cost of transportation to market, it is apparent that the price of the material must fall, or the furnaces stop in times when Scotch pig can be delivered in New York and Boston at 20 to \$22 per ton; even allowing a demand to considerable extent for the superior quality of iron these furnaces make for forge purposes, at an advance of five to seven dollars over the price of Scotch pig.

Besides these furnaces, which use hematite ores only, there are in the centre of the state others maintained by the bog ores found in their vicinity. One of these in operation is at Hebron; and another, whether now in operation or not I do not know, at Stafford, near the Massachusetts line. These furnaces are of small size, each makes only between three and four hundred tons of pig iron, and this of inferior quality, suitable only for foundry iron. It is run into castings, which are sold in the country around. The bog ore is found in the neighborhood of the gneiss rocks containing pyrites, from the decomposition of which it seems to be derived. The localities of the ore are scattered and no very large amount is found in one place.

The table below presents a list of the furnaces which make use of the hematite ores in this state and in Massachusetts. Those of the same class in the adjoining counties in New York are also added, all belonging in fact to the same district.—Data of the cost of manufacture are given in a condensed form, which exhibit at a glance the relative natural advantages of the different establishments. For this table it was necessary to assume a uniform consumption of fuel and ore for all the furnaces of the same character of blast; though by differences of care and skill, or of materials or machinery, some run with greater or less economy than appears in the table.

Copper Ores of Lake Superior.

Continued from page 468.

LAKE SUPERIOR COMPANY.

By entering the field among the firsts, this company secured several leases of locations on which was then regarded as the choicest part of Keewena Point. Some they disposed of to other companies, but retained one next east of the Pittsburg and Boston company, lying on the lower part of the brook called Eagle river. The trap rock approaches here nearly to the lake, and is exposed up the course of the stream and of its branches for nearly ten miles inland. By its rapid fall the ledges are often uncovered, and in many places particles of copper are seen in the crevices of the rock, and sometimes what appear to be veins containing lumps of this metal of considerable size. At a point a mile and a half up the stream the indications seemed sufficiently encouraging to warrant the establishment of a mining settlement. Shafts were commenced in the hard amygdaloidal trap by the side of the brook, where native copper with some silver was found disseminated in the form of a "stocwork." This metaliferous portion of the rock seemed to follow a regular course like a vein, and this was the usual course of the veins of the country. Encouraged by this, the great extent of this belt, and the belief that

the silver and copper were in sufficient quantity to warrant large outlays, the company built a mill for crushing and washing the ore, and laid out their mining operations on an extensive scale. The rock was found extremely hard and expensive to mine, and no less so to crush after it was quarried. The cast iron stamps, made of inferior quality of iron, were rapidly worn out, and the ore proved much less rich than was expected. Iron mills of different kinds were tried, but they all proved of no service. Strangely enough no attempts were made to roast the ore previously to crushing it, though some experiments tried on a small scale proved the efficacy of the method; and smelting was an operation that had not then been attempted in the country.—Still, the explorations of the mine were vigorously prosecuted: one shaft was carried down nearly 100 feet, and levels were run off in directions, reaching far more productive spots. One of these passing under the stream, close by, entered into what the workmen called an "opening." The trap rock suddenly terminated in a vertical wall, and against this lay piled a great collection of loose materials—boulders of trap rock and sandstone, and irregular shaped pieces of copper, all more or less worn by the action of the water. These materials were packed so closely together that they were like conglomerate rock and could be removed only by blasting.—Little water could penetrate them, except on working up near to the bed of the brook, it came down like rain. Following this collection down, it was found to reach to the depth of forty feet, and in another place to over sixty feet below the bed of the stream; and under it lays a true well defined vein, composed of quartz, calcareous spar and laumontite, containing a small portion of copper and silver. The deposit above it yielded in many places large quantities of metallic copper. One of the head miners informed me he alone took out in one day from one small spot 3600 lbs. The pieces varied in size from small particles to masses of several hundred pounds weight; one piece weighed even 1600 lbs. These were found closely packed together at the bottom of the deposit on the surface of the vein, the smaller pieces at the bottom, the largest above. Boulders of trap, well rounded, filled the remainder of the opening. Particles of silver also were met with, one pure lump weighing 6 lbs., and 10 ounces.—This deposit was drifted on for 108 feet in length; but though a considerable quantity of copper was taken from it, no more such pockets were found as that described—still enough was procured to pay for the work done in it.

The extent of this collection of loose materials is not yet ascertained: its width in some places seems to be merely that of the vein, being shut in on each side by walls of trap; but for the most part it is of much greater width, spreading out on the east side of the stream over a considerable area, and even rising into a hill full sixty feet above the present bed of the brook. In this hill the conglomerate collection abuts against a vertical wall of trap, which is probably the wall of the same vein. A level has been driven on the line of contact of the two rocks, without however finding it. It is only beneath the present bed of the stream, and over the line of the vein, that this collection was found productive in copper; explorations, therefore, are not likely to be carried on in other parts of it.

The period of the collection of these materials is evidently very remote, and the manner of it somewhat obscure. From the height of not less than 60 ft. above the present bed of the river to the depth of the same number of feet below it, a powerful action

must have been at work during long periods of time wearing through this very solid rock, and filling the depressions with the broken fragments, which were smothered and rounded by the incessant movement of the water and stones. The immense quantity of rounded boulders collected together seems to show that the river above has been capable of producing these effects; though from the vein being cut out so nicely, and the fact of ancient stone hammers being found on this locality, one might be inclined to refer them in part to human agency; particularly as the ruins of extraordinary mining operations, conducted by an unknown race of people, are found in other parts of this region, together with great quantities of these singular hammers, which appear to have been their principal tools. But these operations, so vast and wonderful, can only be explained by the action of the river running over rapids and carrying masses of ice and stone, sometimes wearing out and sometimes filling its bed, and confined through long periods of time by the looser character of the vein itself within its narrow line.

The thickness of the vein below this collection varies from one to four or five feet. The composition is similar to the other productive copper veins of the country; but though it seems certain that this was the original repository of the loose masses of copper found on its surface, the workings upon it, though extending to the depth of 150 feet, and horizontally still farther, have not been so fortunate as to strike any rich portions. On the contrary they have been for the most part in barren veinstone containing a mica scattering of copper.—Its position is nearly vertical, and its course N. 26° W., S. 26° E.

In consequence of the ill success attending the work it has been abandoned for the last two years after the expenditure of a large capital. We understand, however, that the company is reorganized under the name of the "Phoenix Mining Company," and that the work is to be resumed. A portion of the tract is purchased of the Government, and several localities are known upon it, which present a considerable show of copper. Should this be found in veins, as well as dispersed in the amygdaloid, the enterprise may yet be successful, as indeed the farther exploration of the vein in the brook may ultimately prove. It is of no little interest to determine the character of these indications; for there are some points, which may hereafter be referred to more fully, in which this locality differs from all the other productive mines of this region; and a successful result would show them to be unimportant for this, as well as for some other tracts similarly situated.

Copper Falls.—This is the next location east of that just described, and was set off by the Lake Superior company to the new association formed in Boston under the name of the "Copper Falls Company." The mines are in the face of the high ridge fronting the lake and one to two miles back from it. Ledges of conglomerate extend from the lake up the slope of the ridge, their dip being towards the lake at an angle of 22°; alternating with them at the northern slope of the ridge are layers of trap and amygdaloid in conformable position. The lowest layers of sandstone and conglomerate crop out on the slope of the ridge, the main portion of this being occupied by trap rocks. The veins cross these layers of rock, their course being from the ridge straight towards the lake. The principal one opened is in a deep ravine, which crosses these alternations of rock; its course, as usual, that of the

$$f W \times 6.2832 r$$

acts at the circumference of the axle, and when transferred to the circumference of the roller will therefore become

$$\frac{f W \times 6.2832 v}{R}$$

where R is the radius of the roller and the other quantities of the same value as before. M. Morin gives the following values for f as found by experiment for the several conditions stated:

Coefficients of Axle Friction.

Bodies in contact.	Dry but a little greasy.	Oil, tallow or lard. Applied continuously.	Applied in the usual way.
Wrought iron upon bell metal.....	0.251	0.054	0.075
Cast iron upon bell metal.....	0.194	0.054	0.075
Wrought iron upon cast iron.....		0.054	0.075
Cast iron upon cast iron.....		0.054	0.075
Wrought iron upon lignum vitæ.....	0.188		0.125
Cast iron upon lignum vitæ.....	0.185	0.092	0.100

By substituting in the equation

$$F = \frac{f W \times 6.2832 r}{R}$$

the value of f, given in the above table under the heading corresponding to the conditions of any particular case, the mechanical effect expended in overcoming F, the axle friction at the edge of a roller may be calculated.

Friction is the force necessary to overcome or break the asperities of two surfaces in contact: unguents have the effect of diminishing this force by entering into the hollows of the opposing surfaces: the amount of diminution being different for different unguents. Though the above table may furnish results sufficiently close to the truth, it can hardly be considered sufficiently accurate to regulate the choice of metals where friction is considerable, as in the gudgeon and journal of heavy water wheels, etc. The following table of the mean results of experiments by Mr. Babbage gives the best means of approximating to the different qualities of metals as surfaces in contact.

The Friction of Metal on Metal.

Bodies.	Area of rubbing surface.	Mean of weights to be moved.	Mean of weights required to move them.	Mean proportion.	Weights to 1 inch area.
Brass on wr'ght iron	5.90	69.55	9.510	7.312	11 12.4
Cast iron on cast iron	6.75	54.25	8.538	6.475	8 0.5
Soft steel on wrought iron.....	5.90	69.55	13.261	5.198	11 12.4
Brass on steel.....	5.90	69.55	10.584	6.592	11 12.5
Brass on brass.....	5.90	69.55	13.041	5.764	11 12.5
Cast iron on wrought iron.....	5.90	69.55	12.697	6.023	11 12.5
Cast iron on soft steel	5.90	69.55	11.139	6.393	11 12.5
Tin on tin.....	5.90	69.55	22.666	3.305	11 12.5
Soft steel on soft steel	5.90	69.55	10.430	6.860	11 12.5
Cast iron on hard brass.....	7.75	54.25	8.390	6.581	8 0.5
Wrought iron on wrought iron.....	5.90	69.55	10.417	6.561	11 12.5
Brass on cast iron..	6.75	54.25	8.196	6.745	8 0.5
Tin on wrought iron	5.90	69.55	11.672	5.846	11 12.5
Tin on cast iron....	6.75	54.25	9.344	5.671	8 0.5

These tables show that the friction of tin on tin is less than that of any other two metals; that a journal

of cast iron always gives less friction than a journal of wrought iron, except in the case of soft steel on wrought iron, which after tin on tin gives a minimum friction; that contrary to the general practise brass as either a journal or a gudgeon involves more friction than the harder metals, except when both journal and gudgeon are made of that material. It also shows that inasmuch as cast iron on wrought iron shows a smaller amount of friction than cast iron on cast, by seven per cent, and than wrought on wrought by eight per cent. the traction is least on those railways where cast iron wheels are made to run on rails of malleable iron. We will now subjoin a table of experiments on axle friction with the view of showing the results of metal on metal when unguents are used. This table is also copied from Mr. Babbage, and we regret that as that learned gentleman has omitted to state the dimensions of the machinery employed in those experiments, we are unable to apply the results in the cases given to the ascertaining of the respective coefficients of friction.

AXLE FRICTION WITH AND WITHOUT UNGUENTS. Gun Metal on Cast Iron.

Weight on the axle.	Weight required to move it.			Equivalent of weight for 1 lb. of friction.		
	Without unguents.	With black lead.	With oil.	Without unguents.	With black lead.	With oil.
Cwts.	lbs. oz.					
1	16.0			7.00		
2	30.0			7.46		
3	44.0			7.63		
4	60.12			7.37		
5	112.0			5.00		
6	134.0			5.01		
7	154.0			5.09		
8	175.0			5.12		
9	200.0			5.04		
10	238.0			4.70		
11		170.0	218.8		7.24	5.63
10	173.8	131.1	117.4	6.45	8.54	8.59
11	228.0	161.0	140.0	5.40	7.65	8.80

Cast Iron on Cast Iron.

Weight on the axle.	Weight required to move it.					
	Without unguents.	With black lead.	With oil.	With hogs lard.	With anti-at-trition composition.	With tallow.
Cwts.	lbs. oz.					
1	14.12	3.8	1.8	1.10	7.8	3.1
2	31.4	7.0	3.1	7.8	9.0	5.12
3	47.8	16.8	23.0	10.8	8.5	9.8
4	65.8	24.8	43.0	12.8	11.1	12.12
5	84.0	29.4	47.8	14.8	13.12	14.12
10	272.0	193.8	120.8	21.12		
11		181.0	200.12			

Equivalent of weight moved according to the above table for 1 lb. of friction.

#	7.59	37.33	34.46	14.93	36.57	32.00	12.19
1	7.59	32.00	36.57	24.83	38.95	37.33	18.56
2	7.16	32.00	29.86	24.83	38.95	37.33	18.56
3	7.07	20.36	14.60	32.00	40.42	35.36	23.57
4	6.83	18.28	10.41	35.84	40.49	35.13	22.97
5	6.66	19.14	11.78	38.62	40.72	37.96	23.82
10	4.11	5.78	9.29	51.82			
11		6.80	6.13				

The deductions from the above results are that yellow brass on cast iron shows a higher friction than on gun metal or cast iron; and that this latter shows a higher friction than cast iron on cast iron: that oil and hogs lard are the best unguents for light loads; and that tallow, soft soap and anti-at-trition composition may be used with most advantage in

the case of heavy loads—the latter diminishing friction under a loading of half a ton by upwards of 90 per cent.

We will now offer a few remarks on the resistance to mechanical effect arising from the rigidity of ropes. We will commence our remarks on this subject by submitting the following table from Coulomb.

Coulomb's Experiments on the Rigidity of Chords passing over Rollers or Pulleys.

No. 1.—6 threads.	No 2.—15 threads	"	"	No 3.—30 threads	Nature of the chords.	Nature, weight and diameter of rollers.	Weight hung on each side of the roller.	Addition required to give motion.	Whole weight including the roller.	Resistance of roller previously determined.	Amt of resistance charge-able to rigidity of rope.
					Elm.	Dia. 12 inches.	100	5	315	1.5	3.5
					Elm.	Weight 110 lbs.	300	11	721	3.6	7.4
					Elm.	Diam. 6 inches.	500	20	1130	5.6	14.4
					Guatacum.	Weight 25 lbs.	200	18	443	2.8	8.2
					Guatacum.	Diam. 2 in.	25	11	461	2.8	17.6
					Guatacum.	Weight 4 lbs.	25	6	256	6.4	8.2
					Guatacum.	Diam. 6 inches.	200	24	1074	2.8	13.2
					Guatacum.	Weight 50 lbs.	100	24	253	2.8	17.6
					Ditto.	Weight 50 lbs.	200	3	456	2.7	3.3

If an equal weight be attached to each end of a rope running over a pulley the two weights are in equilibrio; but owing to the friction on the axle of the pulley, as shown above, it will require a considerable addition to one of the weights to produce motion. The addition however found necessary to produce motion is much greater than the proportion necessary to overcome the friction of the axle—the difference being referable to a retarding force consequent on the rigidity of the rope. After loading one end until a slow motion is produced, the other ascending brings the rope across the pulley, causing it from its natural rigidity to oppose the strain that ends to bend it to the circle of the pulley. This causes the rope to stand out a little from the block, and the position of the rope showing the point of application of the force, the result is a preponderance in favor of that side of the pulley where, owing to the rigidity of the rope, the force acts with a longer lever.

Let the increase of leverage be put equal to a, the weight placed on one end of the rope W, the radius of the wheel or pulley equal to R, and the force or weight necessary to produce the least possible motion equal to F. The quantity F-W being the extra loading on one side necessary to produce motion is referable to two causes—the tension, and the twisting of the rope. Now the tension of the chord may be expressed by a coefficient multiplied into the

weight thus y , W , and the simple quantity necessary to bend the rope may be put $= x$. x and y are evidently variable quantities, seeing that they depend on the particular rope used, but for the same rope the force required may be expressed generally by

$$x + y W.$$

Now the power of the pulley to bend the rope is directly as the radius of the wheel or pulley, and the strength of the rope is as the n th power of its diameter d , and consequently the general form of the above expression is

$$\frac{d^n (x + y W)}{R}$$

But

$$F R = W (R + a),$$

and therefore

$$F - W = W \frac{a}{R}.$$

$F - W$ is the amount of increase necessary to produce motion between the two loads and consequently

$$F - W = W \frac{a}{R} = \frac{d^n (x + y W)}{R}.$$

If the values corresponding to the several known quantities in this formula be substituted in three of the cases for which results are furnished in the table of Coulomb, we can at once assign their proper values to the unknown quantities x and y . From this expression it appears that the rigidity increases directly as the weight; inversely as the radius of the wheel or pulley; and directly as a certain power of the diameter of the rope. The deductions from the above table of Coulomb agree with the deductions drawn here from the analytical formula, but the third that the resistance is as a *certain power of the diameter of ropes*, becomes in reasoning from the experiments that it is as the *diameter* simply of the rope. In the last and second last cases given in Coulomb's table, we observe that a rope of 6 strands charged with 200 lbs. requires to overcome its rigidity 3.3 lbs., while another rope of 15 strands, charged with the same load and under the same general circumstances requires for that purpose 8.2 lbs; results in the direct ratio of the number of strands in their respective ropes—6:15::3.3:8.2. Proncy deduced values for the unknown quantities in the above formula from the experiments of Coulomb, but found that as the rigidity of ropes varies with the length of time they have been in use, the power n varies from 1.7 with new ropes to 1.4 for ropes that have been made more limber by use. According to Proncy the above expression for the rigidity of ropes would stand for new ropes

$$F - W = \frac{d^{1.7} (2.45 + 0.053 W)}{R}$$

for old ropes,

$$F - W = \frac{d^{1.4} (2.45 + 0.053 W)}{R}$$

But to deduce a still simpler form of expression we may combine the deductions from experiment made as above, viz: that the rigidity increases directly as the weight, inversely as the radius of the pulley, and directly as the diameter of the rope. I express this algebraically:

$$F - W = \frac{dW}{R} \times z$$

when z is a constant coefficient to be ascertained by experiment. The experiments of M. Amontons show this coefficient to be 0.03125, and therefore to take up his coefficient which is found the best approximation in practice, the expression stands:

$$F - W = \frac{0.03125 dW}{R}$$

Therefore to find the resistance due to the rigidity of a chord passing over a pulley, multiply the diameter of the chord in lines by the weight to be raised in pounds, and the product divided by the radius of the pulley in inches is the retardation chargeable to the rigidity of the chord. This loading necessary to overcome the initial rigidity of the chord leads to a new rigidity, seeing that the rigidity is in ratio of the weight. This new rigidity may be calculated for the new weight it results from by the rule for ascertaining the initial rigidity, and the resulting weight may again be used to ascertain the rigidity occasioned by itself, and so on until the resulting weight vanishes the sum of all resistance of the rigidity being the resistance due to the rigidity of a chord required to raise the initial load.—Required the resistance of a chord 1 inch (12 lines) in diameter employed to raise 1000 lbs, over a pulley 5 in. in diameter?

$$F - W = \frac{0.03125 \times 12 \times 1000}{5} = 75 \text{ lbs.}$$

for primary rigidity:

$$F - W = \frac{0.03125 \times 12 \times 75}{5} = 5 \text{ lbs.}$$

for secondary rigidity:

$$F - W = \frac{0.03125 \times 12 \times 5}{5} = \frac{1}{2} \text{ lbs.}$$

for tertiary rigidity.

The rigidity may be considered to vanish at the second loading, and consequently the answer is

$$75 + 5 = 80 \text{ lbs.}$$

for gross resistance.

M. B. H.

Proceedings of Scientific Societies. —

INSTITUTION OF MECHANICAL ENGINEERS.

"On a Patent Solid Wrought-iron Wheel," by Mr. H. Smith of Westbromwich.

This wheel is made entirely under the forge hammer. It is disc-shaped, the disc part being $\frac{1}{4}$ inch thick, and gradually swelling out to the thickness of the nave and tyre. To compare his plan with the ordinary one, the inventor drew a comparison between the most improved wrought iron wheel of the usual class, and his own. The former is manufactured as follows:—

Pieces of iron, with wedge-shaped ends, are brought together, all converging to a common centre. These are then welded together to form the nave or boss, and the inner ends of the spokes of the intended wheel. Other T-shaped pieces are then welded to the ends of these spokes, and again to each other, forming the inner tyre of the wheel. This done, a rolled tyre bar of a suitable length is banded into a circle of a proper diameter to go on the inner tyre, and is welded to form a perfect circular hoop. This hoop is then heated in a furnace and put upon the inner tyre, and then the wheel is immersed in cold water to occasion such an amount of contraction of the tyre as shall firmly fix it upon the wheel. Rivets or bolts are then passed through both to secure them together.

Now it is submitted that the whole process of thus producing a wheel is open to many well founded objections, such as the following:—

The possibility of a want of dexterity in the manipulation of the different parts, in the making and bringing them together; the chance of doing so when the iron is not in a proper condition for welding;—then, the uncertainty of the hoops or tyres being exactly the same length, or the wheels with the inner tyre of precisely the same diameter; and again, the amount of contraction of the outer tyre depending upon its slow or rapid cooling, will be affected by any variation in the temperature of the wheel itself, and the water in the "bosh" or cooling cistern and these of course cannot be kept uniform. All these circumstances are opposed to wheels being well

made with *loose* tyres, whether with wrought iron naves and arms, or with cast iron naves.

In reference to the second head—durability, it is conceived, from the contingencies already alluded to, that it must be obvious, that a wheel made in one piece will be the more lasting; but on this point, the wheel which forms the subject of the present inquiry has other claims to prefer.

In consequence of the iron in the wheel being both granular and laminar, inasmuch as by the mode of manufacture hereafter explained, this result is insured, and the grain of the iron being of a denser and more compact character than rolled iron, it must doubtless be much stronger and more durable than any rolled tyre bar of piled iron, which is liable to lamination, and altogether of a shorter nature.

Again, the torsive and abrasive effects of the carriage breaks will not produce the same results on a solid disc wheel, as on one with a loose hoop or tyre of rolled iron.

Then, as regards repairing, when the tyre of the disc wheel is worn down so much as to require a renewal, the wheel can be put in the lathe and turned cylindrical, to receive a tyre in the ordinary way, secured on by bolts, screwed into the tyre from the inner side, or by countersunk rivets through the tyre; and it must then be a better wheel than any yet manufactured.

On the subject of cost, it can only be observed at present, that as the first expense does not determine this point, it must be left to be settled by the results of a sufficient experience.

The following is a description of the mode of manufacturing the new solid disc wheels. In the first place, a straight bar of hammered or rolled iron is taken, of 4 to 4 $\frac{1}{2}$ inches width or more if required, and sufficiently long to form a hoop of such a diameter as is most suitable to make the intended wheel. Other pieces of bar iron are then laid flat and close together, and cut in lengths to the same circle as the hoop, to form the base of a "pile;" the hoop is then placed upon this foundation and filled with scrap iron. The whole is then put into a reverberatory or heating furnace, and when at the proper heat, is hammered in the tools or dies to form a mould; the face of the hammer is recessed in such a shape as to form an approximation to the shape of one side of the intended wheel, but only about two-thirds of the diameter; and the anvil face has a circular recess flat-bottomed, into which the hammer face enters. Two of these "moulds" are then put together, back to back, heated in a similar way, and hammered between the tools or dies; but these tools embrace only a segment of about one-fifth part of the entire wheel. The "mould" is turned round horizontally during this process, being turned a little between each blow of the hammer, and it is thus hammered out to the form and size of the required wheel. The wheel is then put into an annealing furnace, and is planished between tools similar to the last, and the wheel then only requires the tyre and the nave turning in a lathe, and the centre boring out.

By this mode of manufacture, it will be perceived that Low Moor iron, or any other description of iron or steel, can be used if required for the tyre of the wheel, and thus in all cases insure a clean wearing surface, and a compound character of fibrous and granulated iron, which it is believed no other system of making wheels affords. The centres for large spoke wheels are also manufactured in one solid piece in a similar manner by tools or dies.—The top and bottom tools are both alike, and are recessed in the form of the nave of the intended wheel with a short portion of each of the spokes radiating from the nave. The centre of the wheel is thus stamped out with a hammer with a portion of each of the spokes about a foot long, ready for welding on to the T pieces, to form the inner tyre and the remaining portion of the spokes. A thin web or fin is left in the centre between the spokes, which is afterwards cut out by the smith. The object of this construction is to surpass in certainty of soundness the precarious method of making them at present in use. It is unnecessary to urge the importance of obviating as far as possible, the occurrence of such accidents as have too frequently happened in consequence of defects of railway wheels; but a few of these cases may be alluded to here, in illustration of the subject.

The accident on the Edinburgh and Northern railway in October last, when the tyre of the leading wheel of the engine broke, and threw the train off the line: that on the East Lancashire railway in November last, where the tyre broke off one of the carriage wheels; that upon the Brighton railway in September last, when the tyre of one of the engine wheels broke, throwing the train off the line: and that upon the Great Western railway, about two years ago, where the tyre of a carriage wheel broke, and a portion of it broke through the carriage, causing a fatal accident.

With the view of obtaining some practical information upon the comparative resistance of the air to the revolution of the disc wheels and of the ordinary spoke wheels, some experiments have been tried at the Vulcan Iron Works, Westbromwich, by Mr. Henry Smith, with the assistance of Mr. Marshall, the Secretary of the Institution; and the results of these experiments are appended in the following table.

EXPERIMENTS ON THE RESISTANCE OF THE AIR TO THE SPOKES OF WHEELS. Vulcan Iron Works, April 17, 1849.

No. of experiment.	Description of Wheel.	Weight of Wheel.		Weight suspended on rope.		Distance fallen by weight.	Total time of revolutions of wheel.	Total number of revolutions of wheel.	Av. speed p. mile pr. hr.	Length of rope.	Time before rope was detached.	Revolutions ditto.	Weight of the rope.
		lbs.	lbs.	Ft.	Secs.									No.	M. Ft.	Secs.	lb
1	Losh.	451	56	270	55	148	17	270	15	38	0*		
2	Disc.	414	56	270	62	161	17	270	15	38	0*		
3	Losh.	451	56	279	60	166	18	355	17	50	7†		
4	Haddan.	423	56	279	60½	176	19	355	17	50	7†		
5	Losh.	414	56	279	68	220	21	355	17	50	7†		
6	Disc.	414	56	279	66	222	21	355	17	50	7†		
7	Disc.	414	71½	279	75	257	22	355	12	50	7†		

These experiments were performed at an old mine shaft 270 feet deep. The axle was placed across the top of the shaft, and carried by two bearings with brass steps; the wheel under experiment was fixed on one end of the axle outside the bearings, and the counter connected to the other end of the axle. The counter was so graduated and arranged that the most correct observation could be taken of the number of revolutions completed in each case.

A drum 2 feet 3½ inches diameter was fixed on the centre of the axle, and a rope ¾ inch diameter was coiled on the drum, with the moving weight attached to the end of it, hanging over the centre of the shaft; the other end was not attached to the drum, but held only by the grip of the second turn of the rope, so that when the rope was run off the drum by the weight falling to the bottom of the shaft, the end of the rope detached itself from the drum without any check. As there was no means of descending the shaft to bring up the rope and weight, a tail rope of the same length and size as the main rope was attached to the weight at one end, and the other end made fast at the top of the shaft, the rope hanging double halfway down the shaft; this served to bring up the weight and main rope after they had fallen to the bottom of the shaft in each experiment. These two ropes weighed 7 lbs. each, and the weight of the main rope caused a gradual acceleration in the moving weight, varying from nothing at the beginning of the descent to 7 lbs. at the end; whilst the tail rope, acting at first with half its weight, caused an increase varying from 3½ lbs. to nothing at the end; whilst the tail rope, acting at first with half its weight, caused an increase varying from 3½ lbs. to nothing in the end. The result was, therefore, a total increase of the moving power, varying from 3½ lbs. at the beginning of the fall, to 7 lbs. at the end; and as this was the same in each case, and the moving weight was also the same (56 lbs.) its

* No tail rope: the rope was detached before weight touched the ground.
 † With tail rope.
 ‡ Ditto, and stone fixed on iron weight.

effect may be neglected in ascertaining the comparative results for the present purpose.

The wheels tried in the experiments were one of the solid wrought iron disc wheels, a wrought iron flat spoked wheel of Losh's pattern, with spokes 3 1-16 inches broad, and a wrought iron flat spoked wheel of Haddan's pattern, with spokes 3 1-16 inches broad. These wheels were selected as near the same weight as was practicable, Losh's wheel being one-eleventh heavier than the disc wheel, and Haddan's wheel one-forty-sixth heavier than the disc wheel; all the wheels were 3 feet diameter.

In the four experiments, Nos. 3, 4, 5 and 6 (see the preceding table,) the time in which the rope was run off the drum was the same in each case—17 seconds; and as the number of revolutions in that time was also the same in each case (50) in consequence of the same rope being used, it follows that the velocity of the wheel at the moment of the power being detached was the same in each case and consequently the comparative resistance in each case is indicated by the comparative length of time that the wheels continued in motion after the power was detached. In the experiments, Nos. 1 and 2, the weight and rope were dropped down the shaft without the addition of a tail rope to pull them up again, and the rope was shortened to 9 feet less than the depth of the shaft, so as to ascertain the exact moment of the power being detached from the drum. The time was the same in both cases, 15 seconds from starting to the power being detached, and the number of revolutions also the same, 38—this gives an average velocity of the circumference of the wheel from starting equal to 16 miles an hour, or a final velocity of about 32 miles an hour, at the moment of the power being detached.

In No. 1 experiment with Losh's wheel, the total time of the wheel revolving was 55 seconds, and in No. 2 experiment with the disc wheel it was 62 seconds; then deducting in each case the 15 seconds during which the power was in action, the results are 40 and 47 seconds respectively for the time of motion after the power was detached; which are in the proportion of 100 to 118, showing that 18 per cent. more resistance was experienced by the spoke wheel than by the disc wheel. In the four experiments, Nos. 3, 4, 5, and 6, the time was 17 seconds from starting to the moment of the rope being detached, and as the rope was in these cases longer than the depth of the shaft, so that the weight stopped at the bottom before the rope was detached from the drum, 14 seconds may be taken as the time during which the power was acting; Nos. 1 and 2 experiments, where the weight of the tail rope was not acting, this time was ascertained to be 15 seconds.

In No. 3 experiment with Losh's wheel, the total time of the wheel revolving was 60 seconds; in No. 4 with Haddan's wheel, it was 60½ seconds; in No. 5 with the disc wheel, the total time was 68 seconds and in No. 6 with the same wheel, 66 seconds—the mean time of the disc wheel being 67 seconds.

Then deducting in each case the 14 seconds during which the power was in action, the results are 46 seconds with Losh's wheel, and 53 seconds with the disc wheel, for the time of motion after the power was detached; which are in the proportion of 100 to 115, showing that 15 per cent. more resistance was experienced by the spoke wheel than by the disc wheel.

The average result from both sets of experiments is 16½ per cent. difference of resistance in favor of the disc wheel, and this is attributable to the additional resistance of the air caused by the flat spokes of the spoke wheel, as the friction of the axle caused the same resistance in each case; the weight being nearly the same of each wheel, and to prevent any change in the friction of the axle, the wheels were changed without taking the axle out of the bearings during the experiments. The axle journals are 2½ inches diameter, and 2½ inches in length; and the friction of the journals was overcome by a weight of 15½ lbs. acting on the drum, when the wheel was upon the axle, and by a weight of 5½ lbs. when the wheel was taken off.

As these experiments were made with wheels revolving on a stationary axle, it is requisite to consider what would be the comparative effect if the wheels were rolling on their circumference whilst revolving at the same rate on their axle, as in the practical case of the wheels of railway carriages running on a railway. In the former case, the mo-

tion of the spokes is at a uniform velocity, and always at right angles to the direction of the spokes; but in the latter case of a rolling wheel, the motion of the spokes is at a varying velocity, and always inclined obliquely to the direction of the spokes, except at the moment of each spoke being in the vertical position. The outer ends of the spokes move in a cycloidal curve, having double the velocity of the revolution of the wheel when they arrive at the top of the wheel, but becoming stationary at the moment of touching the rail at the bottom of the wheel, the average velocity of the outer ends of the spokes is about 1½ times greater than when the wheel revolves on a stationary axle at the same rate of revolution. The average velocity of the inner ends of the spokes is about 3 times greater when rolling than when revolving on a stationary axle. As the resistance of the air increases in proportion to the square of the velocity, the average resistance to the outer and inner ends of the spokes will be about 1½ and 9 times respectively greater in the former than in the latter case. But this is reduced by the oblique position of the spokes as regards the direction of their motion in the rolling wheel; the motion of the spokes being twice during each revolution in the direction of the spokes, and, consequently, the resistance of the air reduced to nothing at those points. By measuring upon the diagram the comparative velocity of several points in a spoke in various positions during a complete revolution of the wheel, and the inclination of the spoke to the direction in each of these positions, the following approximate result has been obtained:—that the total resistance of the air to the spokes when the wheel is rolling, is 3 times the total resistance to the same spokes when the wheel is revolving at the same rate of revolution on a stationary axle.

It follows, that the result of the foregoing experiments has to be multiplied by 3, and, consequently, the excess of the resistance of the air to the spoke wheel over the disc wheel would have been 3 times 16½, or 49 per cent., if the wheels had been rolling, in this case, instead of revolving on a stationary axle. This excess of resistance of the spoke wheel would not be so great in the practical case of the wheels of a railway carriage running on a railway as the friction of the axle journals is greater in that case than in the experiments, from the weight passing upon them being greater; and, consequently, the resistance of the air to the spokes of the wheel would then bear a less proportion to the friction of the axle journals.

Mr. Smith exhibited a finished specimen of his wheel, and one of the moulds in the first stage of manufacture; also a centre for a wrought iron spoke wheel, which he had manufactured that day; it rang as clear as a bell when struck by a hammer.

Mr. M'Connell said, he had tried two pairs of these wheel centres at Wolverton, and had found them perfectly solid, and they were an excellent job; they were for the leading and trailing wheels of an engine 3 feet 9 inches diameter.

Mr. Smith said, in answer to questions, that his hammer with which the wheels were forged was rather more than 9 tons weight; it was a helve taking up under the belly, and was driven by bands.—The weight of the finished disc wheel was about 4½ cwt.; it was made with the first tools that he had started with, and he had adhered at present to his original section of wheel, but he did not profess it to be the best form of section that might be adopted. He had made about 200 of these wheels; there were some now at work on the Birmingham and Gloucester line, and he had an order to prepare some for the travelling post office, to register the number of miles run by them. As to the cost of these wheels he was ready to put himself into competition with other parties.

The chairman remarked, that the durability or life of the body of the wheel was so very much greater than that of the tyre of the wheel, which must be renewed when only about a tenth of the life of the wheel was gone, and would then require a secondary process to put on the new tyre; and, consequently, it appeared to him preferable not to incur any additional expense and trouble by forging the tyre on to the wheel, but to manufacture the disc alone, and put on a separate tyre in the first instance.

Mr. Smith replied, that it was not any more trouble to forge the wheel with the tyre than without it;

it was easily done, and the cost of manufacturing the wheel would be less than putting on a separate tyre. There would be a little more trouble and expense in retyring the wheel for the first time, but he thought that the iron of the tyre would be much more durable than any rolled tyre could be, on account of the process of manufacture.

Mr. Woodhouse asked what advantage the wheel would possess over a cast iron wheel if it were forged without the tyre; but he thought there was certainly danger of fracture from expansion in a cast iron disc wheel.

Mr. Beyer remarked, that he had seen some cast iron wheels that he thought would last as long as wrought iron ones, and he never could understand why they were not more used; there were many wheels of cast iron, even large driving wheels of a feet diameter, that had been running many years, and he thought it was an important question of economy in railways.

The chairman observed, that when locomotive engines were begun, some 25 years ago, they were driven to wrought iron wheels, and thought it a great advantage; and he thought that for rapid railway travelling, they must admit, as a body of engineers, that wrought iron was better for such purposes. The present facilities for the manufacture of wrought iron had been so strikingly shown to them, on the present occasion, that he thought it was hardly possible to save anything worth mentioning by the adoption of cast iron, particularly in the expense of a pair of large driving wheels.—*Glasgow Practical Mechanics' Journal.*

AMERICAN RAILROAD JOURNAL.

Saturday, August 4, 1849.

Preliminary Surveys

The preliminary survey involves more important considerations than any other step in the progress of a public work. It is this which determines gradients, curves, locks, lifts, cuttings, fillings, bridgings—in short, the proportion of power and effect, the amount of first cost and also of subsequent maintenance. The preliminary survey is that part of the duty of an Engineer which demands the greatest care, the fullest information, the most serious consideration, as affecting more deeply than any other part of his duty *the pockets of his employers*; and therefore it is that the location of a public work with undue haste, or insufficient, or perhaps even inaccurate data is one of the worst misfortunes that can befall a proprietary. We make these remarks as an apology for considering a question with which all practical Engineers may be presumed to be familiar.

Strange as it may appear, works are however too often in both this country and Great Britain located permanently on insufficient data. A judicious contractor always examines the character of the strata along a line of work before he sends in his estimate; and truly the Engineer as a man of honor owes his employers the duty of considering this condition of cost in his preliminary survey. The writer of this has always made it a practice to bore at intervals along his lines of survey; and indeed experience has shown him that the *most favorable section* will sometimes furnish the *worst possible location*. It is therefore recommended very earnestly that no preliminary survey be considered completed until the strata at several points along the competing routes shall have been ascertained by means of boring irons. Boring rods are very simple in their construction, consisting in fact of a series of joints screwed on to each other and carrying at the upper end a cross-handle, at the lower a chisel point or augur. For general use they may be made of five or six two-and-a-half feet lengths of inch or inch-and-a-quarter iron, the lengths being fitted to each other by means stout-threaded male and female

screws, all cut from the same die. Two parts are used, one after the other, at the lower end of the borer—one a joint having at its end, like the ordinary quarry jumper, a chisel point for forcing a passage into the strata;—the other a joint having at its end, as in the augur, a semi-cylindrical hollow with cutting end and edges in order, when worked into the hole made previously by the chisel, to draw up the material for the purpose of ascertaining its character. The upper joint of the borer carries at the top a cross stick, which, projecting for some two feet at each side of the boring iron, furnishes the means of forcing down and then revolving in the hole, first the chisel and afterwards the augur. For every additional depth of boring an additional joint is screwed on; and in this way considerable depths may be attained. Iron dogs or wrenches are necessary for gripping the irons when about to be withdrawn from the hole. Four men, working two by two alternately, will bore in ordinary strata for depths not exceeding ten or twelve feet from 40 to 80 feet per day of ten hours.

Inaccurate data is even still worse than insufficient data, and on this account the best class of assistants that can be had to make preliminary surveys the better. Liberal pay will obtain a good class; and therefore lead to true economy: while the pay that offers inducements to only an inferior class of assistants, will in all probability occasion losses a thousand fold greater than the miserable sum economized in pay.

No Engineer can place dependence on the levels obtained by the sliding vane on a staff: it is quite evident that as the staffman in such cases calls out the reading, the staffman is in point of fact the person who makes the section.

We were a little surprised to find a few days ago that clumsy, and as we thought exploded contrivance, the vane-staff, employed on a line running out of New York. Gravatt's staff furnishes a simple and direct means of taking levels; and as in using it the staffman is confined to his own proper office, *the responsible party* reading off and registering the levels, we can hardly think that any young Engineer anxious to make a character in his profession will attempt a section with any other staff. The form of field book used in levelling is very varied: we have found the following the most convenient:

Section of _____ from _____ to _____				
—day of _____ 184 .				
Lengths.	Staff.	Reduced Level.	Planes of collimation.	Remarks.
	3-48	100.00	103-48	Bench Mark No. 1.—Softite of Keystone of Richmond B'ge (middle arch) Boring No. 1.—See registry of boring.
3-20	5-19	98-29		
6-30	7-26	96-22		
9-10	4-92	98-56		
	4-19		102-75	B. M. No. 2—Cut on rock at water's edge.
11-15	5-27	97-48		
12-35	6-31	96-44		
14-40	4-02	98-73		
17-10	3-28	99-47		

This is seen at a glance to be less complicated than the usual form of field book. The 'lengths' are as usual the distances between the several points at which the staff had been held; the column 'staff' showing as in other forms the reading at these points. The plane of collimation in the above form shows

the height above datum of the line of vision or the line of the axis of the telescope; and as seen in the form is therefore different at every setting up of the instrument. The reading on the staff is of course the difference of level between the plane of collimation or plane of vision, and the point on which the bottom of the staff rests; and consequently the reduced level is obtained by subtracting the corresponding reading from the height of the plane of collimation. For example; assuming the height above datum of "Bench Mark No. 1" at 100, the plane of collimation being as shown on the staff, 3-48 above this has a height above datum of 103-48: Again, the point at 'boring No. 1' being as read from the staff 5-19 below this same line of vision or plane of collimation, has a height in reference to the datum of 103-48-5-19=98-29. In river works it will be found necessary to add to the above table a column for 'soundings': the reduced level for water surface may be written in blue or red ink in order to prevent any confusion in plotting the section from the field notes. The liability to error in inking over pencil notes or of their becoming obliterated, should show the necessity of using ink in the field; and indeed only by using ink in the first instance can the notes be considered original notes, these being of course the only ones on which the principal Engineer can place any reliance. No young Engineer should give up his detailed levels unaccompanied by proper checks; though we would recommend the practice of employing a superior Engineer to check throughout on the several bench marks left by the parties who made the detailed section. Too much attention cannot be given to the correctness of levels: an unfortunate series of errors in a section lead to the abandonment of the Kinnegad branch of the Royal Canal in Ireland, after an outlay of some hundred thousand dollars.

After having made trial sections along the several routes that offer themselves on a careful examination of the country between two fixed points of a public work, the best means of embodying the result is to show on a plan comprehending all the routes surveyed the levels of the country at the several points of the several sections, all these levels being expressed in figures having reference to one and the same datum-line. In some cases the profile of a country may be ascertained most conveniently by a series of cross sections at right angles and in connection with a longitudinal section between the terminal points, these cross sections being made from known bench marks on the longitudinal section, and the initial level of each cross-section being the reduced level of the bench mark from which it starts. Having the heights registered at their corresponding points on the map, only very little little skill is necessary to fix on the route offering the most favorable surface; and when a difficulty occurs in the choice of two lines of surface it may be settled generally by laying, for the purpose of comparison, a tracing of one section over the other section. This method will determine the line of most favorable section; but we repeat again *the line of economical location cannot be determined without full information as to the nature of the substrata.*

M.B.H.

Massachusetts.

GRAND JUNCTION RAILROAD AND DEPOT COMPANY.

We are indebted to a friend for the perusal of the second annual report of this company, which has for its object, the construction of a railroad to connect the leading railroads entering Boston with the depots of this company, situated upon the navigable waters of East Boston, so that goods and merchandize inten-

ded for importation or exportation, can be received directly from vessels upon the cars, or betransferred from them to vessels.

No person can have visited Boston without feeling the necessity of such an arrangement independent of any commercial considerations. Railroads centering there, have now no connection, and all freight received by one road and designed to be forwarded by another, is trucked through the City. This necessity, in addition to the expense and waste incurred fills up the street with so many loaded teams as to cause a serious inconvenience to the safety and comfort of its citizens. This evil will be almost entirely remedied by the road proposed. For the purpose of making ample provision for the accommodation of the business of the various roads, this company is preparing two depots on the shore of East Boston, in the very centre of the harbour of the city, and adjoining the docks of the British steamships. It is accessible from the open sea on the south to the largest class of ships, and its docks are protected from the easterly and north-easterly storms. It contains, 1,465,920 square feet of land, piers and docks, divided as follows, viz.:-

1,058,251	square feet of land,
133,195	" " oak piers,
244,474	" " docks,

and has a frontage on Marginal Street of 1,650 feet in length.

Depot No. 2, at the bridge over Chelsea Creek, contains about 456,721 square feet, with a water front of 1,000 feet.

The real estate owned by the company comprised in these two depots amounted to 1,925,641 square feet, including 9,351 feet in length of wharf accommodations, in the deepest and best part of the harbour for commercial purposes. The railroad will connect both depots with four of the principal railroads entering the city, and through them with the interior roads reaching to the Canadas and great lakes, viz.:-the Eastern railroad, Boston and Maine Fitchburg, and Boston and Lowell, and will be 6 and 6-10ths miles in length. The bridge over Chelsea Creek, and part of the road in Chelsea, will be constructed this season; the Mystic river bridge and the remaining portion of the road will be completed the next year.

The receipts of the company have been \$638,550 92, (from assessments, \$580,291 66,) and the expenditures \$614,767 42.

From these additions to the business facilities of Boston, a corresponding increase of her commercial importance is counted upon, and the directors of this company profess themselves confident that these facilities, which they are providing, are alone wanting to give to her a commercial superiority over all her Atlantic rivals. Boston, it is admitted, owes her recent rapid growth to her railroads, and to illustrate their influence on the growth of a city the progress of New York and Boston, in wealth since 1840 to show this is compared, the valuation of each city since 1840 and 1848 is taken.

NEW YORK.

	1840.	1048.
Real Estate	187,121,464	193,029,076
Personal "	65,721,690	61,164,451

252,843,154	254,193,527
Increase.....	\$1,350,373

BOSTON.

	1840.	1048.
Real Estate	60,474,200	100,403,200
Personal "	34,157,400	67,324,800

94,631,600	167,728,000
Increase.....	\$73,097,400

Increase in favour of Boston,.....\$71,474,027

In reference to this result the report says, "if the wealth of Boston has increased from 1840 to 1849, the immense amount of seventy three millions, it needs neither argument nor illustration to show that its trade and commerce must have increased also. It would be curious to trace to its causes, and follow to its results, this new and vast accumulation of wealth in Boston during the past eight years. Cities as with men, have their seasons of prosperity or of depression. Periods of prosperity may be easily pointed out in the history of our own or other cities of the Union. Newport, Salem, Newburyport, Portsmouth, Philadelphia and New York, have had their periods of high prosperity and rapid growth in population and wealth. At one time, the facilities of trade between Philadelphia and the great valley of the West were highly advantageous to that city; and her prosperity was only checked by that work of wisdom and wonder of the time, the Erie Canal, which gave prosperity to New York. Later still, and her progress has been checked by the Massachusetts railroads, and Boston, in the order of events, is having her season of prosperity, which we are all striving to perpetuate and render permanent."

In looking at the commercial history of Boston, the directors of this company find, that although from 1832 to 1848 her importations increased from \$15,769,572 to \$47,110,761; her exports in the same time increased from \$10,102,762 to \$10,513,132, as exhibiting an apparent singular state of things, indicating a want of one element of commercial greatness a larger export trade. To secure this trade, she proposes to make herself the Atlantic outlet of the produce of the west; and the directors of this company affirm that she has the capacity to do this by a continuous line of railway striking the St. Lawrence at Ogdensburgh. In relation to this the report says—

"Boston must become an exporting city, and flour from the west can be placed on shipboard in our city at a less cost per barrel than it can be done in New York, even with the aid of her noble Hudson. A barrel of flour can be brought from Cleveland, Ohio, to Boston in two or three days less time than it can be carried to New York from the same point, and at less expense."

There never was a greater error than this. Let us look at the matter a moment. Oswego, on Lake Ontario, may be made a common point for all produce of the west intended for either city, because all designed for Boston via Ogdensburgh must pass this point, through which also it can be forwarded most cheaply to New York. On the completion of the Hudson river railroad, this point will be distant from New York, by railway, 329 miles, over a route remarkably favorable for its grades. Produce designed for Boston must go from Oswego to Ogdensburgh by water a distance of 2 or 300 miles. From thence it cannot reach Boston by a continuous line of railway short of 450 miles, and surmounting the Green Mountains in its course. Now by what process of reasoning men can persuade themselves that the greater distance can be performed at less expense and in less time, passes our ken. It is undoubtedly true, and it must always continue to be true, that Boston can get her western produce via New York cheaper than by any other route.

If such are facts that cannot be disproved, then money wasted upon the hypothesis of opening a better and cheaper route is, as far as this object is concerned, thrown away. And the less that any such idea mingles with her schemes of internal improvement the better. Roads having this object in view may be profitable investments, but their profits must flow from other sources of business than this.

Contractors are referred to the Advertisement in our paper for Tunneling the Blue Ridge.

Portland and Montreal Railroad.

We have been furnished with a copy of the report of the treasurer and directors, of the Atlantic and St. Lawrence railroad, for the year ending June 30, 1849.

This company has a standing order, requiring the Directors to publish a report of their doings, for distribution among the shareholders, before the annual meeting.

By the report of the treasurer it appears that the receipts and disbursements for construction of the road to the above date, and also the receipts and expenditures on Income account since the opening of the Road have been as follows.

There have been received from assessments on shares in the Capital Stock,	\$564,914 94
Rents and wharfage,	1,978 39
Amount borrowed of Income account, and demand Loans,	58,314 06
City of Portland Loan, amount scrips sold,	135,000 00
Bills Payable,	275,421 26
	\$1,305,628 65

The total amount paid and chargeable To construction is:—for Station houses and for Depot lands in Portland, and improvements thereon,	\$114,787 91
For Land damages,	35,009 55
For Fencing,	16,361 54
For Equipment for operating Road,	100,275 79
For Interest on Loans in anticipation of assessments,	17,791 49
For Interest on city of Portland Loan,	2,400 00
	30,191 49
For Interest paid Stockholders on assessments,	47,807 46
For sundry acc'ts, including Grading, Bridging, Superstructure, Office Expenses, Engineering, &c. &c.	941,042 62
Total,	\$1,275,476 27

The whole amount of Bonds that have been received from the City Treasurer, under the Act authorizing the City to aid the construction of the Road, is	\$262,000 00
Amount sold as above,	135,000 00
Balance on hand and available,	\$127,000 00
There has been paid to the Commissioners of the sinking fund, created by the City of Portland Loan Act,	\$7,240 00
The whole number of shares taken of the Capital Stock, exclusive of those issued as security for Loans is	10435
Deduct number released and canceled,	290

Whole number now available, 10145 equal to	\$1,014,500 00
On which is paid as above,	864,914 94

Leaving uncollected,	\$149,585 06.

In part of which the Company holds notes upon conditional receipts given, amounting to 31,929 94

Of the balance uncollected (the last assessment not having been called for) it is supposed, nearly the full amount will be realized.

The Road was opened for travel to North Yarmouth, the 20th of July last—to the Junction in Danville, and to Lewiston over the Androscoggin and Kennebec Railroad, the 4th of December, and to Mechanic Falls, the 19th of February. The results are shown below:

Total amount received from 68445 passengers is	\$35,473 57
" " " Merchandize,	21,550 14
Total Receipts,	\$57,023 71

The current expenses are:	
For maintenance of way,	\$7,376 86
" Locomotive Power,	8,781 83
" Train Expenses,	5,667 49
" Office Establishment,	2,347 82
" Station Expenses	2,596 26
" Am't. allowed Androscoggin	

and Kennebec Railroad
Company, for use of Road 5,320 00
..... 32,090 26
Net Receipts, \$21,933 45

This amount should be credited interest to reduce the construction account, inasmuch as interest has been paid to shareholders on their stock.

In speaking of the prospects of the road the directors say—

"We have not yet had time to test the actual productiveness of the Road, and if the receipts should equal our anticipations, there will be no difficulty in disposing of stock, either in payment of contracts, actual sales, or as collateral for Loans, at its par value. Other Roads are being opened, which will add materially to our business. The Androscoggin and Kennebec Road is completed and in operation from the junction in Danville, 25 1-2 miles to Winthrop, and the Kennebec and Portland Road is opened and in operation from North Yarmouth to Bath, 23 miles. Both these roads are at the present time run in connection with our Road, and must greatly increase its business, and still more, as these connecting roads are extended.

The road from Mechanic Falls to Buckfield, 13 miles, is nearly graded and ready for the superstructure, and will probably be completed and opened early in October next. This road penetrates a well settled and fertile part of Oxford county, and will command much of the business of the eastern part of that county, beyond its terminus at Buckfield, and contribute essentially to the business of our Road.

Aside from these considerations, further movements on our part should be made to keep pace with the progress made by our Canadian friends. We understand they are now making efforts to raise means to complete one half their line of Road, in order to avail themselves of Government aid for the residue, a bill having passed the Canadian parliament at its recent session, to aid such Railroads as may have expended one half the amount required for their completion, by guaranteeing the interest and payment of Loans, for the other half. At this time the St. Lawrence and Atlantic railroad company are negotiating for means of further progress, and as we are now, somewhat in advance of that Company in the joint undertaking, there seem to be good reasons for awaiting the result of their present efforts. The monetary condition of the two countries, and the disturbed state of the public mind in Canada may defer for a time the completion of both roads to their point of junction at the Boundary; but that these difficulties will be speedily surmounted, and the roads be completed through within a reasonably short period, we entertain no doubt. It is so clearly demonstrable, that the joint road from Portland to Montreal, when once completed, would be one of the best paying roads in the country, connecting, as it would, in the cheapest and shortest line the immense business of the Great Lakes with the Atlantic Ocean, that there can be but very little doubt of raising the necessary means on both sides for accomplishing this great enterprise, as soon as there is sufficient relief in the money market here and in Canada. An act has been passed by the Legislature of Vermont at their passed session, authorizing the extension of your charter through the North Easterly part of Vermont to the Canada line, thus, with the grants previously made by the Legislature of New Hampshire, extending your charter from Portland to the boundary line of Canada in Vermont.

The whole amount expended in the construction of the road up to July 1st, including interest paid on assessments, and loans, according to the treasurer's report, is 1,275,476.27cts.

Estimated amount required to complete the road to South Paris 130,000.00

Making cost of whole Road from }
Portland to S. Paris, 47½ miles, } 1,405,476.27 cts.

The annual meeting of the company is to be held on the 7th of August instant.

The Public Works of England. NO. 3.—CALEDONIAN CANAL.

The whole progress of the Caledonian Canal is so entirely illustrative of the conduct of public works

in this country, that a detailed account of it would not be undesirable.

The Act for the purpose, which passed on the 27 Dec., 1803, granted to the government the sum of £20,000, for the undertaking. The engineering and conduct of the canal was entrusted to Telford, but the commissioners appointed another eminent engineer, Mr. Jessop—to survey the line and calculate the cost. The estimate of these gentlemen for the whole work was £474,000, exclusive of the price of land, which expense, the supposed, would not be considerable—many proprietors have offered their land gratuitously, and the general value of land in the country through which the canal passed not being great. The expense for the first year was calculated at £75,000. Before the close of the year docks in both seas were in a considerable state of forwardness; they were set out at 400 yards in length and 70 in breadth: 400 bolls of oatmeal (56,000 lbs.) were lodged in storehouses, and delivered to the workmen at prime cost; 150 persons were set to work, besides persons making and repairing utensils—a number in those days thought very great, though a railway engineer would smile at it. The average wages to the workmen was 18s. a day. Fir was cut down on the spot or in the neighbourhood, costing from 10d. to 14d. the cubic foot—imported timber would have been twice as dear, and answered no better. Thus the preparatory arrangements were begun with much forethought and economy.

The salary of the engineer, Mr. Telford, was at the rate of three guineas per diem, including travelling expenses, with some allowances for one or two lengthened journeys. This sum would make Mr. Brunel stare. The salaries of the superintendents were fixed at from 50 to 150 guineas per annum.—The valuation of the land was about £15,000.

Great apprehensions were entertained that the nature of the soil would interpose insuperable difficulties. Mr. Jessop's report, in the actual state of geological knowledge, is curious. "It seems (he states) probable in some early age of the world the immense chasm, almost two thirds of which is still occupied by water, has been nearly (why did I not say quite) open from sea to sea, and that the land which now separates the locks has been formed from the decay of the adjoining mountains. This decay is very apparent in Ben Nevis, which is evidently a part only of a much greater mountain which seems to have included the present one and two adjoining mountains of lesser height. Impressed with this idea, I was very apprehensive, after the first trials of the ground at Inverness, that many other parts would be found similar to it. That greatest part of the land there being composed of gravel and sand, is so open that the water in the pits sunk and rose with the tide. Fortunately, a place has been discovered where a foundation on clay may be got at by surrounding the pit with a cofferdam." It was found generally that the gravel and sand had a sufficient admixture of earth to exclude water.

The width of the lock was calculated at 38 feet, length in the chamber 152 feet: 23 locks were provided for, at an estimate of £171,327, and as many bridges at an estimate of £34,000. The common cutting of the canal was estimated at £142,000, the depth being 20 feet, with a bottom of 50 feet—a slope of 18 inches to a foot, and 90 feet width at the surface. The remainder of the estimate was for deepening rivers, cofferdams, aqueducts, culverts, with a sum of £12,000, for steam-engines.

By the time a single year had passed, the usual rate attended these estimates. It was found that the locks would be too small, as frigates of 44 guns might be required to pass—the length was extended to 185 feet and the breadth to 43, with an addition to the estimate of £122,624. Then side locks were required for small vessels, to save the wear and tear of the large locks; these were further estimated at £75,200. Iron railways were constructed for the purpose of conveying stone from the quarries opened in the vicinity of the canal—one of them 11,000 yards, a great length in those days for such a purpose.—The number of labourers was increased from 150 to 900. The greatest difficulty was encountered in the erection of the sea locks, in the construction of which a good deal of ingenuity was exhibited.

In addition to the increase of other estimates, the salaries, as usual, were increased. Two resident inspectors were appointed, and several other officers, at allowance of upwards of £200, yearly each. Far

more trouble and expense than was anticipated occurred in the valuation of the land, which the proprietors did not seem disposed to part with gratuitously, nor at other than a high value.

A great improvement on the usual practice of canals was introduced at the very commencement of the undertaking in the construction of the bridges. On the Forth and Clyde canal wooden drawbridges had been used at first, raised by chains and timber framings; as these wore out, cast iron bridges were substituted, raised by a wheel and pinion; but the Caledonian bridges were of iron, on the swivel principle, which had been already used in the London Docks. One of the most important works in the early stage of the canal was the altering the course of the rivers Ness and Oich. The beds of both of these rivers were required for the canal. The embankment necessary was very extensive.

In 1820 the first steam-boat was constructed for the canal by Mr. Henry Bell, the introducer of steam navigation into England, and the person who established the well known steam-boats on the Forth and Clyde.

On the 23rd of October, 1822, the canal was opened from sea to sea with very great ceremony. The principal landlords along the land fired salutes and gave entertainments on the occasion, and the papers of the day described the affair as one of great magnificence. The passage back, from west to east, was made in 13 hours. The depth of water was then only 12 feet, but dragging machines were in active operation for the purpose of deepening the canal to 20 feet.

The entire time, from the commencement to the opening of the canal, was 19 years. It was begun in October, 1803, and opened, as we said, in October, 1822. The expenses to this time were £912,373—of this no less than £47,886, was paid for land which was to have been granted gratuitously; £616,770, was paid for labour, and did vast good to the country. The steam machinery, estimated at £10,000 only cost £5596, but the whole machinery cost upwards of £121,408. The cost of management for the whole time averaged under £1500 per annum. On the whole, and by comparison with moderate undertakings, this great enterprise was conducted with extreme economy and great ability. At times the persons employed on the canal at one time amounted to above 900.

In the first year of the opening 307 vessels entered the canal, of which 37 passed from sea to sea. This was then considered a favourable account. The tolls fixed were a farthing a ton per mile, with an increase upon very short voyages.

From May, 1823, to May, 1824, 278 vessels passed through the canal, but the expenses of maintaining the canal were considerable. Nearly 200 workmen were employed on the works, and the tonnage duty consequently doubled. The canal dues previous to the increase, from the year quoted above, amounted to £1555. Notwithstanding the increase the profits of the canal were small—more workmen were obliged to be employed. The increase tonnage drove the shipmasters to the circuitous passage of the Pentland Frith, though even now the duty on the whole passage was but 2s. 7d per ton. One of the reasons for increasing the duty was the complaint of the proprietors of the Forth and Clyde Canal, who complained that the Caledonian, constructed at the public expense, entered into an unfair competition with them by low terms.

Since that time no efforts have been able to make it a profitable one, though the Caledonian Canal, taking the circumstances of the time in which it was constructed into consideration, is a work of which the nation may be justly proud.

The mounds, which guard the entrance of the canal at the Beaulieu Frith, were advanced from the high water mark to 4 fathoms deep of water; at the end is the sea lock. These immense works are 400 yards long, and took four years to construct. The settling of the vast bottom of mud and earth took two years; and the cradle of masonry which surmounts it, capable of receiving the largest merchant ships, is 170 feet long, 40 feet wide, and 30 feet deep. The other works throughout the canal are on a similar scale. At the entrance of the lakes, owing to the sponginess of the ground, great difficulties were surmounted by the perseverance of the engineer. The dredging necessary for excavation of such an extent

was constructed with immense ingenuity. Neptune's staircase, which we have already mentioned as connecting eight locks in succession, contains 400 yards of solid masonry. A construction of the kind had never been attempted before.

On the whole, few works show more vividly the untiring ingenuity and perseverance of the country than the Caledonian Canal.—*Daily News*.

Improvements in rolling Iron.

[Specification of patent granted to Mr. Wm. Clay, engineer, Clifton lodge, Cumberland, for certain improvements in machinery for rolling iron or other metals; parts of which improvements are applicable to other machinery, in which cylinders or rollers are used.]

This invention has for its object to roll bars of iron, or other metal, into a tapering form of a wedge like, or conical shape, and is caused by allowing the distance between the compression rollers to increase gradually and progressively as the rolling goes on.

1. The arrangement for carrying this invention into effect, consists in making the bearings of the top compression roller moveable, instead of stationary, so that they may slide up and down in their standars. Upon the top of this moveable rollers bears the lower end of a vertical rod, furnished with a piston at the upper end, which passes through a water and air tight stuffing box, into the bottom of a cylinder. This cylinder is filled with water, or other non elastic liquid, and is provided on either side with inflow and outflow valves. The rate of outflow of water from the cylinder is capable of being regulated to the greatest nicety by means of a screw spindle, to the end of which the outflow valve is attached, so that as the liquid runs away, the piston yielding to the pressure of the bar cylinder, and, consequently allow the top roller to slide upwards in its bearings, whereby the distance between the two rollers will be gradually and progressively increased, and the desired taper given to the bar, the shape of which will depend upon that of the grooves. The top of the cylinder is provided with a safety valve, loaded (by means of a spring) to a certain extent, so that in case the pressure should increase beyond it, the valve may open and allow the water to escape, and the piston to rise up to the top. The water is supplied from any convenient source, and the outflow valve is kept closed, when the machine is not at work, by a coiled spring placed behind it, upon the spindle. It is proposed to apply the safety valve arrangement to sugar cane crushing, and other mills, in order to obviate the injurious effects of sudden shocks.

2. A modification of the preceding consists in substituting for the hydraulic apparatus a sliding frame which rests on the top of the vertical piston rod. Above this frame works an eccentric, or heart shaped cam, keyed upon a shaft, so that as it revolves, the sliding frame will slide upwards, and allow of the top compression roller doing the same. Rotary motion is communicated to the cam shaft from the bottom roller through the intervention of toothed gearing.

When it is desired to roll one portion of a bar tapering, and the remainder parallel, the piston rod is made to pass through a screw, capable of being adjusted to any convenient

distance to the top of the upper compression roller, and which catches against it, and thereby prevents its further upward motion.

Claims.—1. The application to rolling machinery in general (when such is required) of apparatus by which the bearings of one of the compression rollers are allowed to rise gradually in their standards to allow of taper forms being produced with the same facility as parallel bars.—2. The construction, or arrangement and adaption, of the hydraulic apparatus and appendages to machines for rolling iron and other metals, by which the shaping rollers are separated, so as to produce taper rod or bars by the rolling process.—3. The modification of the preceding, which consists in the employment of the eccentric, or heart shaped cam, to regulate the gradual progressive separation of the rollers for the before stated purpose.—4. The adjustable screw in combination of the apparatus, claimed under the second and third heads for rolling bars, tapering for a portion of their length, and parallel for the remaining part thereof.—*Mining Jour.*

English Patents.

IMPROVEMENTS IN STEAM-ENGINES.

[Specification of patent granted to Mr. John Penn, engineer, Greenwich, for certain improvements in steam-engines]

Mr. Penn's improvements in steam-engines are as follow:—1. He places a floater in the condenser, or in a separate vessel suitably connected therewith, which, as the water accumulates in it, from accidental or other causes, ascends proportionally. This floater is connected to a stop-valve placed in the injection passage. The result of this arrangement is, that as the water accumulates in the condenser, and the floater consequently ascends, the stop-valve will be partially or wholly closed, and the influx of the injection prevented.—2. It is proposed to place in the steam passage leading from the boiler to the cylinder a suspending ballance vessel, which is connected to a stop-valve placed a little further on in the same passage, in order that, as the boiler primes or the water boils over, a portion may be received into this vessel, which will descent by its increased gravity, and act upon the stop-valve, so as to partially or wholly close the passage of the steam to the cylinders, whereby the engines will be made to work at slow rate, and any injurious effects from sudden shocks to them be prevented.—3. A chamber, opened laterly to the water, is placed in the side of any auxiliary steam-vessel beneath the water-line, and is fitted with a small submerged horizontal paddle-wheel, which is keyed upon a vertical rod carrying a bevil wheel at top. This bevil wheel gears into another bevil wheel keyed upon the end of a horizontal cranked rod, fitted with a connecting rod, which works a double pair of weighted bellows, similar to those employed by blacksmiths. The top of these bellows is connected by a combination of cams, jointed rods, and levers, to the expansion valves, or throttle valves, or dampers, so that as the speed of the vessel through the water increases, the velocity of the revolution of the small paddle-wheel will increase also, and a greater quan-

tity of air be driven into the top part of the bellows, which will consequently rise, and have the effect of regulating the passage of the steam to the cylinders, or the draught through the furnace. The bellows are provided with valves for regulating the quantity of air contained therein.

Claims.—1. The application in marine steam-engines of a floater to the condenser, or separate vessel separately connected thereto, and also of a stop valve to the condenser or injection pipe: the two being so connected together that, as the water accumulates in the condenser, from accidental or other causes, the flow of the injection water thereto will be partially or wholly stayed until the air pumps shall have reduced the water to its proper and determined level.—2. The application in marine steam engines of a suspended ballance vessel to the steam passage leading from the boiler to the steam cylinders, and also of a stop valve a little further on in the same passage; the two being so connected together that, as the priming or boiling over takes place, the passage of steam to the cylinders shall be partially or wholly closed, and the speed of the engine reduced accordingly.—3. The application of the self acting mechanical apparatus to sailing vessels propelled by auxiliary steam power, through the medium of screws or other suitable propellers, and which apparatus is made to work inversley to the speed of the vessel—that is to say, that as the speed of the vessel increases from the sailing power, the steam power shall be reduced accordingly' or *vice versa*, by means of this apparatus acting upon the expansion valves or throttle valves of the induction passages, or the dampers of the furnace.—*ib.*

Proceedings of Scientific Societies in Great Britain.

INSTITUTION OF CIVIL ENGINEERS.

June 5.—JOSHUA FIELD, Esq., President, in the Chair.

The paper read was a "*Description of a Method of Rolling Bars for Suspension Bridges, and other like purposes.*" By Mr. THOMAS HOWARD, A. Inst. C. E.

It was described that by the ordinary process of manufacture, the head, or end of the link, out of which the eye, or hole for the connecting pin, was bored, had been sometimes welded on to a parallel rolled bar, or, at other times, been hammered to the required form; both these methods were, however, objectionable, owing, in the former case, to the insecurity, and in the latter to the tediousness and expense. By the method introduced by Mr. Howard, the bars were rolled at once into the requisite form; the shingle, or faggot, was first passed longitudinally, at a welding heat, through grooved rollers, in the ordinary manner, and then, before being drawn down to the intended thickness, was carried to rollers having bosses, or increased diameters at the places corresponding to the heads to be produced, and there passed to and fro between the rollers transversly, or across the breadth of the bar; thus receiving a pressure only at the enlarged parts of the rollers, which gave the necessary increase of breadth at the heads; it was then taken to plain finishing rollers, and drawn out longitudinally in the usual

manner, until it attained the required length and thickness, the heads being afterwards trimmed by machinery to the exact dimensions, and the holes drilled for the pins.

It was stated that the chains of the large suspension bridge, erected by Mr. W. Tierney Clerke over the Danube, at Peeth, which lately so satisfactorily withstood the heavy strain brought upon it by a retreating army, were on this system at the King and Queen Ironworks at Rotherhithe: as were those for lifting the tubular bridge at Conway, and over the Menai Straits; and also that the links for a bridge now erecting by Mr. Vignoles, at Kieff, in Russia, were manufactured by another firm, under license to use Mr. Howard's system.

Some interesting observations were recorded of the results of the experiments for determining the strength of these bars, showing them to possess great elasticity and freedom from permanent set.

The discussion elicited some useful remarks as to proportions of the area of the body and of the head, and of the diameter of the pin, which, it was shown, had much influence on the resisting power of the heads;—the larger the pin the less being the tendency to rupture the eye.

The process appeared to be admitted as a great improvement on the ordinary mode of manufacture, and tending to give confidence to the engineer that his designs could be executed in metal, uninjured by manipulation.

June 12.—The first paper read was "A Description of the Construction of a Collar Roof, with arched trusses of bent timber, at East Horsely Park." By the Right Honorable the Earl of Lovelace, A. Inst. C.E.

The roof which covered a hall of fifty six feet long by twenty four feet wide, was described as being sustained by four arched trusses, springing from stone corbels. The ribs of these were each composed of four layers of deals, three inches thick, bent to the required form by steam heat. All the mouldings surrounding the tracery were also bent to the required forms in the same manner, thus giving great strength and lightness, as well as performing the work with greater economy of labor. The tracery was cut out from two thicknesses, half an inch each, of tub stave oak, glued together, with the fibres at right angles to each other, which facilitated the carving, and gave greater strength to the minute tracery.

The ceiling was formed of half inch diagonal boarding, and as the slate battens crossed it in a horizontal direction, the roof was strongly braced against the action of the wind, and the staining of the alternate boards gave a pleasing variety of effect.

This kind of construction was first suggested by Colonel Emy, in his work on Carpentry, but he had applied it to much flatter roofs of large span, whereas Lovelace's intention was to demonstrate its applicability to roofs for edifices in the Pointed and Tudor styles, and to show that great advantage would result from bending timbers rather than cutting them to the requisite forms, that the thrust of

the roof might be entirely taken from the upper part of the walls, and carried far down them and that such a construction might be adopted as would satisfy every condition of solidity, and, at the same time, admit of considerable decoration.

In the discussion which ensued, the ingenuity of the design and of the mode of execution of the roof were equally approved, and the noble Earl was deservedly complimented for the motives which induced him to bring to the Institution the account of one of his works.

The second paper was "A Statement of Observations made on the Initial and Terminal Velocities of Trains in descending Inclined Plains." By Capt. W. Moorsom, M. Inst. C.E.

The observations were eighty two in number, and were made during the ordinary passing of trains on the Waterford and Kilkenny Railway, the gauge of which is 5 ft. 3 in., over two adjoining inclines; falling at the rate of 1 in 100 for upwards of a mile and half, with a short intermediate level between them.

The speeds at which the descent was begun, varied from 20 to nearly 44 miles per hour, and the loads varied from 32 to 94 tons

One of the planes presented for the greater part of its length two curves of a radius of 1½ and 1.6 miles respectively, and the other plane was straight for part of its length, but contained a curve of 2½ miles radius.

The general results in the more curved plane were, that initial velocities of 20 to 30 miles per hour, at the top of the plane, became terminal at velocities of 24 to 28 miles per hour; and on the straighter plane the same initial velocities became terminal between 29 and 31 miles per hour.

Again, on the more curved plane, initial velocities between 30 and 40 miles per hour, became terminal at velocities between 29 3/4 and 31½ miles per hour; and on the straighter plane the same initial velocities became terminal at 30 3/4 to 33 1/2 miles per hour.

Initial velocities above 40 miles per hour were noted only upon the more curved plane, and became terminal at 30 to 31 miles per hour. There did not appear to be any constant proportion between the load in motion and the terminal velocity; but the latter appeared to be dependant more upon initial velocity than upon the weight or character of frontage upon the trains.

The general practical conclusion was deduced, that the question of gauge had little or nothing to do with terminal velocity derived from gravity, and that the views generally entertained by engineers during past years, of the great resistances experienced by trains at high velocities were borne out by the observations recorded in the paper.—C.E. & A. Journal.

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JONA. EDWARDS, President.
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July 28, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
C. CROZET,
Engineer Blue Ridge Railroad.
Brooksville, July 26, 1849.

Samuel Kimber & Co., COMMISSION MERCHANTS WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13 8-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.

2. For the construction of the connection of the Company's canal with the James River at Cartersville.—This work will consist of a timber dam across James river, the excavation of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.

3. For the construction of the connection of the Company's canal with the James river Near new Canton.—This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.

4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.

5. A wooden bridge across James river at Bent Creek 870 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23rd of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN,
Chief Engineer J. R. & K. Co.
Richmond, July 18, 1849. 3c29

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

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Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*
- James Herron, Civil Engineer,**
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.
- Dudley B. Fuller & Co.,**
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.
- Cruse & Burke,**
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.
- To Railroad Companies.**
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.
- Manning & Lee,**
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.
- IRON.**
THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.
- Railroad Iron.**
OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, June 1, 1849.
The above will favorably compare with any other rails.
- Railroad Iron, Pig Iron, &c.**
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by 4 Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2 1/2 feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5 1/2 Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUFACTURERS OF RAILROAD MACHINERY.

The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,

Prest. Beaver Meadow Railroad & Coal Co., Philadelphia,
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR RAILROAD TURNOUTS.

This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

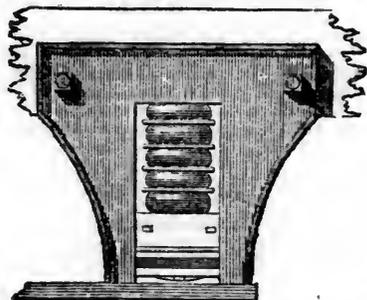
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.
May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by the reports, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1814, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs James Lee & Co., 18 India Wharf, Boston.
May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupying but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY.

CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,

142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR THE USE OF SCHOOLS AND SELF-INSTRUCTION, containing:

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawings, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

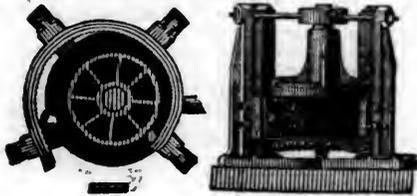
The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO.,

114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR
WORKS.

DAVENPORT & BRIDGES,

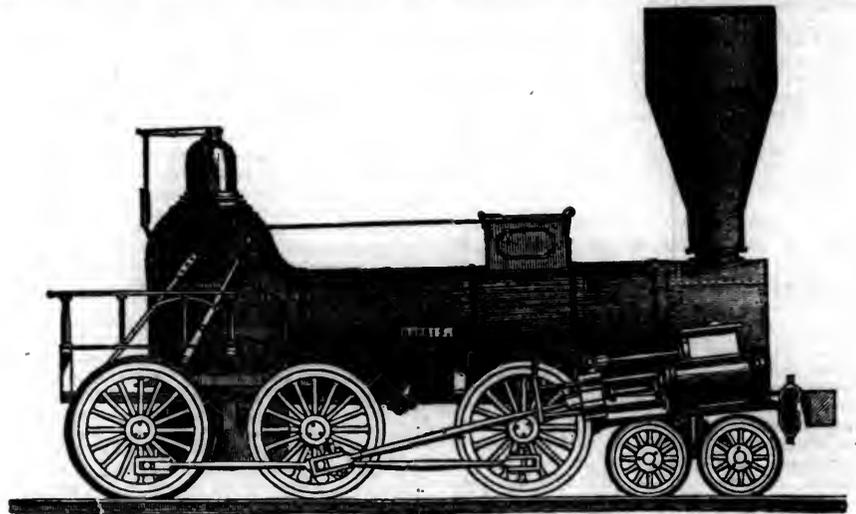
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Rollers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. IL SCHULTZ & CO., 54 WALL ST.

Saturday, August 11, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 481.

NEW YORK

The iron ores of this state are found in districts far remote from each other, and of different characters in different geological formations. At the east, in the counties of *Columbia and Dutchess*, is the *hematite ore region*, which is but a continuation of that just described in Connecticut and Massachusetts. Though rich in iron ores on the east side the Hudson, these seem mostly to fail on its range west of the river through Rockland and Orange counties and New Jersey, where the gneiss rocks, that bound the hematite formation on its south side are remarkably productive in *magnetic iron ores*.—Veins of these ores commence in *Putnam county* near the Connecticut line, and are traced through the highlands across the Hudson. In Orange county three furnaces and several forges are built to use these ores, and several others in the three counties

of Putnam, Rockland and Orange have long since been abandoned.

In the northern part of the state along the western shore of *Lake Champlain*, extending to the western limits of *Essex county*, and probably connecting directly with the mines of the St. Lawrence district, is a region still more productive in *magnetic iron ores* than that of the southern portion of the state. These support eight blast furnaces and more than 150 forge fires, which last consume over 50,000 tons of ore per annum.

West of this, and in the same great primary tract, are the mines of *St. Lawrence and Jefferson counties*, whose outlet is the St. Lawrence river. The ores furnished by these are mostly *specular ores*, on which are dependent five blast furnaces.

In the secondary strata south of this tract, along the shores of *Oneida Lake*, and extending to those of *Lake Ontario* is a group of red and variegated slate, occupying a narrow strip of the surface extending nearly from the Hudson to the Niagara river.—Their geological position is beneath the Niagara limestone, which is itself below the old red sandstone. They carry with them a band of *red fossiliferous ore*, small in thickness, but supplying a large amount of valuable ore, where the formation lies spread out in nearly horizontal layers convenient to the surface of the country. This ore, well known in Pennsylvania as the "*Calawissa ore*," is of easy reduction, containing some calcareous matter, and makes a good foundry iron. In *Oswego county* there is one furnace using these ores, in *Oneida* one, and in *Wayne county* three more.

SOUTHERN DISTRICT.

Columbia and Dutchess Counties.—The iron ores of these counties lie near the Massachusetts and Connecticut line, and are included in a portion of the same belt of strata in part described under the head of these states. The ores come into New York state at about the point where the Western Railroad crosses the line, and a few miles south of this, in the town of Hillsdale a valuable bed of ore has been wrought for more than twenty years. The ore is in large quantity and it costs to mine it about one dollar per ton. It has been carted to the Stockbridge and Vandusenville Furnaces, and also to some of those in the northwest corner of Connecticut, where it has been found to work well mixed in inferior proportions with the best Stockbridge and Salisbury ores. It contains a considerable amount of sulphur, and alone would not do well. It must,

however, have good qualities to have made it an object to transport it for years to the Stockbridge Furnace, a distance of twelve miles.

Prof. Mather describes the ore beds here as follows:—

"Prescott's ore bed is one and a half miles north of the Columbia turnpike in Hillsdale. It is bounded on the west by limestone like those of *Amenia, Indian Pond, Fishkill &c.* This locality was discovered many years ago, and forty tons of ore picked out of the brook and reduced in a forge. It was not much worked until 1822, when Mr. C. Prescott began the manufacture of yellow ochre at this place. The ore is hematite, in detached nodules, alternating with ochre and fragments of decomposed slate rock. The hematite increases, and the ochre diminishes in quantity as you descend. The ore has been penetrated, according to Mr. Prescott's statement, 32 feet without finding bottom. This ore yields 32 per cent. of bar iron when worked in the forge, and at least 50 per cent. of pig iron when smelted in the high furnace.

Another ore bed is located three quarters of a mile south of the above, also on the east side of the limestone, which was opened by Mr. Prescott in 1822, and which he has since sold to a furnace company in Salisbury, Connecticut.

Mr. Prescott has made from his ore bed 275 tons of yellow ochre, which has been sent to market and sold."

Copake Furnace.—This furnace in the town of Copake, near the southeast corner of Columbia co., was built in the year 1845 by Messrs. Pomeroy of Pittsfield, Massachusetts. It has the advantage of an excellent bed of hematite ore directly by the fur-

* Prof. Mather either describes a different mine from that now worked for the Hopewell Furnace in Fishkill, or one of us is in error as to the position of the limestone. I describe it as on the east side of the ore (p. .)

We appear not to be the only observers, between whom there is some discrepancy of opinion in relation to this mine. Dr. Lewis C. Beck in the annual report for 1837, remarks of it—

"Independently of the interest, which this locality possesses in a mineralogical point of view, the judicious manner in which the mining operations are conducted, renders it worthy of particular notice."

Prof. Mather the next year of his report state that, "Most of the galleries have caved in in consequence of the injudicious method of working the ore."

nance; but this being established on a stream of insufficient power, it has not been very successful, and it has finally been found expedient to add a small steam engine to insure at all times the required blast. The furnace is about thirty feet high, and was built for making only cold blast iron. The ore costs about \$1 25 per ton, charcoal seven dollars per hundred bushels. The production of pig iron is from three to four tons per day, with consumption of about 200 bushels of charcoal to the ton. The ore bed here too, according to Prof. Mather is bounded on the west by limestone, and mica slate is not far to the east.

Northeast, Dutchess Co.—The furnace here was built in 1847 by Wells, Robertson & Co. It is distant from the Housatonic railroad seven miles, the cost of transportation being one dollar per ton. The Salisbury ore bed lies one mile only to the southeast, but the furnace is supplied from an excellent bed opened on the furnace bank, which has been before alluded to as possibly a continuation of the Salisbury bed. The ore resembles the best of the Salisbury ore, being a very pure and easily washed hematite of open spongy texture and light reddish color.

The furnace is 33 feet high, eight feet across the boshes, and two feet tunnel head. It is driven by a steam engine of about twenty horses power, and is supplied with a complete set of hot air pipes and an efficient blowing apparatus. The ore costs \$1 50 per ton delivered; charcoal about 7 50 per hundred bushels. The yield of the furnace is from 5 to 6 tons daily.

Amenia Furnace—owned by N. Gridley & Co.; built about 20 years since. It is situated near the Amenia ore bed, on a small stream seven miles from the Housatonic railroad. The ore costs \$1 50 per ton delivered: charcoal from \$6 50 to \$7. The furnace is blown with hot blast, is well managed, and has been very successful. Much of the iron made is of a superior quality of foundry iron, for which an extra price is paid to be made into heavy castings.

The Amenia ore bed is thus described by Prof. Mather in the State Geological Report, for the year 1838:—

“The Amenia ore bed yields 5000 tons of ore per annum, which gives on an average 50 per cent. of pig iron. The mine is worked to this day like an open quarry. A layer of earth and gravel and broken rocks covers the ore from five to twenty feet in thickness. This is first removed and the ore then excavated. They have not yet found the bottom of the ore in any place although in one pit they have excavated into it 45 feet. It improves in quality the farther they descend. No estimate can be formed of the amount of ore in this bed, which probably unites with the others north and south of it. Estimating its breadth at 100 yards, and its length at 1000 yards, with 15 yards depth, through which it is open, it is capable of yielding 1,500,000 tons of ore, and at the present rate of workings will last 300 years.

Talose slate crops out a few rods east, and white limestone a few rods west of the ore bed. Mines which have been and still are extensively wrought, have been opened over a distance of more than half a mile in length; the extent of the bed in these directions is not yet known. Another mine, possibly a continuation of the same bed has been opened at Squabble Hole, about 2 miles SSW. from Amenia-ville. The ore at this place lies under a deposit of pebbles, gravel and loam about 15 to 20 feet deep.—

It is supposed to be abundant. Many tons have been taken out during the past season.”

Prof. Mather speaks of another mine called the Chalk Pond ore bed, two and a half miles northeast of Amenia-ville.

Dr. Lewis C. Beck also describes this ore in the annual report for the year 1837—

“The bed has been opened at various places for the distance of 100 yards, and the ore presents all the varieties observed at the celebrated Salisbury deposit. It often occurs in the form of stalactites of various sizes, and possessing uncommon beauty.—The same high polish, or blackish sooty matter is observed on the surface of the nodules, and they not unfrequently have a light brown color, and a structure so distinctly fibrous as to bear a considerable resemblance to wood. A fragment of a stalactite from this locality was found to have a specific gravity of 3.828, and to lose upon calcination 135 per cent of its weight. The composition of this specimen will probably be a fair average of that of the pure hematite variety from the various localities this country.

Analysis of Brown Hematite from the Amenia ore bed.—

Peroxide of iron.....	82.40
Silica and alumina.....	3.60
Water.....	13.50
Oxide of Manganese.....	trace
	100.00

Dover Furnace—was built about twelve years since. It is situated eight miles from the Housatonic railroad. The ore is brought in part from the Amenia ore bed at a cost of three dollars per ton, and a portion from the Foss bed, a mile and a half to the WSW., at a cost of about \$2 50. The ore at this place is associated with mica slate, and is found in large quantities of good lump ore. The Clove ore bed has also furnished a considerable amount of ore to this company. It cost in 1838 for

mining \$0 75; duty \$0 94. The ore is of pure quality; the bed, bounded on the east by limestone. Coal costs about \$7 per hundred bushels. The furnace is blown by water power and with hot blast: its size is about 35 feet in length.

White's Furnace in Dover—Built in 1846. It is eight miles from the Housatonic railroad on a small stream of water. Ore is obtained from the Quaker Hill and Foss ore beds at a cost of about \$2 50 per ton; coal costs \$7.

The three furnaces last described will soon be much benefitted by the extension of the Harlem railroad to Dover Plains. The cost of transportation of iron to market by teams to the Housatonic railroad and by this road and the Bridgeport boats to New York has, at the rates charged by the Housatonic railroad company, been a serious expense, from which they will now be in great part relieved. The ore bed too in the vicinity will share in this increase of value; and should the supply of charcoal warrant, it is reasonable to expect that several new furnaces may be started in this neighborhood. The Harlem railroad has found it for its interest to charge the lowest rates of freight and passage, and its extension to Dover Plains must soon open to the notice of capitalists a district now little known, but remarkably formed in its soil, climate and mineral resources.

Beekman Furnace—about two miles north of Beekman Village, and fourteen from Poughkeepsie, is owned by Sterling and others of Poughkeepsie. It uses the hot blast and makes about five and a half tons of iron a day. It is on a stream which affords excellent water power and a fall of some twenty feet. The ore bed is two miles and a half north of the furnace, the road following up a stream and along the base of a high ridge of mica slate, which rises to the west. The ore has been opened along a length of eighty or a hundred rods in a north and south course.



A broken irregular excavation down to the water level, which at the most is forty feet from the top of the bank. It cannot well be drained deeper than this, and a steam engine will be required to work deeper. From the fact of the ore above the water being mostly removed, an impression prevails that the bed is failing. To the east it is worked through to the limestone, and some persons I met with employed at the mine did not seem to be aware that it continued below. At other places in the vicinity the indications of ore are very good.—The quality is excellent, a rich chocolate brown hematite. It lies under eight or ten feet of clay and occurs in massive strata mixed with ochres. Places for working are very convenient in the stream close by. Contracts for raising the ore are at \$1 per ton and sometimes \$1 25, according to the quantity of earth to be removed over it. Fifty cents is paid for transportation to the furnace. Charcoal costs about 8 dollars. This furnace has been successful, making excellent iron at a good profit.

Hopewell Furnace at Fishkill, built about 16 years since, owned by Judge Emmet of Poughkeepsie,

and leased to Mr. William Bushnell of that place, at \$1500 per annum. It is nine feet in diameter across the boshes, and forty feet high, uses hot blast, and makes from five to six tons per day. At the time I visited it in the fall of 1847, it was making from five to five and a half tons of No. 2 iron of excellent quality. It is situated on Fishkill creek, about fourteen miles from Fishkill, landing on the Hudson, and six miles south from Beekman Furnace. The water power appears good. Coal costs delivered, 7 50 to \$8, being hauled about twelve miles. The ore bed is owned by Mr. Bushnell.—It is two miles and a half north from the furnace, and fourteen miles from Poughkeepsie, where Mr. Bushnell has built a large furnace to be supplied from this bed. The ore is of the best quality of chocolate brown hematite, and of very uniform character. It lies in strata on the west side of a ridge of siliceous limestone, and dips with this rock at a steep angle to the east;—but the ore appears to curve over away from the limestone and dip to the west. The excavations cover two or three acres and are about fifty feet deep, of which ten to twenty

A. Table of the Iron Furnaces in the State of New York.

In the following Table are comprised all the furnaces in the State, arranged according to the districts just described; excepting the Poughkeepsie furnace, and that of P. Townsend, Jr., all are built to use charcoal.

	No.	Names.	Proprietors.	Situation.	Capacity.	Ores.	Blast.	Date.
Southern District.	1	Copake,	Pomeroy of Pittsfield,	Columbia county.	1200	Hematites,	cold,	1815
	1	Northeast,	Wells, Alger and others, Mass.	Dutchess county,	1800	" "	cold	} 1847
	1	Amenia,	N. Gridley, & Co.	" "	1800	" "	hot,	
	1	Dover,	.....	" "	1600	" "	hot,	
	1	White's,	White,	Dover county,	....	" "	hot,	
	1	Beekman,	Sterling and others,	Dutchess county,	1600	" "	hot,	
	1	Fishkill,	Judge Emmett,	" "	1600	" "	hot,	
	1	Poughkeepsie,	Wm. Bushnell,	Hudson River do.,	2500	Hem. & Mag.	hot,	1847
	1	Greenwood,	Parrott and others,	near West Point, Orange county,	....	Magnetic,	hot,	
	1	P. Townsend's,	Peter Townsend,	Erie railroad, Orange county,	2500	" "	hot,	
1	P. Townsend's, Jr.,	Peter Townsend, Jr.	near N. J. State line, Orange county,	2500	" "	hot,	1848	
Late Champlain District.	1	Duane,	.....	Franklin county,	600?	Magnetic,	.....
	1	Sisco,	F. H. Jackson,	Westport, Essex county,	2500	" "	hot,	1846
	2	Port Henry,	Port Henry Iron Company,	Port Henry, "	5000	" "	hot,	
	1	Crown Point,	Hammond & Tower,	Crown Point, "	2500	" "	hot,	
	1	East Moria,	.....	E. Moriah, "	....	" "	hot,	
	1	Mt. Hope,	E. Woodruff & Son,	Washington county,	1500	" "	hot,	
	1	Adirondac,	McIntyre, Robertson and Henderscn estate,	Essex county,	500	" "	hot,	
St. Lawrence District.	1	Rossie,	George Parish,	Rossie, St. Lawrence county,	3000	Specular,	hot,	rebuilt 1843
	1	.....	Benjamin F. Skinner & John S. Blish,	" " "	1800	" "	.....
	1	Fullerville,	Messrs. Fuller,	Fowler, " "	600	" "	.....
	1	Canton Falls,	H. Van Rensselaer,	Canton Falls, " "	400	" "	.....
	1	Brasher,	Wm. H. Alexander, of Syracuse,	Brasher, " "	800	Bog Ores,	.....
	2	Waddington,	Messrs. Ogdens,	Waddington, " "	....	" "	} out of blast.	
	1	Norfolk,	.....	Norfolk, " "	....	" "	
	1	Westfield,	.....	Westfield, " "	....	" "	
	1	Antwerp,	James Sterling,	Jefferson county,	800?	Specular,	cold,	
	1	Sterlingville,	" "	" "	800?	" "	hot,	} one out of blast. 1847
	2	Carthage,	Leased by Budd & Bones,	" "	800?	" "	or cold	
1	Scriba,	Swiss Company,	Scriba, Oswego county,	1500?	" "	.....	
* Ontario District.	1	Constantia,	Coffing & others,	Oswego county,	1700	Fossiliferous,	hot,	
	1	Taburg,	Armstrong,	Oneida county,	1700	" "	hot,	
	1	Clinton,	Bacon & Cheney,	Wayne county.	2000	" "	hot,	
	1	Ontario,	Titus & French, of Rochester,	Ontario, Wayne county,	1500	" "	hot,	rebuilt 1848
	1	Wolcott,	Livingston & Hendricks, of Albany,	Wayne county,	900	" "	hot,	

* Mr. Vanuxem in the Geological Report speaks of a furnace at Westmoreland. And both he and Dr. Beck of another at Lewisbury. Of these I have no details.

at the surface are in clay, and below in ochres and ore. It is impossible to tell what the thickness of the ore strata may be; but the quantity appears to be enormous, and from the size of the excavations it is evident large quantities have been taken away. It is said to be found over about ten acres, and loose pieces in the road on the line of the bed indicate its continuance where it has not been opened. The cost of the ore delivered at the Hopeville Furnace is mining one dollar transportation fifty cents; washing ten cents. A large proportion is lump ore not requiring washing. The washing is done on the shore of Roger's Pond near the ore bed, where Mr. Bushnell has a steam engine of four horse power employed in raising water for this purpose. When the ore is well cleaned two tons make a ton of iron.

This furnace has been successfully and skillfully managed. The iron has sustained a good character in the market, and no one can examine the cinder heaps without seeing that the furnace has run well and failed to extract little of the metal that was in the ore.

Poughkeepsie Furnace.—The large furnace built in 1847 on the bank of the Hudson just below Poughkeepsie, though not itself in the hematite region, is supplied from the ore bed at Fishkill, 14 miles back from the river, and will be run with charcoal or anthracite according to the relative profits of one to the other. It was built by William Bushnell, Esq., who has displayed in the plan and execution of the work no little judgment and skill.

Copper Ores of Lake Superior.

Continued from page 492.

EAGLE HARBOR MINE.

The pleasant little bay, called Eagle Harbor, lies about nine miles east of the mouth of Eagle river.—Its entrance is narrow, and its width does not exceed a quarter of a mile; but it extends parallel with the coast about a mile, affording safe anchorage to vessels that can pass over the reef at the entrance.—The depth of water in this is somewhat over six feet. The outer shores of the harbor are ledges of trap rock; but within are smooth sand beaches, which slope rapidly down into deep water. From the safety of the harbor, when vessels are once in it, and its importance to some of the neighboring mines, it is probable its entrance will be deepened before many years, as it can well be done without great expense. It is the nearest harbor to the mines of Eagle river including the Cliff and North American Mines; and it may be at some time advisable to connect it with them by a plank road in order to make it their shipping port, instead of, as at present, sending their copper in scows to the vessels anchored in the open lake.

The outer shores of Eagle Harbor are skirted with bands of trap rock; these almost directly give place within to strata of conglomerate and sandstone which pass by their northerly dip beneath the trap and the lake. The trap is highly amygdaloidal, and contains copper together with the other minerals common to this rock near its contact with the sandstone. Fissures running at right angles to the bands of rock are of frequent occurrence. These are generally filled with the white calcareous and siliceous veinstones; and in a calm day they may be traced far out into the lake, being plainly discernible from the canoe, which floats on the transparent water high above them. One of the veins was found highly productive in native copper directly at the surface, the metal occurring in large ragged masses in the taumonite and quartz, of which the vein was principally composed; but as the height of the shore above the lake did not exceed fifteen feet,

and the width of the trap belt was only 60 or 70 ft. there was little room for working the vein except in its course under the water. And a stop was soon put to this by the injudicious mode of laying out the work, the water of the lake being soon admitted into the open cut. The spot being directly upon the outer shore exposed to the heavy waves from the north, and to the ice of winter, it is doubtful whether further progress will ever be made in following this vein. From forty to fifty tons of copper were obtained and the work was then abandoned. The location of the company extends back upon the trap ridge; but little has been done upon it in the way of exportation.

North Western Mine.—This lies four miles back from Eagle Harbor on the southern slope of the trap ridge. It is singularly situated to the Albion, North American and Cliff Mines. The vein is found passing through the compact trap above, the stratum of conglomerate, which here occurs between the compact and amygdaloidal trap, and lastly through the amygdaloid at the base of the ridge. A greater width of the rock is exposed to view than the shape of the ground admits of at the other mines above named, a swamp at those almost immediately succeeding to the steep cliff above. Here a gentler slope affords room for mining operations on a larger line of vein; and several shafts sunk along it to moderate depth have exactly determined its course and position. From one of these masses of copper of many pounds weight have been obtained besides a considerable quantity of stamp work; though its depth is only about twenty feet.—The work seems to be abandoned for the present, notwithstanding its very encouraging appearance. The tract is conveniently situated as to communication with the harbor, the road passing through the ridge by one of the gaps, and being on an easy grade.

Northwest Mine.—This is situated six miles southeast from Eagle Harbor, with which it is connected by an easy road. Its geological position is precisely similar to that of the mine just described.—Three veins are known on the tract, which are near together, and the two outer ones nearly parallel to each other, while the middle one may be a connecting vein between them. The vein now worked is the farthest to the east. It has been opened by several shafts along its line below the steep cliff for a distance of several hundred feet; and these shafts are connected by underground levels, within, however, only from 17 to 30 feet of the surface. These superficial workings were laid out, perhaps not with good judgment, for the permanent advantage of the mine, in order to secure the masses of copper found in the vein at this level. The metal occurs precisely as at the Cliff and North American Mines, in sheets, masses, and stamp work, the masses lying along the vein on edges of indefinite length and depth; their thickness here, so near the surface, seldom exceeds eight inches, but they may be traced almost uninterrupted for about 300 feet along the level. Below the mine is not proved; but with so extraordinary a show of copper at so shallow a depth, there can be little doubt as to the ultimate value of the mine. A considerable amount of rich stamp work and masses have been already extracted; but as the mine is comparatively new, no shipments have yet been made. A large force is at work mining, making roads and surface improvements and in putting up a set of stamps. These are to be placed on a small stream a mile from the mine, and away from the road to the harbor, so that the materials will have to be hauled twice over the

same ground; an expense, which, when the operations are extensive, will probably be lessened by putting up a steam engine at the mine.

A curious feature common to this mine and several others, are the evidences of mining operations, once conducted by an obscure race of people, more intelligent than the present race of Indians, and far more skillful. On the course of the veins are remains of ancient pits; and upon the surface are found stone hammers or picks of curious form—one end shaped like a wedge or chisel, the other rounded off and around the middle is a groove, as if for binding on the handle. These are made of the hardest varieties of greenstone trap, which is the hardest rock to be found, and must have required as much work to fashion as it was capable of enduring when made into a hammer. The number of these is very great, especially at the Minnesota Mine, in the description of which I shall allude more particularly to these ancient workings. The pits are found scattered over the whole mining region, and they have led to the discovery of some of the most valuable veins. H.

Railroad Mismanagement.

We have read with great care, and with a desire to make every allowance, the mass of evidence taken before the Committee of Investigation on the York, Newcastle and Berwick railway. After our continual expressions of distrust in the existing direction of railway companies, and our repeated demands for a public audit, we should hardly be doing justice to ourselves and the part we have taken, if we professed ourselves at all surprised at the result. Yet we are surprised, just as a man who has heard of battles all his life is surprised when he sees one, or as a man is surprised when he first sees an elephant. With some effort of the imagination, and with more distrust of human nature than it was pleasant to avow, we certainly did conceive the possibility, not to say the probability, of utter confusion or disgraceful jockeyship in the management of railway accounts, notwithstanding the parade of auditors, general meetings, half-yearly statements, and other guarantees. But evils we dreamt of are no longer creatures of the imagination. The outlandish figure, stupendous bulk, and grotesque movements of the animal, are actually before us, and appeal to the senses. We now know what we suspected, and see what we know. When you have been to see a sight, there are always people who will ask you, "Well, did it fulfil your expectations?" or, "Were you surprised?" It would be very strange indeed, if one could so thoroughly anticipate all the prodigies of nature and of art as never to catch a reality in advance of one's conceptions. Perhaps, then, it is due to the prolific and versatile power of nature, or time, or the course of human affairs, to admit that George Hudson, his colleagues, his secretary, his auditors, and his shareholders, strike one with the idea of novelty and originality, as if we had not seen the like before, and could not quite conceive it. We wish to deal equal justice between all the actors in this wonderful story. Though the play of Hamlet without the prince himself would be very imperfect, yet the prince alone, without any body else, would be equally so. George Hudson may be the chief personage in this drama, yet he is not the only one; and he cannot be appreciated without giving the others their due.

Three years ago the York, Newcastle and Darlington company, as it was then called, resolved at Mr. Hudson's suggestion, and apparently on sufficient grounds, to purchase shares in the Sunderland docks to the amount of £75,000. From various causes, though the shares have been bought, parliamentary powers are still wanting for the operation. In the interval, however, and particularly about two years since, Mr. Hudson being chairman, made further purchases of shares so as to double the amount. He now saddles the second purchase on the company, as well as the first, and the question who the shares belong to happen to be of grave import to the possessor. The committee repudiates them, and calls on Mr. Hudson to refund the purchase money, which he has paid from the funds of

the company. We are not going into the question of Mr. Hudson's authority or intentions in purchasing the dock shares. By far the most important feature in the case is the way in which business is done by a great railway company. Last November Mr. Close, the secretary of the company, made out certain accounts, in which £125,000 was inserted as on account of the Sunderland docks, and as part of a sum total of £1,869,228. On the 13th of that month that sum total was adopted by a minute of the directors, and published next day in a printed statement, which expressly mentioned the subscription to Sunderland docks, as one of the items included in the sum, and which was confirmed by a general board on December 11th. Thus, the secretary, the directors, and the general board, all adopted a sum total which involved the purchase of the dock shares, and so assumed the question now in dispute. Last February 20, a general meeting of shareholders, summoned by advertisement, was held for the purpose of considering and approving, *inter alia*, "a bill for enabling the York, Newcastle, and Berwick railway company to make certain branches in the county of Northumberland and Newcastle-upon Tyne, and for other purposes." All the proper parliamentary notices of this bill had been given by repeated advertisements in numerous provincial papers. At the meeting a bill was submitted to the approval of the shareholders. Its preamble stated, "And, whereas, it would be attended with local and public advantage, if (amongst various objects named) power were given to the said company to subscribe to the Sunderland docks, authorised to be made the Sunderland dock act, 1846; and the York, Newcastle, and Berwick railway company are willing to execute the said proposed new works, and to subscribe to the said Sunderland docks." And the 42d. section enacted that it should be lawful for the company to subscribe a sum not exceeding the sum of £150,000. The bill was adopted; and therefore, so far as regards that meeting, Mr. Hudson was thenceforth fully authorized to purchase the second batch of dock shares as he was the first. Yet all this time, and for several months after, it appears that only Mr. Close and a director or two had the least inkling of the fact that Mr. Hudson had increased the company's interest in the docks from £75,000 to £150,000, and that the purchase were not on his own private account. The committee of directors, the general board of directors, the auditors and a special general meeting of shareholders, had all considered and approved accounts, statements, and a bill before Parliament, containing something of which the general board of directors and the shareholders at large were entirely ignorant, and which they now vehemently repudiate. Though they approved the bill, they had not the least idea of its contents, and did not even ask to see the preamble, or to have it read.

We have only space at present to notice one other charge against Mr. Hudson. It is one in which we apprehend public opinion will be far more unambiguous and severe in its condemnation than in the last mentioned instance. In the summer of 1845, the company having created and allotted a quantity of shares, and certain limited remainder, of which I gave so many to Mr. Hudson. On one ground or another he became entitled to 937½. He sold them at a very large premium. But what did he sell? Only the 937½ which were his due? No such thing. He sold on his own account—that is, as if the were his own, 10,894 shares? He sold not only more than he had to sell, but more even than the company had to dispose of. Such was the premium, that on this one transaction he made a profit of £145,704. There was really nothing to sell, but he went on selling—that is pocketing premiums, *va infinitum*. No wonder at Mr. Hudson's fabulous wealth. It was fabulous indeed, for it consisted in receiving large premiums for promises which he had not the least power to fulfil. But what an incredible state of accounts which could allow such a transaction to sleep for four years—Mr. Hudson all the time quietly enjoying the proceeds! In order to make room for this abnormal issue of shares, the register of shareholders has been privately increased from 42,000 to 56,000. The surreptitious shares were not entered, of course, in Mr. Hudson's own name, but under the names of numerous railway officials or private friends; the *modus operandi* uniformly being that Mr. Hudson directed the secretary to issue so many shares to such a name; and the secretary did so with-

out any demur, though not without occasional misgiving and surprise. We are only describing the process, having little desire to speak out at present on its motives. Mr. Hudson, who, for form's sake, had executed the company's subscription contract to the amount of 8,600 shares, and who found every body leaning upon him for assistance and advice, who also found that every thing he touched turned to gold, doubtless thought it his fate to make shares and sell them. His office was plenipotentiary; so long as every thing was rising it would always be in his power to rectify any irregularities. He was the company himself, and really does not seem to have known whether it was for himself or the company that he paid or received; excepting that, as commonly happens in such cases, he found himself—quite without knowing it of course—paying on the company's behalf, and receiving on his own.—*London Times*.

Gutta Percha Tubing.

A series of interesting experiments have just been concluded at the Birmingham Water Works, relative to the strength of gutta percha tubing, with a view to its applicability for the conveyance of water. The experiments were made, under the direction of Mr. H. Rofe, engineer, upon tubes ¼ of in. diameter, and ½ in. thick, of gutta percha. These were attached to the iron main, and subjected for two months to a pressure of 200 ft. of water, without being in the slightest degree deteriorated. In order to ascertain, if possible, the maximum strength of the tubes, they were connected with the water company's hydraulic proofing pump, the regular load of which is 250 lbs. on the square inch. At this point they were unaffected, and the pump was worked up to 337 lbs., but, to the astonishment of every one, the tubes still remained perfect. It was then proposed to work the pump up to 500; but it was found that the lever of the valve would bear no more weight. The utmost power of the hydraulic pump could not burst the tubes. The gutta percha being slightly elastic, allowed the tubes to become a little expanded by the extraordinary pressure which was applied, but on its withdrawal the resumed their former size.—*Mining Journal*.

Zincing of Iron.

There are, it is well known, two different methods of coating metals with zinc;—one by immersing in the molten zinc the articles required to be coated, and another by precipitating the zinc from a solution by means of galvanism. The solution most commonly used for this latter process is, a weak solution of oxide of zinc in potash ley. Numerous experiments have been recently made by M. Riepe, at the laboratory of the Society of Encouragement, at Berlin, on the solution best adapted for this purpose. The following is a summary of the results obtained:—The compounds of zinc employed by M. Riepe were—a solution of sulphite of zinc, a solution of cyanide of zinc in cyanide of potassium; a solution of the double salt of chloride of zinc and sal ammoniac (salt for welding); and a solution of hyposulphite of oxide of zinc. The operation appeared to be most successful with the solution of sulphite of zinc, and with the double salt, above mentioned; but, to ensure success, the solution must be weak, and a weak galvanic current must be employed, otherwise the zinc precipitated will again separate from the iron in the form of thin scales; if proper precautions be taken, the operation will succeed perfectly well, and the zinc may, by that means, be laid on as thick as a sheet of paper. It is scarcely necessary to remark, that the article to be coated must be well cleansed previous to performing the operation. With regard to the preparation of salts, the following remarks will be found requisite:—The sulphite of oxide of zinc is prepared by dissolving in water, saturated with sulphurous gas, as much hydrate of carbonate of zinc, recently precipitated, as will completely saturate the water. With respect to the ammoniacal chloride of oxide of zinc, proceed as follows:—Dissolve one part of zinc in hydrochloric acid, and, to this solution, add one part sal ammoniac, evaporate the liquor and crystallize. The crystals are colourless six-sided prisms, translucent, easily soluble in water, and very easily deliquescent. Cyanide of zinc, with cyanide of potassium, are comparatively too expensive; and hyposulphite of zinc gives less satisfactory results.—

M. le Docteur L. Elsner.

Improvements in Railway Wheels, Turn-Tables, etc.

Messrs. Wm. Baker, of Magboston, and John Ramsbottom, of Longsight, near Manchester, have just obtained a patent for some improvements in the construction of railway wheels, and in railway turn tables, which latter improvements are applicable to certain shafts or axles driven by steam, or other motive power. The railway wheel is constructed with spokes of angle iron, which are bent into triangles, and arranged in two eccentric circles with the bases outwards, and the ends which form the splices placed together. The tire, which is made on the inner circumference, with a shallow dovetail groove, is then shrunk on to these bases, so as to draw each pair of spokes together, and the tire is held on by means of pieces of metal, which are driven into the spaces between each pair of spokes, and there held fast by riveting or upsetting. The turn-table consists of top and bottom plates, which are suitably supported on a central shaft, and constructed with a number of eccentric and corresponding grooves in their inner and opposite faces.—Spheres, cones, or cylinders, are then placed in the grooves of the lower plate, and serve as bearings to the top plate of the turn-table. The number of Spheres, cones, or cylinders, in these grooves, diminish from the outer to the inner one in a greater proportion than would be due to the differences of their diameters. The edges of the table are provided with a rim, to shield the interior from ballast, and to support the ends of the rails of the permanent way. The bottom plate is perforated with numerous holes, some to receive the spikes for bolting it to the sleepers, and the rest to drain off the surface water. The patentees describe several modifications of the turn-table, such as forming the bottom plate of eccentric grooved rings bolted to the sleepers or suitable foundation, and constructing the rings in pieces and bolting them together; also making the top plate in segments of a circle, and riveting them together.—Sometimes the grooves are made large enough to hold two rows of spheres. Lastly, this invention consists in the application of the preceding principle of construction to support shafts or axles; that is to say, shafts subject to great strain in the direction of their length. They are cast with shoulders, fixed on the face, with concentric grooves; opposite to the shoulders are fixed collars of hard metal, having on the face in front of the shoulders a like number of corresponding concentric grooves. A number of spheres, cones, or cylinders, are placed in the spaces formed by the grooves in the shoulders and the collars, and serve to relieve the shaft from a considerable portion of the strain. Or, if the shaft is vertical, the bearing end, and supporting heel piece, are furnished with a number of corresponding concentric grooves, and into the space so formed are placed the spheres, etc., as in the preceding case. The grooves of the heel-piece are filled with some lubricating mixture to decrease the friction.—(*claim* : The improved construction of railway wheels, and the arrangement and combination of cones, cylinders, or spheres, in the manner and for the purpose before described.

Mechanics Magazine.

Society of Arts.

May 9, 1849.

Mr. Digby Wyatt, architect, read a paper on Metal-work, and its artistic design.

The paper commenced with some remarks on the absolute necessity of the study of *specific design*, in order to confine the errant imaginations of artists within reasonable bounds, and in order fully to take advantage of all the natural properties, mechanical capabilities, and recorded experiences, peculiarly belonging to all materials, in the elaboration of which its requisite that an alliance between use and beauty should be effected. Mr. Wyatt maintained that all propriety and perfection in manufacturing design was derivable from the result of such studies, and that the more clearly the object individuality of every ingredient was preserved and enunciated in the finished article, the more satisfactory, to both eye and mind, would the character of its ornamentation appear.

The *specific design* of metal-work was described as based on three great studies, a thorough knowledge of the general conditions of which was requisite to all who would either manufacture, compose, or criticise, in any one of its numerous ramifications. The first of these was, that of the distinctive

characteristics and appliances of each metal; the second, its form as modified by all the mechanical processes of manufacture; and the third, a thorough analytical and critical acquaintance with all the best models in which reasonable and good principles of art can be traced, and through modifications of which pleasing associations of idea may be commanded at the will of the designer. In accordance with his scheme, thus laid down, Mr. Wyatt proceeded to deduce the correct theory of the manufacture of each metal from the properties with which it had been endowed by nature. He then described, at considerable length, the process by which almost all objects in metal must be produced, dwelling especially on those best harmonising with the character of each substance, and the accredited conventionalities of its use. Thus he emphasised the refining, beating into thin sheets, wire-drawing, stamping, and torsion of gold; the beating in plate, gilding, dead-silvering, parcel-gilding, soldering, &c. of silver; the hollow casting of bronze, by means of wax, and of moulds *a bon creux*; and the solid founding of iron in complex forms. Having disposed of the structural processes, Mr. Wyatt rapidly analysed the decorative, or superficial, enumerating and sketching out the leading peculiarities of engraving, matting, niello, cooking, burnishing, the six chief divisions of enamel, and three or four varieties of damascening (*tauscia, lavoro all'ogemina*). The mechanical limits of the art being thus pointed out, the impression suggested by the history of past *chef-d'auvres* were then cursorily examined. The extreme antiquity of metal-work, and its details among the Jews, Egyptians, Assyrians, Persians, Greeks, Etruscians, and Romans, was demonstrated from descriptions furnished by various authors, and by monuments of wonderful merit still existing. The speaker then glanced at this mediæval portion of his subject, and concluded by calling attention to the beautiful examples of metal-work, ancient and modern, by which he was surrounded, and urging the necessity of a systematic recognition of first principles and practical details, to be superadded to the study of beauty and fine art in the abstract.

In addition to the articles of gold and silver-plate, the bronzes, and fine iron-castings which had been contributed to the exposition of this Society, the paper was illustrated by a quantity of beautiful specimens of ancient metal-work, most kindly lent for the occasion by Mr. Pratt, Mr. Webb, Mr. Hawkins, Mr. Hardwick, and several other gentlemen. The room was hung round with a series of drawings of the highest interest, a portion of the stores accumulated by Mr. Wyatt for his forthcoming work upon the subject.

Brussel's Academy of Sciences.

On the Passage of Hydrogen Gas through Solid Bodies.—BY M. LOUZET.

If a horizontal current of hydrogen gas emanating from a capillary orifice, be directed towards a sheet of paper, held vertically at the distance of a few millimeters from the orifice, in such a manner the current may be perpendicular to the paper, the paper is traversed by the gas. But the gas does not, so to say, shift itself through the paper, as might be expected; it resumes its form of a column, and may be inflated behind the paper with just as great readiness as if the paper were not interposed between the current of gas and the ignited body. Again, if a ball of spongy platina be placed behind the paper, and in the direction of the current of hydrogen, the metal becomes red hot; if the sheet of paper be an inch or so from the orifice, provided that the platina be placed close to the paper—or but a short distance from it. It is well to remark that the pressure under which this phenomena is effected does not exceed that of four or five inches of water.

"To my great surprise," adds M. Louzet, "I found that the hydrogen gas traversed in the same way gold and silver leaf. Thus

if a ball of spongy platina be enveloped in several folds of gold or silver leaf, and a current of hydrogen gas be directed against it, it soon becomes red hot, and the gold or silver will adhere to its surface. A ball of spongy platina placed behind a leaf of tin foil, against which a current of hydrogen gas was directed, became highly heated, but without being red hot. But as tin foil is pierced with a multitude of fine holes, which may be perceived by placing a leaf between the eye and light, the phenoma is not very remarkable. If, however, the tin foil be doubled, the platina still becomes strongly heated.

"Hydrogen gas passes in the same manner through a fine membrane of gutta-percha in chloroform. But hydrogen gas will not traverse small pellicles of glass, however thin they may be obtained.

"These experiments may be very correctly performed with Doberein's apparatus for the production of instantaneous light, an apparatus well known in England."

Coal Mining 300 Years Ago.

In this age of experiment, it may be interesting to know some of the fancies in connection with coal mining in past times. In the Bodleian Library there is a manuscript, written in Greek, by one Nivandes Nucius, from which the following has been extracted:—"In this city (City) and all the neighboring country, they are accustomed to burn a certain black, shining, stony substance, producing hot embers without smoke; but when the substance (coal) has been consumed, it yields no cinders, but a very fine dust, which is scattered through the air. These stony substances they dig out of the deepest recesses of the earth, finding certain veins from which they extract them; but a peculiar prodigy takes place when they are about to commence digging. The miners are accustomed to excavate at a distance of eight or more stadia from the city, below the river, about 30 cubits or more. When they meet with this mineral, they form a spacious cavern; but they are not able to throw out the mineral immediately, for fire on a sudden bursts forth, and encompasses the whole cavern. When the miners are desirous of extracting the coal, they put on a linen garment, which has neither been bleached nor dipped in water; this covers them from head to foot, leaving only certain apertures for the eyes; they also take a staff in their hands, which serves to guide and direct their steps in the passage leading to the cave. The miner then draws near to the fire, and frightens it with his staff. The fire then flies away, contracting itself little by little. Having then expended itself, it collects itself together in a surprising manner, and becomes very small, remaining quite still in a corner. But it behoves the man wearing the linen garment to stand over the flame when at rest, always terrifying it with his staff. Whilst he performs this service, the miners extract the stones: but as soon as they have left the cave, the dormant fire on a sudden bursts forth, and environs the whole cave. No one then ventures to enter without the aforementioned garment and staff, for he would be inevitably consumed. And this

we ourselves have beheld, being admirers of the operations of Nature." Can modern science unriddle the mystery of the garment and staff?—*Mining Journal*.

Ventilation of Mines.

From the recent experiments at Birmingham, which showed that gutta percha tubing would resist a pressure of even 337 lbs on the square inch, and the fact that it will not collapse when the atmosphere is withdrawn, it seems likely that this material will become valuable for the ventilation of mines. We find that 3 in. tubes can be made in single lengths of 50 ft., and not weighing more than from 50 to 60 lbs. each. This, together with the fact that the joints are so readily made, by simply warming the flanges and pressing them together, will render their erection in the shafts, &c., of mines a matter of comparative ease.—*Mining Journal*.

The Coal Trade for 1849.

The quantity sent by railroad, this week, is 38,038 05 by canal, 13,521 15—for the week 51 560 tons.

It is not to be denied that the coal business is unusually dull, at the present time, and that prices for small lots, forced into the market, have been less than the usual rates, but we have not yet heard of a single sale made below \$1 80. for white ash and only one or two as low as that, which were forced sales to meet liabilities; but the tendency is unquestionably downward, which is aided and assisted by publications, made in certain quarters, through a morbid appetite to do mischief, and this downward tendency, if it continues, will result in a reduction of wages, which is as certain to follow as it is for water to run down stream, in spite of all the combinations and unions in the country, as we stated a few weeks ago. If the market does not require coal, it will not be purchased if offered at even \$1 50, nor will it increase the demand for the article; and therefore we consider it the height of folly, since we have remained idle so long, at this critical period, to mine an excess of coal, and offer it at low rates, and thus lose all the advantages of the market for the closing three months, when it is admitted by all who have any knowledge of the business, from the demands of the market, that the trade must be brisk for that period, unless the disastrous effects of the present revenue laws of the country should prove more destructive than even the most desponding have admitted. We have always been of the impression that there could not be any increase in the consumption of this year, and have refused to endorse statements to the contrary in our columns, but we have yet to supply an increase of four hundred thousand tons, from the different regions, over the supply of last year for the balance of the season, to throw as much coal into market as was consumed that year: besides, the great number of coal yards in the various sections of the country, with but few tons in each yard, will always require about 100,000 tons as regular stock. This would require an additional increase of 100,000 tons provided the consumption only of last year is maintained.

Amount of coal sent over the Philadelphia and Reading railroad and Schuylkill navigation, for the week ending on Thursday evening last:—

	RAILROAD.		CANAL.	
	Week.	Total.	Week.	Total.
P. Carbon..	13,041 17	188,278 10	5,813 04	99,231 19
Pottsville..	3,959 04	50,301 04	2,161 09	30,331 16
S. Haven..	17,582 11	245,811 19	4,708 15	54,451 12
P. Clinton..	3,461 13	72,532 13	838 07	16,421 11
	38,038 05	586,924 06	13,521 15	197,437 01
		197,437 01		

total by R R & Canal 784,361 07
to same period last year, by Railroad.... 725,627 69
" " " Canal..... 217,172 06
942,799 15
Decrease this year.. 158,437 18 tons.—Mining Jour.

English Patents.

John Coope Haddan, 29, Bloomsbury-square, C. E., for an improvement or improvements in railway wheels.—This invention consists—1. In making the spokes of wrought iron bars, which have their nave ends bent into the form of three sides of an equilateral polygon, so that the may overlap one another.—These ends may be placed radially or tangentially to the centre, and welded to one or between two cheeks, and are cut away from the centre hole of the cheek, so as not to come in contact with the axle. These spokes may either be of the L or T form, and are bent into the desired shape at the nave end by means of suitably shaped blocks.—2. the tyre of the wheel is made of less diameter at the part next the flange than in the entire, in order that the tread may be on the centre of the line rails.—3. To enable the flanged wheels to run on tramways, a ring with a plain periphery and a portion of its inside circumference chalked down to receive the flange is shrunk on. Claim.—The three several modes of constructing railway wheels.—Mining Journal.

Iron Trade.

The prospects of the iron trade are at this moment, we regret to say, a little overshadowed, that check which commerce has received by the continuances of political disturbances on the continent, has made itself somewhat too sensibly felt in the working iron districts of this kingdom. We live and thrive by the peaceful intercommunications of the trading world. It would be all the better for us if the Temple of Janus were continually shut; but it is not in human zeal, nor in human wisdom, to perpetuate the halcyon days of universal peace. In proportion however, as that is interrupted, will be the interruption of our prosperity as a mercantile and mining people. There are other causes co-operating in the depression to which we advert; the make for some weeks past has somewhat outran the actual wants of the world, and the lull which has fallen upon railway undertakings, and the restraints which have, unwisely as we think, been put on Government as to the increase of its steam navy, are so many ingredients which have immediately contributed to lower, for the moment, the iron markets of the United Kingdom.

We trust that no more will be made of this temporary suspension of activity than it is entitled to; that as few furnaces will be blown out; the make as little reduced; and employment as generally continued as possible under the circumstances; and we have great reason to hope, notwithstanding the somewhat serious declension of prices, that the turn things have taken, as well as the direct consequences of it, will be superficial in its depth, and short lived in its duration. In some senses, certainly, it will be an occasion for patience and forbearance on the part of those chiefly and most intimately interested in the branch of our indigenous industry; and in most of the inconveniences which will sometimes overspread our social as well as our commercial relations, feeling of this description are more likely than any others to furnish us with a remedy, or to supply an alleviation.—Mining Journal.

Illinois

WAUKESHA, AND MILWAUKEE RAILROAD.

The common council of Milwaukee have voted to subscribe one hundred thousand dollars to the

stock of the Milwaukee and Waukesha railroad, the first link to connect Lake Michigan with the Mississippi waters. An annual tax of one per cent. is to be levied on the real estate of the city, the proceeds of which are to be appropriated to the payment of the stock, and the tax-payers to become stockholders in the road, to the amount of tax they shall severally pay. This subscription, however, is not to be binding on the city until the individual subscriptions to the stock of the railroad company shall amount to \$300,000.

Internal Improvement Debt of Illinois.—The Springfield, (Ill.) Journal of the 7th inst, furnishes a statistical table of the entire internal improvement debt of that State, which fixes the amount at \$6,970,022.79. The greater part of this amount has been funded through the recommendation and untiring perseverance of Governor French. The canal debt and school fund debt are not included in the above amount; the former being considered entirely provided for by the pledge of the canal and canal lands. That Illinois will be able to pay to the uttermost farthing her entire State indebtedness does not admit of a reasonable doubt, and that she has the disposition to do so has been made abundantly apparent from the large vote that was given in favour of the constitutional special tax for the liquidation of the principal of the State debt. Illinois once relieved from the incubus of her indebtedness, and there is no degree of prosperity and importance she may not attain.

Railroad from Chicago South—Important.—The Chicago (Ill.) Tribune of the 27th ult says, that a responsible company have contracted to construct the railroad from Chicago to a point in Indiana, near Lima, in LaGrange county, where it will meet the Michigan Southern railroad. They own about one fourth of the \$1,600,000 they are to receive for building the road (iron being found them). It is to be completed in three years, when Chicago will be within 36 hours travel of New York, by way of the Erie railroad, as a road will be built from Toledo along the lake shores to Buffalo. Milwaukee must awake and construct a road to Chicago, thus placing themselves on the great line of rapid communication.

Virginia.

Orange and Alexandria Railroad.—At a late meeting of the President and directors of the Orange and Alexandria railroad, agents were appointed in the various counties through which the road will pass, to obtain the right of way. These agents are allowed \$4 per day as a compensation for their services, and are to report monthly to the Board.

The President of the Company, Mr. Henry Daingerfield, and the chief engineer, were appointed a committee to contract for iron, of the weight of about 50 lbs. to the yard, for the Eastern section of the road.

Baltimore and Ohio Railroad.—Capt. Wm. H. Swift, of the U. S. Topographical Engineers, has resigned his post, having been elected President of this road, and the vigor of his management is already perceptible. At a meeting of the Board of Directors, held on Tuesday last, contracts upon the second letting, embracing twenty-five miles west of Cumberland, were given out. The prices are in all cases within the estimates of the engineer, and there are now 45 miles in the hands of contractors, embracing the most difficult portion between Cumberland and the Ohio. This fall, about 50 or 60 miles more will be let, which will bring the road to the Jygart's Valley River, whence a good turnpike of about 100 miles in length offers a connection with the Ohio at Parkersburgh. The remaining portion of the contracts will be awarded in the spring, and as care has been taken to give to those most difficult the advantage of a good start, it is believed the whole of them will be completed almost simultaneously.

Petersburgh Railroad.—The Petersburgh Intelligencer of the 7th inst. says:—"We are pleased to learn that the Petersburg Railroad Company has just effected a contract with our townsman, James Dunlop, Esq., who has the agency of an extensive iron manufactory in England, for heavy T rails, sufficient to relay their track as far as the Junction of the Greenville railroad. This, with the iron already laid, will make 45 miles, which will complete the rebuilding of their road as far as their heavy trade is carried. The effect of this improvement will be to greatly increase the safety, comfort and expe-

dition of the passenger lines on the railroad, and also enable the company to carry freight with greater despatch.

In connection with this subject we are pleased to see in the Wilmington papers that the Wilmington company has also just contracted for T rails enough to relay 100 miles of their road. This will add vastly to the attractions of the inland line, and when the Manchester road is done, we think the land route will command the most of the travel between the north and south.

Vermont.

Vermont Central Railroad: There is every reason to believe that the new stock of this corporation, some twenty thousand shares, has been taken; eight thousand by the old stockholders, and the remaining twelve thousand by Mr. Quincy, the new Treasurer. From the known energy and great financial abilities of this officer, it may reasonably be supposed that the success of this enterprise is now placed beyond a doubt; and that certainly will justify the enormous salary, \$10,000 per annum, which is to be paid him. It has been stated that one of the late employees of the transfer office put out some twenty seven hundred more share certificates than the capital stock would allow of, pocketing the balance over, running from 1 to 10 dollars per share, the whole proceeds amounting to some fifteen thousand dollars.—Boston Traveler.

Massachusetts.

The Salem and Lowell Railroad, which Mr. Livingston of Lowell has contracted to build for \$250,000, ready for running, is 16 1-2 miles long. It extends from Essex railroad in South Danvers, to the Lowell and Lawrence railroad in Tewksbury. A large proportion of the land owners on the route have become subscribers to the stock.

Taunton Branch Railroad.—Directors for the ensuing year: Thomas B. Wales, Samuel Frothingham, Samuel Quincy, John F. Loring, and Wm. A. Crocker. Wm. A. Crocker of Taunton was chosen President, in place of T. B. Wales, resigned.

Boston and Providence Railroad.

A report has recently been made by the directors of this railroad, by which it appears the capital has been increased from \$2,530, to \$3,160,000, the limit prescribed by the act of incorporation. The increased expenditures of capital has been mainly in the construction of the Pawtucket branch and improvements at Providence. This branch opens a new route to Providence, and completes a communication between Boston and the centre of that city, and also a junction with the Stonington and the Worcester and Providence railroads; and, furthermore, shortens the line between Boston and New York about three-quarters of an hour, by obviating the detention at the ferry. The whole cost of the improvement has been 577,962 dollars. Another expensive operation was the construction of a new road from the Tell Gate station through West Roxbury to Dedham. This was undertaken to secure the company against competition in that direction; and in consequence of it, several petitions for competing lines have withdrawn their petitions. The cost of the improvement when completed will be about 285,000 dollars.

The net earnings of the road for the last year (ending July 1, 1848) were \$163,139. The increase of gross receipts over the previous year was 15 per cent.; the increase of the Providence travel 7 per cent.; the way travel 45 per cent.; the New York travel 29 per cent.; New York freight 10 per cent.; and local freight 29 per cent. The road and the station houses throughout the line are said to be in a better condition than they have been at any time since the road was built. The directors express a belief, that, under a faithful and intelligent management of the superintendent, the affairs of the road have been conducted with all the economy consistent with the safe and efficient workings of the road. They subjoin to their report—what is rarely, but what the public would like to see done—a statement of the force employed in the business of the road, and the amount paid to those in its service.

This statement shows the whole number of individuals employed to be 201, with salaries as follow: President, 2,000 dollars; Superintendent, 3,000;

Treasurer, 1,500; Treasurer's Clerk, 700; Superintendent's Clerk, 360; Sup. of Transportation, in Boston, 1,500, do in Providence, 1,000; 2 Ticket Clerks, 600 each; 3 Station Baggage Masters, 83 cents per day; 6 Freight Clerks, 527 per year; 25 Laborers in Freight Department, 4 Night Watchmen, 16 Laborers in Wood and Water, 16 Switchmen, 12 Brakemen, 10 Firemen, 26 Laborers, 1.00 per day each; 13 Gate and Flagmen, 260 per year each; 8 Conductors, 539 per year each; 100 Engine-men, 648.25 per year each; Superintendent Machine Shop, 1,500 per year; 31 mechanics, wood and iron, and 4 Carpenters, 1.25 per day each; Superintendent of Road Repairs, 540 per year; Train Baggage Master, 400 per year; Fruit Agent, (in summer months) 40 per month.

Accompanying the Directors Report is the Report of the Examining Committee of the stockholders, of which Dr. Smith was Chairman. The report expresses entire satisfaction with the course of the Directors, and with the condition and prospects of the road. The committee especially commend the method of conducting the business transactions of the road. They say: "It is perfectly simple, exact, and not liable to mistakes. Although analogous to the system adopted on the Eastern road, it is superior from the circumstance that whatever is done through the day, is finished, by being settled at night. Hence, bills are not permitted to accumulate of any kind, for or against the corporation; and there are no obscurities or perplexities from that source."

AMERICAN RAILROAD JOURNAL.

Saturday, August 11, 1849.

Extension of the Baltimore and Ohio Railroad.

Proposals are invited for the Graduation and Masonary of the part of this road not already under contract between Cumberland and the Tygart's Valley river—a distance of about 103 miles. The number of sections now to be let will be about 58; of which 23 occur between Cumberland and the mouth of Savage River—18 in the glades, and the remainder on Raccoon and Three Forks creeks. The work will generally be moderate, although there are a number of sections worth the attention of contractors accustomed to heavy jobs.

Specifications and plans will be ready at Cumberland, on and after the 27 of August current. The proposals, addressed to the undersigned, will be received at Cumberland up to Saturday the 15 of September inclusive. Further information may be had at the Company's Office in Cumberland. Full testimonials will be required from those unknown to the undersigned.

By order of the president and directors.
BENJ. H. LATROBE, Chief Engineer.
August 9, 1848.

Railway Reports and Railway Management

False as a Bulletin, became a proverb in France from the character of these of the Great Emperor, which were better known to express what he wished to be true, than what was true in fact. We are afraid that the character of some railroad reports will give a modified expression to a similar idea. Certain it is that they convey as little knowledge of the actual state of a road, as did the bulletins of the actual condition of affairs;—both are statements of results which are desired, but not of anything actually accomplished.

We do not think for an instant, that as a general rule, directors intentionally misrepresent in their reports. These mistakes result from a good natured weakness of yielding to a desire of presenting to stockholders a favorable statement of their investments, and from a want of sufficient experience as to the actual cost of constructing a road, and keeping it in repair. Experience coming from the use of roads is now testing the correctness of these reports, and is bringing some stocks down to a low point, which, upon the strength of such reports, stood at the top of the market. We suppose that

the stock of the Boston and Worcester road is, in fact, worth as much to-day, as it was when it commanded 15 or 16 per cent. more than it sells for now. Yet upon the strength of the reports of this company people were justified in paying a large premium for it. Those that made up the reports, we have no doubt, were sincere in their delusion, and as much mortified at their mistakes as those who have lost so largely in investing in this stock. The history of such roads teach a useful lesson, which should not pass unheeded by those having the management of such works.

In this country, every road of any considerable magnitude requires the united strength of those interested in its construction to build it. There is a great tendency, therefore, to build them in the cheapest manner possible. Consequently the work of repairs must be commenced almost as soon as it goes into operation. The necessity felt of deriving an income from them at the earliest possible moment, causes them to be put in operation before they are fitted to receive their equipment. The actual amount expended to put them in this condition is put out to the world as their ultimate cost, and the proportion that their earnings bear to this cost, is taken as the rate of dividends that they are capable of paying.

Upon such data, roads commence at once the payment of dividends. In the meantime, the income as fast as earned is used to complete the work of construction, and when dividend day comes round, money is hired to meet it. The work of construction and repairs still goes on, absorbing all the income of the road, and often much more. These wants have to be met with new loans, till a debt is accumulated, too unwieldily to be provided for in this manner, and an issue of new stock is resorted to, to discharge it. The same causes again produce similar results. Repeated issues of stock are made till the revenue is found inadequate to the payment of the former dividend, and a fall of stock is the necessary consequence. The completion of a road is looked upon as an end never to be realised, and the uncertainty of all calculations based upon reports of their affairs, undoubtedly has a tendency to often depress these stocks below their real value, and we think, may be considered as the leading cause of the great distrust now felt toward this kind of property, which so lately stood the highest in public confidence.

In this country, most of the evils of the kind we have enumerated must work their own cure. Each state adopts such a system of legislation in regard to its railroads as suits its own ideas, and we cannot expect any greater harmony in these than in other matters. The great object in the legislation of all the states upon this subject is to confer upon companies similar privileges to those enjoyed by individuals, and impose upon them similar responsibilities—conferring in addition the power necessary to the accomplishment of the objects they have in view; leaving their management almost entirely to the directors of their companies. Uniformity, therefore, can only result from the spontaneous adoption by companies of such a method of construction and management, as experience shall approve as best fitted to secure the great objects they have in view. Legislation in the end could accomplish no more than this. If it should act it would only give a legal sanction to such a policy as the experience had showed best adapted to the management of railroads.

Though it is foreign to the policy of our State governments to prescribe any rules for the manage-

ment of our roads, it might adopt a regulation, which, without interfering with them in any respect would, we think, be followed by very beneficial results. Let each state appoint a board of railway commissioners composed of suitable persons, whose duty it shall be upon the opening of a road, or of any part of it, to report its precise condition; the amount of money already expended upon it; and the sum necessary to put it in complete order; its characteristics so far as its grade, manner of construction, nature of soil on which it runs, &c., are concerned, and in fine to report every fact necessary to give the public a precise idea of the value of the road as an investment.

Such a plan, while it would lay before the public all that it is necessary for it to know relative to any road, would leave its management entirely to its directors. It would fully protect the rights of the public without interfering with those of private individuals. It should be made the duty of such commission to report annually the condition of the various roads in a state, which we have shown would be as necessary as to do this at the opening of a road. No policy could be resorted to, that would soon secure the general adoption of the best mode for the management of railroads. And it would equally put it beyond the power of a designing director to impose upon the public, or a gambling speculator, to raise or depress the value of its shares to carry out his own schemes.

South Carolina.

Greenville and Columbia R. R. Co.

The annual meeting of this company was held at Columbia on the 7th and 8th of May last. From the report of the president and engineer, it appears that the grading of the whole line from Columbia to Anderson Court House, is in progress, a distance of about 127 miles. The section from Columbia to the crossing of Broad river, embracing the bridge over this river, a distance of 26 miles, will be in operation by the 1st of January next. Contracts have also been made for timber for the superstructure of the road from Broad river to Frog Level, within 8 miles of Newberry, to which last point, should iron be seasonably purchased, the road can be opened early in the spring; and the remainder, with reasonable dispatch, to Anderson Court House.

From this point to Greenville nothing as yet has been done; and it is uncertain whether the people of this district will avail themselves of a charter they possess, authorising the construction of a separate road to Anderson, or whether by uniting with the above company, they will aid in extending their road to Greenville.

The construction of the Greenville and Columbia road to Anderson, will open a railway communication to the whole of the western and northwestern part of South Carolina. Efforts are making by the people of the Spartanburgh and Union districts to construct a road to connect with the above at the crossing of Broad river, or at Newberry. A road is also to be built to Laurens district from some point in this road. A cheap and expeditious means for transportation of produce throughout the whole year to the principal seaport in the State, will thus be provided, which will incalculably enhance the value of land in this remote part of the State which are now burdened by the immense cost of the transportation of its products, and which being entirely of an agricultural nature, are of great bulk when compared with their value. At present it is chiefly forwarded by river navigation, which is available only a part of the year, during which time the farmer is compelled to send his produce to a mar-

ket, whether there is a demand for it or not. This necessity often puts him in the power of the purchaser, from his inability to take care of it, after it arrives at its place of destination. With this road to forward it at pleasure, he will only do so when it will meet ready sale. This ability to forward at all times to market renders land in remote parts of the State nearly as valuable as that in the vicinity of the sea shore.

Another great advantage of this road will be the social advantages it will confer upon the inhabitants of the section through which it runs. Social intercourse is the most valued privilege of life, and the difficulty of enjoying it the great drawback in the life of the southern planter. A railroad gives him all he lacked before—society, and constant intercommunication with his fellow men. A railroad is in fact a much greater blessing to the isolated man, than to the inhabitants of a large town or city. It gives him all the advantages they enjoy, while he is exempt from the many evils they must suffer.

The means to build this road are principally provided by the inhabitants along its line. The State is to subscribe \$150,000 to it in the bonds of the S. Carolina railroad as the road progresses. A part of this subscription has been made available. With these bonds, iron sufficient to lay 35 miles of the road has been purchased of the South Carolina railroad company. It is a light rail, weighing only 25 lbs. to the yard. It is admitted that a heavier one would be preferable, but the company wisely prefers to lay this down for the present, than to involve itself in debt, for one of higher cost. As the road is not intended for high speed, this rail, with a suitable wooden superstructure, it is believed will, for the present, answer almost every purpose of the heavy rail.

It is gratifying to witness the very general interest felt toward this road by the whole population of the section through which it runs, and the sacrifices all are ready to make to secure its success—every one manifesting the same regard for its welfare as though it were his own property.

Much of the grading of the road has been done by stockholders along its line who are allowed the privilege of working out upon the road one-half of their subscriptions. This is an excellent arrangement where the work of grading is comparatively light, as planters and farmers are often in a situation to do a large amount of work, though possessing little cash means.

In connection with this road, a survey has been made of Broad river, for the purpose of ascertaining the cost of rendering this river navigable for keel boats. The entire distance for which this river is navigable is 160 miles: 100 below, and 60 above, Cherokee ford. At this place the navigation is interrupted by shoals. It is believed that for 20,000 dollars, slack water navigation could be made at these shoals, and the whole river put in good boatable condition. Efforts are to be made to obtain the aid of the State for this purpose. The river is looked upon as an important feeder to the railroad.

The officers of this company for the ensuing year are:

- John Belton O'Neal, of Newberry, President.
- Wm. Patton and Daniel Blake, of Charleston.
- John S. Preston and Edward Sill, of Columbia.
- William S. Lyles, of Fairfield District.
- Drayton Nance and S. Fair, of Newberry District.
- F. G. Thomas, Joel Smith and Thos. C. Perrin, of Abbeville District.
- J. N. Whitner and J. P. Reed, of Anderson—Directors.

Wm. Spencer Brown, Chief Engineer.
James L. Gaunt, Secretary and Treasurer.

Pennsylvania.

York and Cumberland Railroad.

The great object of this road is to connect the city of Baltimore with the public works of Pennsylvania at Harrisburgh, by a road from York to the former place. The construction of this road has been a favorite project with Baltimore for some time past. It is being built by Gonder, Burke Co., who are well known throughout the country as extensive contractors. A gentleman connected with this firm, accompanied by Mr. Goldsborough, the Engineer of the road, have recently visited Maine for the purpose of testing the qualities of the rail laid upon the Atlantic and St. Lawrence road, which is of the Ω pattern. After subjecting it to various trials they became fully satisfied of its superiority over any form of rail now in use. From its shape, the process of rolling imparts to the top of the rail a vertical position of the laminae or grain of the iron, which effectually prevents the lamination of the rail, from which it suffers most in its rear. This firm has purchased this kind of rail for the above road at less than forty dollars per ton, delivered in Baltimore, which is at a lower figure than we have yet heard of. The road we believe is to be completed in about one year.

St. Lawrence and Atlantic Railroad.

The annual meeting of this company was held on the 7th instant. We have not yet received the report of the directors. The company resolved to take measures to push the road to the boundary.

The board of directors elected for the ensuing year is as follows:

- Josiah S. Little,
- John Anderson,
- St. John Smith,
- John B. Brown,
- John Mussey,
- Ezra F. Beal,
- Eliphalet Greeley,
- Wm. P. Fessenden,
- Thomas Hammond,
- Thomas Crocker,
- James L. Farmer,
- William W. Thomas, and
- Solomon H. Chandler.

Boston and Worcester Railroad;

The report of this company, received, states that the arrangement between that corporation and the Western road has been renewed, with some modifications, for three years. The relaying of the track with heavy rail is not yet completed, but arrangements have been made to accomplish it speedily.—The new rails are to weigh 64 lbs. to the yard, to be fastened at the joints by strong chains, firmly drawn upon the ends of the rails, and each rail of six yards in length, resting upon seven substantial cross-ties. Thus constructed, the directors think the road will be one of the firmest and most durable in the country. The Framingham track will be soon completed. By the Report presented to the Legislature in January, it appeared that the earnings of the road for the year ending 30th November last, amounted to \$688,068—an increase of \$28,970 over the preceding year. During the last six months there has been a small increase of income from passengers, but a large decrease of income from freight, making an aggregate diminution of \$11,811, as compared with the corresponding period of last year. The following statement of liabilities and assets is presented:

Capital stock paid in.....	\$4,500,000
Balance of debts, including income of the current six months—about.....	460,000
Total.....	\$4,960,000

Construction accounts, including the road and its equipment, lands and buildings of every description, engines, cars, machinery, tools and fixtures of every kind, together with stock of iron, fuel, oil, materials of the repair of shops &c.....\$4,360,000

The report furnishes no details in respect to the financial condition, property; management or expenses of the road. Accompanying the director's report is a report of a committee of stockholders, signed by J. T. Austin, Chairman. It is generally approbatory. The committee expresses an opinion that the surplus fund, instead of being reduced, as it was in January 1849, ought to be increased; and that no debt ought to be incurred beyond the funds provided by the stockholders.

Auburn and Rochester Railroad.—The officers selected for the ensuing year are Henry B. Gibson, John M. Sherwood, Joseph Fellows, Wm. V. J. Mercer, Jacob Gould, Wm. A. Sackett, Oliver Phelps, Charles Seymour, William Wiley, Nathaniel Thayer, William F. Weld, Alexander Duncan, E. Darwin Smith.

Hartford and Providence Railroad.—At the annual meeting of the stockholders of this road, he held on the 4th instant, the following persons were chosen directors for the ensuing year, viz:—Joseph Trumbull, Wm. H. Inlay, Alfred Smith, D. F. Robinson, Samuel S. Ward, Calvin Day, Austin Dunham, Chas. H. Northam, Amos M. Collins, James M. Bunce, and Wm. T. Lee.

At a subsequent meeting of the directors, the Hon. Joseph Trumbull was re-elected President.

The earnings of the New Haven Railroad, from January 1st to August 1st, were as follows: Net earnings \$78,056 11.

The capital of this road is two and a half millions, and a dividend of 3 per cent. was declared.

The earnings of the Harlem Road for July will be about \$39,000.

Madison and Indianapolis Railroad.

At the annual election of directors for this road, in June last, the old board was unanimously re-elected. The members are R. H. Winslow, of New York; J. F. D. Lannier, Jas. Whitcomb, Jesse D. Bright, James M. Ray, Joseph G. Marshall, Henry Bates, Michael M. Dunn, Samuel Moore, John Brough, and Zachariah Tannehill, of Indiana. The board met and organised on the 23d of July, when John Brough was unanimously re-elected President. W. N. Jackson is Secretary of the company. His term of service does not expire until January.

The prevalence of the cholera, we learn, has seriously affected the receipts of this road. It has brought travel in the west to almost entire stand.—Notwithstanding these drawbacks a dividend of four per cent. on the enlarged capital stock was declared, from the earnings of the road during the last six months, leaving a surplus equal to one-third of one per cent.

This is certainly a very good exhibit for a road that has as yet no other railroad connections. From its northern terminus, Indianapolis, roads radiating into every part of the state, are now in process of construction; portions of each of which will be soon in operation. Other roads to connect with this road at various points along its line are in progress, all of which must to some extent become tributaries to this road. The above is the only road in operation in Indiana;—and the good management which has characterised its concerns, has done

much to give confidence in similar undertakings in this state. To a certain degree it has stamped a character upon them a. l. We hope its good fortune will not tempt it into any foolish expenditure of money in the shape of expensive and fanciful depots and the like, which have run away with so much of the capital of the eastern roads.

Indiana is accomplishing a great work in her roads. Her capital is on what must ever continue to be the great line of travel between the east and the west. From this point railroads penetrate every portion of the state. Her central position, and her being the terminus of so many roads, cannot fail to make her one of the most important places in the west.

The following extracts from an Indiana paper show the relation that this road bears to others now in progress:—

The Edinburgh and Shelbyville road, 16 miles long, now about completed, diverging from the Manchester road Edinburgh, 56 miles from Madison.

The Shelbyville and Rushville road, 19 1/2 miles, nearly ready for the rails.

The Shelbyville and Knightstown road, 25 miles, will be ready for the iron 1st of March next; for the last two roads iron rails have already been purchased.

From Indianapolis to Noblesville, being a section of the Indianapolis and Peru road, running up White River 22 miles, will be graded and bridged by the 1st of April next. Their agents in the city are now purchasing their rails.

The Indianapolis and Terre Haute road, 70 miles long, will finally form a part of the great line to St. Louis is half under contract for grading and bridging. The grading and bridging of the other half will be let this Fall.

The Indianapolis and Lafayette road, 65 miles, is partly under contract for grading and bridging.

The Indianapolis and Bellefontaine road has put some 27 miles, next Indianapolis, under contract for grading and bridging.

These roads are being made almost entirely by the people of Indiana, immediately interested without the aid of foreign capital.

We could give no more graphic commentary on the energy and enterprise of our people, than to state the fact that the soil of the country through which these roads pass, in the year 1820 belonged to the Indians, where the feet of white men scarcely ever trod.—*Indianapolis paper.*

Railroads in South Carolina.

The South Carolina railroad extends from Charleston to the three termini, Hamburg, Columbia, and Camden. It is 242 miles in extent and all in successful operation. At Hamburg it connects with the Georgia railroad system. From Columbia, in addition to the Greenville and Columbia railroad, a railroad is in rapid progress of construction to Charlotte, North Carolina, 110 miles.—At this point it forms a junction with the North Carolina Central road. From Manchester a road is now in progress to Wilmington, North Carolina, a distance of 160 miles. This is the only link wanting to unite the railroads of South Carolina and Georgia with those of the north. The South Carolina railroad forms the main trunk line of the various roads in this state which radiate from it at every direction, and when completed, will penetrate at convenient distances every portion of the state. These roads, from the nature of the soil, the general topographical features of the country, and the mildness of its climate, are of easy construction, and their cost is not beyond the ability of those sections through which they run. Whether valuable or not for dividend, they will confer a great benefit upon the state and increase the value of every kind of property to a vastly greater degree than their cost.

Rutland Railroad.

We have in hand the report of this company, submitted to the stockholders on the 20th day of June last. The road is in a state of great forwardness, and the whole line will be completed and in running order the present year. All the iron for the superstructure has been purchased and is now being delivered along the line of the road. The work of laying the track is completed from Bellows' Falls to Chester, 14 1/2 miles, and the grading between Chester and Ludlow (the eastern slope of the mountain) fourteen miles further, is nearly ready for the rails. The laying of the rails has also been commenced at the Burlington end, and six miles are now in running order. The grading between Burlington and Cuttingsville, 75 miles, is expected to be completed so as to occasion no delay in laying the track. There will then remain only 15 miles between Cuttingsville and Ludlow, which it is proposed to finish so that the whole line may be in running order during the present year. About \$10,000 have been expended in constructing a branch road from the main line to the navigable waters of the Otter Creek at Vergennes.

According to the report of the Engineer, the whole amount of work done upon the road up to the first of June is as follows:

4,263,921 yards of Earth Excavation.
263,058 " Solid Rock Excavation;
15,225 " Loose " "
31,679 " Bridge and Arch Masonry.
19,107 " Culvert Masonry.
16,834 " Hardpan—paid for as such.
2,083 Lineal feet Bridging.

Costing in the aggregate the sum of \$1,214,974 53, a portion of which has been paid for in the capital stock of the company. And it is estimated that the work remaining to be done to complete the grading, masonry and bridging, on the entire line from Bellows Falls to Burlington, to prepare the road for the superstructure, is as follows:

986,269 yards of Earth Excavation.
40,305 " Rock Excavation.
7,190 " Bridge and Arch Masonry.
2,066 " Culvert Masonry.
2,938 Feet Bridging.

Costing at contractor's prices, with a liberal allowance for corporation work unfinished, the sum of \$297,278 24.

The furniture for the road consisting of twelve locomotives, of eighteen to twenty tons, have been engaged of the Taunton Company. The car furniture is in progress of construction at Brandon.

There is now due from delinquent stockholders the sum of \$411,137. Of this sum, \$313,222, it is estimated, will be available. Nearly the whole of the amount unpaid, is due from subscribers living on the line of the road. The floating debt of the company is \$299,141, and the available means of liquidating it, including the above \$313,222 amount to 415,022. The company have issued bonds to the extent of \$578,058, of which the sum of 158,000 is held by English manufacturers, in part payment for rails.

The number of shares issued is now 14,666—of which 8,949 are held in the country, 4,616 in Boston, and 1,101 by contractors; 2,654 more are to be issued to contractors on fulfilment of their contracts—making 17,320, a capital stock of \$1,732,000.—Paid in, \$1,655,462.

The affairs of this road seem to have been managed with marked ability. All the railroads of Massachusetts, New Hampshire, and Vermont, are more or less dependant upon Boston for the means for their construction. The influence of this

city was exerted strongly in favor of the rival route to the Rutland road, the Vermont Central. In the start the latter was looked upon as by far the most promising of the two, not only in reference to its business and profits, but its early completion. The friends of the former, left to rely mainly on their own efforts, felt that the most prudent and careful management was necessary to their success. Influenced and controlled by this consideration, they have quietly and with uninterrupted success, pushed forward their work, which bids fair to reach Lake Champlain as soon as its rival. Its stock is at a very respectable quotation, and we think it will pay 6 per cent. dividend from the commencement. The good management that characterised its affairs, enabled it to hire money at fair rates, and saved it the necessity of following the example of so many roads of raising means by the issue of stock at less than par value.

The officers of the road for the ensuing year are—

Timothy Follett, of Burlington,
George T. Hodges, Rutland,
Nathan Rice, Boston,
John Howe, Boston,
Benj. T. Reed, Boston,
John Elliott, Keene, N.H.,
William Henry, Bellows Falls,
Nathaniel Fullerton, Chester,
Chester Granger, Pittsford,
John A. Conant, Brandon,
Charles Linsley, Middlebury,
Paris Fletcher, Bridgeport,
Samuel P. Strong, Vergennes.

President,

TIMOTHY FOLLETT.

Vice President,

George T. Hodges.

Treasurer,

Samuel Henshaw, Boston.

Assistant Treasurer and Clerk,

Samuel Swift, Middlebury.

Chief Engineer,

William B. Gilbert, Rutland

Ohio and Pennsylvania Railroad.

A meeting of the directors of this road was held last week, July 25, in Canton, Ohio, at which the following resolutions were adopted:

Resolved, That the Chief Engineer be instructed as soon as the other duties of the engineering corps will permit, to proceed with the location of the line westwardly from Wooster to the town of Mansfield, by way of the southern or Loudenville route, which is hereby adopted, as it has been ascertained by the surveys, to be the cheapest and best, and which will secure a convenient connection with Mount Vernon; and from Mansfield westwardly to some suitable point upon the line of the Cleveland, Columbus, and Cincinnati railroad, at or near Galion, so as to accommodate a line to Bucyrus, and also a connection with the railroads which are proposed to be constructed in the direction of Marion and Bellefontaine or Urbana.

Resolved, That the Chief Engineer be instructed as soon as practicable in view of the existing engagements of the department to proceed to the location of the line between Pittsburgh and the Beaver Station, and also from the State line to the Mount Union Station.

A resolution was also adopted to put the road—from Canton to Wooster—thirty-four miles—under contract, on the 28th of September next.

The above resolutions may be considered as settling not only the direction, but the terminus of this road.

The Chief Engineer, Mr. Roberts, is now on the western end of the line, and is actively engaged in promoting the rapid and safe prosecution of this great work, and we may look upon its completion at an early day as a matter beyond doubt.

Railroad Reports.

Ogdensburg Railroad.—The Annual Report of the directors of the Ogdensburg—called the Northern—railroad, was submitted at the Stockholder's meeting on the 4th ult. The report states, in regard to the contracts for grading and masonry, that on the westerly half of the line, from Ogdensburg to Malone, a distance of 62 miles, about half the work has been accomplished; but that on the easterly half of the road, from Malone to Rouse's Point, 55 miles, the progress has been unsatisfactory, so that the contract has been annulled, and a new one made. Arrangements have been made for advancing both ends of the line equally. The most important and critical piece of work on the road, the tunnel at the Chateaugay crossing, constructed to conduct the river under the heavy embankment there required has been successfully completed at a saving of 6000 dollars on the original estimate of \$54,000.

Contracts for ties, sub-stills, bridge-timber, etc., sufficient for all the requirements of the road, have been made, and to the largest extent are executed and delivered. The fencing along the line is in a very forward state, and will be entirely completed soon. Eight thousand tons of rails have been delivered on the line. A very favourable contract has been made for the delivery of this iron at the Rouse's Point terminus—About 600 tons of chairs have been delivered to the company, and provision on favourable terms has been made for the remaining wants of the road for spikes.

The expenditures incurred for lands, now amount to \$48,658. Of this there has been paid,

For station grounds at the terminus and on the line (upwards of 400 acres).....	\$24,017
For roadway, about 1,400 acres, (including incidental damages,).....	15,047
For lands purchased to save expense of crossings.....	3,096
For lands purchased to secure materials for road bed.....	2,030
For 2,478 acres of wood land on the line of road, to insure a cheap supply of fuel, the aggregate cost of which is \$5,734, there has been paid on account.....	2,680
For tax-sale purchases for same reason, of various lots adjacent to the road, liable to be redeemed.....	984
For legal and all other expenses connected with the settlements of the purchase.....	804
	\$48,658

It is estimated that about \$5,000 more will be required to complete the wants of the company for lands for every purpose and to secure a full title. This includes upwards of 80 acres at the foot of navigation of the Western Lakes, with 4,000 feet of water front on one of the best harbours, 105 acres at the foot of navigation of Lake Champlain, with 2,000 feet of water-front, and from 5 to 15 acres at every eligible business point on the line of the road.

With a view of accommodating the transportation of lumber, a branch of business which cannot fail to be very large as soon as the road is opened, grounds and full convenience for a turn out track to Champlain river landing have been secured to the company, with five hundred feet of water-front, above and below which, private owners are extending Docks and Rails to accommodate the business cheaply and to any extent. The Champlain and St. Lawrence railroad company have finally concluded to continue their road from the present terminus at St. John's, to a junction with the Northern railroad at Rouse's Point, which it is their intention to have completed by next season.

The original capital subscribed, on which the first assessment has been paid, represented 40,000 shares or \$2,000,000; of these, there have reverted to the company from various causes..... 4,054 shares, and there is estimated upon recent and careful investigation, as bad and doubtful stock subscriptions..... 2,166 shares,

together..... 6,220 shares, whereby the immediately available capital of your company has been reduced to..... 33,780 shares, or..... \$1,689,000 on this there has been paid, to date,..... \$1,268,600 leaving a balance for collection of..... \$420,400

of which there is secured and applicable under contracts for construction and equipments of the road, entered into with responsible parties, about..... \$257,000 leaving otherwise collectable..... \$169,000 with 6,220 shares, the property of the company undisposed of.

The expenditure of the company, to date, amounts to \$1,325,977. The first complete estimate of the road was rather under \$3,000,000. It is now thought upon renewed investigation, that, that sum will not be materially exceeded, and with so large a portion of the work completed, with every real difficulty overcome, or brought into measure, reasonable reliance can be placed on present estimates. The Directors look for the means necessary for a proper continuance of the work, to an issue of bonds by the company. The condition on which it is proposed to issue these bonds, contemplates an investment at not less than par, at 7 per cent. per annum interest, to become reimbursable in five to fifteen years.

Twelve miles of the road from Champlain village, (connecting with the Champlain river landing,) to Centreville, are ready for business; to this will be added fifteen miles by the month of September, and if required, the road can be further opened this season to Chateaugay, a distance of forty-five miles from Lake Champlain. Of the remaining distance, west, about fifty miles are further advanced than any other portion of the Line, of same extent, and the entire work is at present, in so forward a state, that it requires but an ordinary exertion of the same means hitherto employed, to ensure the opening of the whole Line by the summer of next year.

Depreciation of Railways and Railway Plant.

Shareholders have found such extreme facilities in the investment of capital in railways, and in its withdrawal therefrom, that they have generally been led to regard their interest as of very short duration, and have evinced a distaste for any consideration of such subjects as depreciation, deterioration, destitution, or renewals. They are, therefore or have been, too willing to place their property in the care of persons who deal largely in promises; and the men who profess to give the highest dividend are the men after their own hearts. A short time ago, we heard that the expenses charged to revenue for repairs, were to the full adequate to the maintenance of the plant and way up to its original value. New engines were indeed provided, but these were understood to be for new lines and extensions two for every three miles. Slumbering on the brink of this financial precipice, the shareholders are all at once awakened to the recognition of the fact—that the works of man are not of infinite duration that wear and tear and decay are consistent with the laws of nature; that no machine is so perfect, but it will in time finally become unservicable; and that even the elementary materials of which the engines and way are composed are inherently liable to change.

The facts which experience brings to our aid shew that the deterioration of carrying stock—engines and vehicles of all kinds—is at the rate of about 10 per cent. per annum; that is, the plant is capable of being kept in repair, on the average for ten years, after which an entire new stock must be provided. If, therefore, the cost of such plant be on any line £40,000, the sum of £40,000 must be provided yearly out of revenue from the date of purchase, to renew it as worn out. But at compound interest of 5 per cent., £31,800 instead of £40,000 would be annually chargeable to this account to revenue. The elaborate report of the officers of the London and

North Western railway, just published, shows further, that a large sum must also be annually set aside; to accumulate at a compound interest, to meet the decay and restitution of rails, chairs, and sleepers. For the first few years after the completion of a railway, the reparation in this department is necessarily light; but in seven or eight year after the opening, the sleepers, rails, and chairs evince signs of decay which cannot be mistaken.—Lines laid down for engines of eight or nine tons weight have been required to bear engines of twenty tons and upwards, and rails and chairs of greater weight have been laid down to support the additional weight of such engines, the cost of which replacement has usually been charged to capital, after allowing for the light rails and chairs removed.

The sum which has been estimated as requisite to be set apart yearly on interest, to accumulate at 4½ per cent., to re-place the rails, chairs, and sleepers, at the expiration of twenty years—the compound term of their duration—is £320 per mile; and assuming that a railway is being relaid at the rate of £160 a mile, and changing that amount against its revenue, there still remain £160, more to be set aside for every mtle of line open. Although the duration rails, chairs, and sleepers, may and does vary respectively, and on every line of railway is depended partly on the great or less number and weight of engines and trains, partly on the efficient balasting, preparation of sleepers, and other causes, there can be no doubt that from £100 to £200 a mile is required on every line to be set aside, over and above the cost of ordinary reparation, as charged in the published accounts of revenue on all lines—not even, in this case, excepting the North-Western line, where, as regards financial matters, that company has been justly distinguished for its pre-eminent prudence.

Railway shareholders have been flattered into the belief that their property is altogether independent of the incidents of other commercial enterprises; and hence they have been led to disregard the commonest principles of economy, which the nevertheless fully admit and recognise in all their private and personal undertakings. The London and North-Western company, therefore, merit the praise of pre-eminence only because they have ventured boldly to apply the doctrines of common sense to so transcendental a thing as a railway is supposed to be. The bargains made by many companies to lease or other companies' lines, and to divide profits beyond a fixed per centage, have rendered it essentially necessary to ascertain what a line really produces as profits of working, lest it should turn out that, after paying dividend out of capital for a series of years, they should find it necessary to stop all payments whatever, beyond the guaranteed amount, for many years afterwards.

Now that wear and tear, and reparations are admitted to be chargeable on revenue—and which they necessarily will be, reason or none, when the capital account is closed—we augur favourably for the railway interest at large; not only from the exclusion of wild

competition, but from the establishment of this species of property on an unassailable basis of commercial security.—*Railway Record.*

On Gold, and Gold Mines.

BY WILLIAM BYRKMVRE.

No. 11.—Gold Diggings, or Washings, and Gold Mines.

Until of late years, it was generally supposed that gold was confined to few countries; and associated with but few minerals. More recent researches, however, have demonstrated that opinion to be fallacious; for this metal is now found in very considerable quantities in (besides the well known gold countries) the great eastern region of Siberia, the United States and also in their new acquisition, Upper California; and it is also said to be found abundantly in the southern part of New Holland. In smaller quantities it is found in England, Wales, Ireland, and Scotland, and in nearly every country in Europe. Besides the usual substances containing gold, it is now ascertained that limestone in Russia affords a certain per centage of the metal; and it is also known to exist in magnetism limestone. I have seen it in malachite (hydrous carbonate of copper), and which may explain why gold exists in such quantities in the fine copper of Chili and Japan, and why it is likely to be found in the copper smelted in South Australia. From the above facts, there can be no doubt that gold is neither limited to few localities nor to few minerals, and were it sought for in the substances not possessing the usual color, it would be found still more abundantly.

It is also generally believed that the purest metal comes from Africa; but late experience has proved that as fine gold comes from 56° north latitude as ever came from the torrid regions of Africa. There can now be no doubt that it is a vulgar error, nearly as great as the supposition that coals were only to be obtained in Great Britain; while, in fact, they are found abundantly in other countries, and of excellent quality, and were, probably, mined for in one country—China, to wit—long before the inhabitants of our own isle were aware of the inexhaustible treasures they possessed.

A great deal has been said of the pernicious effects arising from gold mines; but, were a comparison instituted between them and the cotton trade, it is probable that most persons who have made the inquiry will admit that they are not one half so destructive to health or morals as the cotton trade of this country and the United States, as at present conducted.

In regard to the gold of the ancients, it appears that in the time of the Jews much gold was produced from Ophir, probably Ethiopia; where, indeed, in the adjoining country a Russian engineer has lately announced that gold exists in as great abundance in his own country. Under the Persian empire immense quantities were obtained in Lydia, Parygia, and the north eastern part of the empire, probably in the very regions which now yield so abundantly in Russia, more especially the southern ranges of the Altai Mountains, known as the Tar Bargatai. Under

Philip and his son, Alexander the Great, the Greeks raised gold from productive mines in Thrace and Thessaly. During the Roman empire it was obtained—besides the usual sources in Asia and Africa—in Northern Italy, the Pyrenees, Spain, and in Transylvania.

The dark ages were not favorable to the development of the gold and silver mines, and their produce generally fell off to a great extent; but, notwithstanding this period—and the enormous sum of £178,000,000 in gold and silver possessed by one king, Ptolemy Philadelphus, there can be little doubt that mankind do now possess more of the precious metals than at any former period of the world's history; though, probably, no single state can now command near so much as the successor of the great Alexander. The fact that America alone has poured forth treasure up to the beginning of the present year, to the prodigious sum of £1,511,000,000, which is according to the best data I can find, will induce the belief that, great as were the precious metals in antiquity, still their amount is now more than rivalled, albeit the wear and tear of the £1,511,000,000, in the 357 years that the New World has been known to Europeans.

In Great Britain, gold was found in the time of the Romans, and was one inducement for them to conquer the country; but it does not appear to have been got in any great quantity until the time of James IV., in whose reign a good deal was found in Scotland, and also in that of his successor, James V. According to Pennant, no less than £300,000 sterling of gold was found in the reign of the latter; but that amount is no great sum, when compared with the value of the mines of iron ore in the same country—Scotland having, last year, produced 580,000 tons of cast iron which at the present price of £24s per ton, amounts to the large sum of £1,226,000 in a year, which is about 25 per cent. of the value of the rich gold mines of Russia; in the short space of 20 years, one country has increased from 37,000 tons of cast iron, which, at the then price of £5 10s. per ton, was equal to £2,735,000; and the other has increased from 23,054 lbs. troy of gold, of the value of £1,076,198 to 87,756 lbs. of the value of £4,100,000. I have taken the produce for last year of the Russian mines to be 2000 poods; for though a statement lately appeared in the "City Article" of the *Times*, that the produce was less than the previous year, it is quite possible that that statement may refer to the quantity actually received at the Royal Mint during the year, and not the total produce of the mines; for usually 200 to 300 poods are excepted to be transmitted as the complement of the produce of the year, which would make the yield for 1848 equal to 2000 poods.

For Sale.

A TURN TABLE, thirty feet in diameter, made by Aldrich of Worcester, nearly new, and in good order, will be sold at a low price, enquire of JONA. EDWARDS, *President*, Troy and Green bush Railroad, Troy, New York.

July 23, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,

C. CROZET,

Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

Samuel Kimber & Co., COMMISSION MERCHANTS WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13 8-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.
2. For the construction of the connection of the Company's canal with the James River at Cartersville.—This work will consist of a timber dam across James river, the excavation of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.
3. For the construction of the connection of the Company's canal with the James river Near new Canton.—This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.
4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.
5. A wooden bridge across James river at Bent Creek 870 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the tide water connection and Mr. John Cooty, the engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23d of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN,

Chief Engineer J. R. & K. Co.

Richmond, July 18, 1849.

329

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Situation Wanted,

AS an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

LEWIS BURYER,
64 Avenue B, New York.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
New York and Harlem Railroad Extension,
Croton Falls, N. Y.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central-Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androseggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Buckeport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

To Railroad & Navigation Cos.

Mr. M. Burr Hewson, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
NO. 1 NEW STREET, NEW YORK.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address
E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.
OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
63 Broad street.
New York, June 1, 1849.
The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 1/2 by 1/2 Flat Bars.
25 Tons of 2 1/2 by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia,

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

**P. S. DEVLAN & CO's
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. ly14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 201f

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. *Suction Hose. Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS, Reading, Pa.

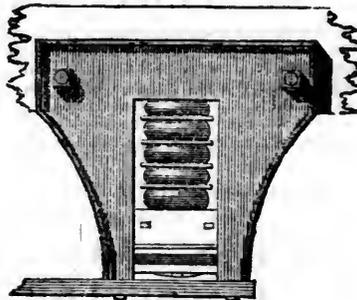
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton. 6w20
May 19, 1849.

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by separate statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. It Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1849, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 33 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. ly25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

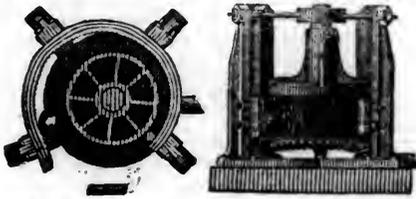
5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES. Published by WM. MINFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 15th.
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1849. }

ENGINE AND CAR**WORKS.****DAVENPORT & BRIDGES,**

HAVING ASSOCIATED WITH THEM

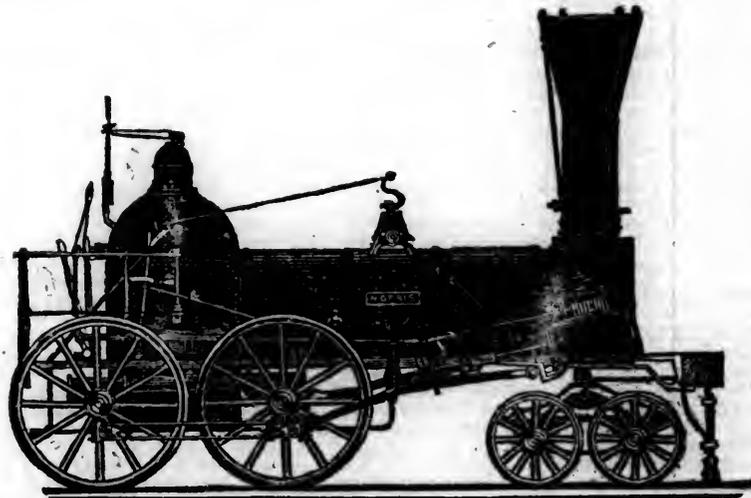
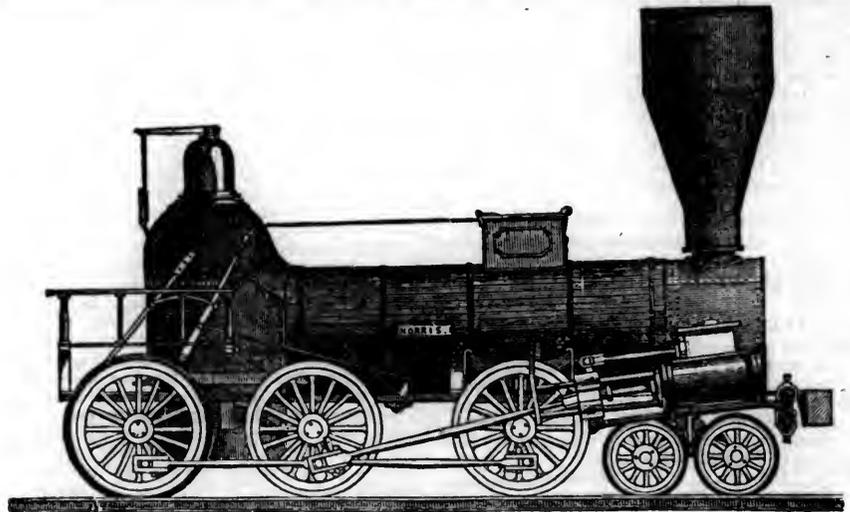
MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. V., No. 33]

SATURDAY, AUGUST 18, 1849.

[WHOLE No. 695, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, August 18, 1849.

Iron Ores and the Iron Manufacture of the United States.

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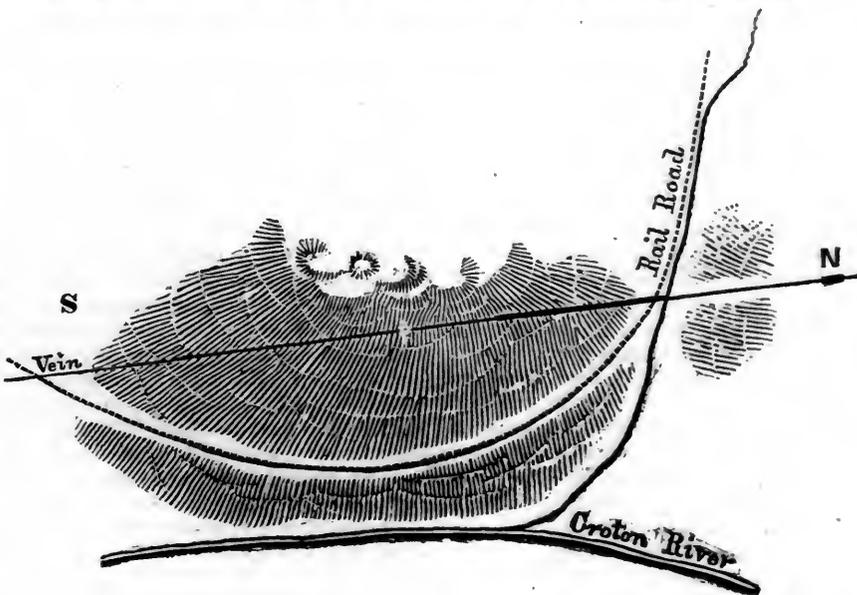
NEW YORK

Magnetic Ores.—Putnam County.—The ores of this county have in years past been used to considerable extent, and will some time again be in demand, when other fuel than charcoal can be cheaply brought to their vicinity, or the ores can be carried to meet the anthracite.

They are magnetic ores, found in that range of primary rocks, which border upon the limestones and slates of the hematite ore range to the east and south. These primary rocks include indeed a part of the hematite formation along the line of the state in Dutchess county; but farther south in Putnam county the stratified rocks, which contain the hematites, have given out, and the granitic rocks cover nearly the whole county, their range extending across the Hudson, where they constitute the Highlands, and thence through Orange county into N. Jersey. Throughout their whole extent they are characterised by large and important veins of magnetic oxide of iron.

The first of these we meet with is in the town of Southeast, on the line of the Harlem railroad.—This vein was once wrought to considerable extent,

Magnetic Ore Vein at Southeast, Putnam County.



the ore being carried great distances to supply forges in the neighboring towns. It is found in the granitic rocks of this region, whose range farther southwest furnishes the ores of Orange county, and of northern New Jersey. The vein is vertical, pursues a north and south course, and has been opened by an excavation of sixty or seventy feet in depth up the north end of a high ridge. The Harlem railroad, curving around the base of this ridge, crosses the line of the vein twice, as represented in the accompanying sketch. To the north of the road, about fifteen rods, the vein has been opened again and a deep pit in the solid rock a hundred feet long and ten wide, now filled with water, shows, together with the workings on the other side, that at one time this ore was in good demand. Floating on a raft in this pit under the arch of the rock into what appears the commencement of an adit, I was able to measure the thickness of the ore in this ten foot cut. It occurs in parallel veins running with the main vein of quartz, the aggregate thickness of the ore veins being from three to four feet. On the

ridge the ore is concentrated into a single vein of about the same thickness of three to four feet.— Sometimes next the wall are layers of sulphuret of iron, but the quantity does not appear sufficient to injure the ore. Quartz is more or less mixed with it, and in such proportion as to be of no small service to it as a flux. The coarsely aggregated structure of the ore is evidence that it must be a good working ore either in the blast furnace or forge. Except the small quantity of sulphur I have seen nothing likely to impair its useful qualities.— The length of the vein is not known, but it is proved to extend far enough to supply a very large amount of ore. There is no fuel to smelt this in the vicinity, and the Harlem railroad now offering a cheap mode of transportation to the coast, it will probably be taken there and smelted with anthracite. The ore can be mined for about \$1 25 per ton and the same sum will pay for its transportation. The hematites farther north on the line of the road would be improved by the addition of this ore to the charge in the furnace, and the

magnetic ore too would work better for a mixture of hematite.

This vein in the New York State Geological Reports is called the *Townsend Mine* on the Simewog Hill. Prof. Mather's account of the Mine is much more flattering than what I have given. He says: "This mine was the first known and first worked in this part of the country. The ore was carted to great distances, and shipped on the North River to some of the towns on Long Island Sound and various parts of the country. The largest portion of the ore was carried to Danbury, in Connecticut, and was there an article of traffic. It has not been wrought for twenty or thirty years in consequence of other beds having been found in more convenient locations for smelting and transport. Fifty thousand tons of ore at least have been taken from this mine, estimating four tons to the cubic yard, and 100,000 tons more may probably be taken from the vein in Simewog Hill, without going below the level of the small stream which flows across the ore bed. Should it ever be necessary to obtain this ore in quantity at least 1,000,000 tons may be calculated on above the water level of the Croton River, which flows along the base of the Hill, and free from the expense of drainage, by driving an adit level from the level of the Croton, a distance of three or four hundred yards, to intersect the vein.

This vein of ore has also been worked to the extent of several thousand tons near the road and north of the little stream mentioned above as crossing the vein. The vein here is from eight to fourteen feet thick, and nearly vertical in position, between strata of gneiss and hornblende gneiss, which dip 70° to 85° to the ESE. On Simewog Hill, one-fourth of a mile south, the vein is from three to twenty feet thick, associated with similar rocks and with granite. It has been wrought on Simewog Hill from 50 to 60 feet or more in depth over a length of 340 to 400 yards. It is scarcely doubted from the observations made, that this vein is a least two miles in length with an average width of six feet. Its depth cannot be estimated, but it is presumed that the labor of ages could not exhaust it in depth, as the bottom of such veins have never, in any country, been found."

More in the centre of Putnam county, away from any means of cheap transportation, are mines of great extent, easy to work and furnishing good qualities of magnetic ores. But the wood in their vicinity being long ago consumed, there is now no demand for these ores, and the mines remain neglected. They seem to lie on one range, perhaps one great vein, which is traced in a NNE. and SSW. direction along the crest of the highlands, back of Cold Spring and Peekskill for an extent of about eight miles. It approaches within nine miles of the river at Cold Spring, where much of the ore has been brought in former years and smelted in the old stack now standing on the top of the hill above the river. It was estimated to cost three dollars per ton, delivered on the river, which cost might be somewhat reduced by a more systematic course of mining than was there pursued. The veins are described as of great width, sometimes containing twenty-five feet of solid ore. Some of it of excellent quality of granular ore, and some of it titaniferous. From the vast amount of these ores and their convenient position for mining, high above the water courses, it is probably they will ere long be as extensively worked, as they have been heretofore.

The principal mines are known as the *Phillip's Mine*, the *Stuart Mine*, the *Denny Mine*, *Coalgrove*, *Gouverneur* and *Kemble Mines*. According to the

account of Prof. Mather it would seem that these mines have already supplied some 50,000 tons of ore.

Orange County.—On the east side of the Hudson the mines of magnetic iron ore appear to be inexhaustible, so on the west side among the Highlands, their number and extent are almost without limit;—and so they are at this time almost equally neglected, for at this moment there are only two furnaces using them, the old *Southfield Furnace*, belonging to Peter Townsend, Esq., and the *Greenwood Furnace* to Mr Parrott. Another it is true is just built by P. Townsend, Jr., which will be set in operation when iron bears a higher price than it did in 1848.

It is remarkable that these mines, so abundant back from the Hudson on both sides, should be wanting in the hills overlooking the river; or it not wanting, that the ores should here prove wholly worthless, either from their small quantity or inferior quality. No where would ores be more valuable than in this position, and no where can a locality be found that seems so likely a place to afford them, and yet contains none. Proximity to the great market of New York city, and to the termination of the Hudson and Delaware Canal at Roundout, where great supplies of anthracite from the northern coal fields of Pennsylvania can be obtained at the cheapest rates, would render a location on the Hudson near to good mines, of very great value. Here too there would be a choice of fuel, not always enjoyed even at the furnaces near the coal mines of Pennsylvania: for the anthracite of the southern coal fields, brought round by sea, is delivered on the Hudson within half a dollar per ton of the same price with that brought through the canal to Roundout; and sometimes it is advantageous to use one of them in preference to the other, or to mix them to neutralize their impurities or modify the effect of those of the ores. The price of anthracite at this time (winter 1848) at Roundout, is for the large quantity \$3 67 per ton. Brought to the city of N. York it is worth half a dollar more for the transportation, which brings it to the price of the coal shipped from Philadelphia.

But none of the magnetic ore mines are so situated that their ores can be conveniently put upon the river. In the disposition of the mineral resources of the country Nature proves to be remarkably impartial. Few localities possess any great advantages over the rest. If the ores in one district are very abundant and good, either the locality is remote, making the transportation a heavy item, or fuel is disproportionately high; and often where the materials are all cheap, the ores make only a poor cheap iron; and when they are high, the iron sometimes possesses some peculiar character for toughness or suitability for particular uses, that makes it in demand at the highest prices and the works are sustained. By carefully comparing the resources of different localities, one will be surprised to find how uniform are their capabilities; and not unfrequently the apparent advantages of one over another will be found to arise from a greater skill there applied, which alone makes the difference. Thus none of these districts, even in regions originally the most inaccessible, long continue neglected; and in some, where the only fuel Nature appears to have provided has been consumed, and the wild lands brought under cultivation, the art of man opens a way for other inexhaustible stores, which no one ever supposed were intended for such a use.

The river hills have been carefully explored; and some ores have been found: but none of which have

yet proved valuable. At Anthony's Nose below West Point the excavations for the tunnel on the Hudson river railroad opened a bed of ore of a few feet thickness, which, like other ore found on the same mountain, proved too sulphurous to be of any value. On the other side, back of "Caldwell's," mines have been opened, and there are beside many indications of ore within two miles of the river, all of which, so far as I have seen, prove of no account.

Bradley's mine, six miles above Haverstraw, and two back from the river, is of very inviting appearance from the abundance of the ore and the facility with which it may be procured. The mine is opened at the top of a high peak, down which the ore can be slid several hundred feet. Large quantities of it have been taken out and thrown down the hill, and the vein is now well exposed, showing a thickness of full ten feet of ore dipping steeply into the hill. Of this there are two varieties: one a very black unmagnetic ore of granular structure, crumbling on exposure to grains and crystals of oxide of iron;—the other of laminated structure of brown and black ore with some quartz intermixed. Tho' these appear like ores of a fair percentage, they were found by the analysis made for me of A. A. Hayes, Esq. to be rather garnet rock than iron ores. The former consisted of—

Quartz and silica.....	38 70
Lime.....	21 25
Magnesia.....	3 10
Alumina.....	11 06
Per oxide Manganese.....	0 93
Per oxide Iron.....	24 73
	<hr/>
	99 77

The latter of—

Quartz and silica.....	41 33
Lime.....	22 00
Alumina.....	6 43
Per oxide Iron.....	29 00
Oxide Manganese,	}traces.
Oxide Titanium,	
Magnesia,	
	<hr/>
	98 76

Oxide of tin also was detected in very small quantity in each of these. Mr. Hayes informs me he has before discovered it in the ores of the Highlands; and I have myself found it in a garnet rock of the Andover ore bed in New Jersey, which is in the continuation of this geological formation.

As this locality has from the deceptive appearance of the ores heretofore led to fruitless expenditures in endeavors to work them, and might involve others again, it seemed well to join this account of their character, though they can be of little real value. Should, however, rich ores be discovered in their vicinity, these may serve a good purpose as a flux, for which they are well adapted. Other ores of little better character I have found in the same vicinity. In the abundance of these there is certainly encouragement that beds of richer ores may some time be found.

Omitting many veins of inferior promise found between this place and West Point, the most important mine with which I am acquainted between the summit of the Dunderberg Mountains and the Hudson river is the *Forest of Dean Mine*, about six miles back from Fort Montgomery to the WNW.

This mine was extensively worked some years ago, and the ore was smelted at a furnace situated three miles towards the river on Pokalo Creek.— Since it was abandoned it has filled with water, so

that no accurate knowledge can be obtained of its extent. That the vein is a large one is evident from the width of the opening, and that it has been worked to considerable depth is also apparent from the depth of the water and the heaps of rubbish about the mine. From the most authentic statements I could get, I judged that from ten to sixteen feet of ore might be relied upon in a regular vein cutting through the knoll where the old mine is situated, and it is by no means improbable the vein may be much larger. Its course is east of north and west of south, the vein dipping with the strata of gneiss in which it lies at a steep angle to the east. A stream of water runs near the mine and has been diverted to flow over the bank, that it might afford power to pump the mine. It is of no small consequence for this purpose, as, from the situation of the mine, it could not be drained by an adit more than about 20 or 25 feet. The ore has been in high repute, and formerly sold at prices far greater than any ore now brings. The specimens lying about the mine are of good quality of magnetic ore evidently quite rich and apparently free from injurious ingredients. Of rather compact structure, it is likely to be much harder to work than the coarse granular ores of some of the mines of Lake Champlain. It is in a district of several thousand acres of good woodland; and if the ores could be obtained at a reasonable rate, a charcoal furnace might be run advantageously within two miles of the river;—or still better, the ores could be taken to the river and there smelted with anthracite. It is an easy down grade to the river with a good gravel road following the course of the Pokalo Creek. Having been employed by different parties to investigate the resources of this locality, I have made the following estimates of the cost of making charcoal and anthracite iron—reckoning the *duty* or *ore-leave* at 44 cents per tons.

For Charcoal Iron two miles from the River.

Ore, 1½ tons, mining \$1 25	}	\$3 83
Duty,.....44		
Trans.....50	}	\$21 83
Charcoal, 160 bush. at 7½ cts.....		
Labor 2 50, flux 50.....		
Repairs, Superintendance, Interest etc 3 00		

To which add 37 cents for transportation to the river.

Anthracite Iron on the River.

Mining.....	}	\$4 27
Ore, 1½ tons duty.....		
Transportation.....	}	\$17 93
Anthracite, 1½ tons at 4 37.....		
Other items.....		

To put this iron in New York market would cost fifty cents more, making the whole cost of the anthracite iron only \$18 50, a less price than any iron it is believed can now be furnished for. These resources would have been made use of before this had the property been so situated that the ores could have been obtained.

A few miles west of this locality is the summit of the Dunderberg Mountain, which, with its continuation under other names north and south, divides the valley of the Hudson from the valley of the Ramapo. It is in this valley that the great ore beds of Southern New York are found—beds equalling in extent perhaps any of the other immense deposits described in this work as occurring in New Hampshire, Northern New York, Missouri or Georgia. And yet though these ores are so abun-

dant that for centuries they might supply the world with iron, not so much use has been made of them at any one time as of a single hematite ore bed in Massachusetts or Connecticut or Pennsylvania. They were discovered at an early period in the last century, when the territory was owned by Lord Stirling. Furnaces for smelting the ores were established as early as the year 1750, and from that time to the present a few thousand tons of ore a year have been used. But though the whole amount may be 200,000 or 250,000 tons it is as nothing compared with the vast bodies of ore lying exposed to view on the surface.

Although numerous furnaces and forges at a former time made use of these ores, yet as charcoal became scarce they gradually ceased their operations, till for some years past the Smithfield and the Greenwood Furnaces alone kept in blast.—These mines are described in the Geological Reports of Professors Beck and Mather. I shall content myself with referring to these reports for descriptions of particular mines, limiting myself to a general account of their resources, and of the furnace operations.

H.

Copper Ores of Lake Superior.

Continued from page 492.

The range of hills on Keeweenaw Point, south of that which contains the mines hitherto described, is of a porphyritic trap rock, and its metallic veins consist of ores in place of native metals. The resemblance both of the veins and of their repository (the porphyritic rock) to those of the better known mining districts of Central Europe and of Central and South America is as marked as the difference of the veins of the trap range from all other metalliciferous deposits is striking. And as the porphyritic character of the rocks containing metallic veins is elsewhere regarded as highly favorable, its development here cannot but be considered in the same light, although the veins have not yet been proved at those depths, where similar veins in other parts of the world are almost alone found productive.

The most promising locality at present known in this range is at *Lac la Belle*, in the steep hills bordering the lake of this name, which lies only four or five miles from the southern shore of the Point.—Near the summit of these hills, and not less than 600 feet above the lake, veins of vitreous copper ore associated with the yellow sulphuret were opened in 1846, which, along the surface, presented a promising appearance, swelling out to a thickness occasionally of several inches of pure ore. Shafts were sunk upon these, without, however, reaching any very productive spots. Still, however, it was judged expedient to commence an adit level near the base of the hill, which should reach the vein at a sufficient depth to fully determine its character.—This level has now been driven in through solid rock a distance of about 700 feet, and it must be near the vein, if it has not already reached it. The result is properly regarded as very problematical, though there are many circumstances tending to warrant strong hopes of success. Of these are the rich character of the ores at the surface, the permanent nature of the vein, and the favorable variety of rock in which it occurs. On the other hand is the uncertainty as to quantity, and the possibility (by no means extreme) that the vitreous and grey copper ores of the lode near the surface may all turn to yellow sulphurets in the deep workings. I have not personally examined this mine the present season, and only speak from my recollection of what I saw in 1846, and from such accounts as I collected this year when in the country.

Another mine of vitreous copper and grey sulphuret of copper was worked in 1816-7 on the continuation of this range back of the Eagle river works, about ten miles from the mouth of this stream. The location belonged to the *Suffolk Mining Company* of Massachusetts; and was for a time regarded as highly promising from the great abundance of the ore. But though the quantity was large the quality was too poor to warrant the continuation of the enterprise, which was abandoned before the vein was proved at any great depth. I have not visited the locality and cannot speak with knowledge of its character.

From this vicinity to the waters of the Fire Steel river and the Ontonagon, no other mines are at present wrought to my knowledge except that of the *Quincy Company* on the shore of Portage Lake.—Of this I have no information except the report that they are raising some metallic copper. I am in hopes, however, to have before long some reliable account of the mine, which I may present to the readers of the Journal.

H.

D. K. MINOR, ESQ.

The numerous friends of Mr. Minor will be happy to hear from him through the subjoined communication which he enclosed to us on board the steamer California, on the eve of her leaving for San Francisco. He was then in fine health and spirits. He promises to give us some of the results of his California experience, which we shall be happy to place before our readers.

For the American Railroad Journal.

Joshua Forman,

FORMERLY OF NEW YORK.

I owe an apology, Messrs. Editors, not only to the writer of the following notice, but also to you, for having so long kept in my possession a just tribute to the subject of this notice. My only excuse is that I desired to add my own testimony to that of the writer, a gentleman of high respectability residing in Philadelphia, in favor of Joshua Forman, whom I have known personally—though not intimately—for nearly forty years. As a man, he was intelligent, active, persevering and liberal; as a Judge he was ready, prompt and impartial; and as a statesman, though little before the public as such sagacious, and in advance of the age in which he acted—so far, indeed, was he in advance of the people of 1806, 8, 10 and 1812, in the western settled portion of New York, that he was called “a visionary”—yet his wildest predictions in relation to the Erie Canal, the rapid advancement of the western country, importance of the village of Syracuse, now a city, have been more than realized; yet, like most other pioneers in great enterprises, he never participated in the improvements and advantages foreseen by him; nor has he ever received his just share of credit and honor for the services he rendered;—may I, therefore, ask of you the favor to publish the following tribute from one who knew him intimately and long—with this feeble effort.

Yours, very respectfully,

D. K. MINOR.

Panama, New Grenada, June 20th, 1849.

To the Editor of the American Railroad Journal:

JOSHUA FORMAN.

It has often been a matter of regret and surprise to us that, in connection with the great “Erie Canal,” the name of JOSHUA FORMAN never, or very seldom, appears.

It is not our purpose to take away from the glori-

ous halo which surrounds the names of Gouverneur Morris and DeWitt Clinton, one bright ray; but whilst we accord all honor to those great benefactors of their common country, we claim some tribute for gratitude for Joshua Forman.

It is not pretended that the last-named gentleman originated the idea of connecting the waters of the Hudson with those of Lake Erie. Morris, Ellicott, Clinton and others saw the importance of such a work, at an early day, but we claim for Joshua Forman, formerly of Onondaga, the honor of first bringing the project before the Legislature of his native State, New York, and of pushing its advancement so long as he continued a member of that Legislature. He and the late Judge Wright, of the same state and Legislature, were room-mates at Albany, and gave much of their time and attention to this great plan. If we mistake not, so early as the year 1807 Judge Forman introduced the first "resolution" on the subject; the enterprise, at first, found few friends; its projectors were in advance of their age, and but a few hundred dollar were appropriated for an exploration of the route. At a succeeding session a larger sum was granted, and the subject was attracting friends, when Forman left the Legislative Halls for the Bench, having been appointed first Judge of Onondaga County.—Clinton then took up the matter, and his herculean mind only grasped the difficulties of the undertaking to conquer them, and build for himself an undying fame.

We have often asked ourselves the question—How, when the trumped of fame was sounding its spirit stirring notes in honor of Clinton, one glad note was not vouchsafed to *Foreman, the Pioneer*?

We knew the subject of our notice well. More than thirty years we listened, with pleasure, and we hope with profit, to the emanations of his clear head and bright mind. We heard him detail his struggles for the "Canal;" how he wrestled with prejudice, how he conquered the wavering and how he convinced the doubting.

Judge Forman projected and laid out the city of Syracuse; but long since he left the place of his adoption to seek new enterprises in the south, his energetic mind leading him to new projects and encountering new difficulties.

Smooth be the end of thy path, my old friend; and as you sink into the vale of years may thy spirit be comforted by the reflection that you have always been a true friend to your native state, and given your best years to its improvement, and the welfare of its people. The Destroyer of the Ephesian Temple lives in history—its founder is without a name. Such is fame!

G. C. McC.

Philadelphia, 13th Feb. 1849.

Georgia

Efforts are now making in this state to construct a railroad from the Central road to Augusta via Waynesboro' in Burke county. The length of the proposed road is 52 miles, and its estimated cost \$500,000. To raise this sum it is proposed that the city of Savannah shall subscribe \$200,000; and \$100,000 more to be raised by a subscription of its citizens. It is believed that the Central road would subscribe \$50,000 leaving only \$150,000 to be raised in Burke county and elsewhere.

A large and enthusiastic meeting was held by the citizens of Savannah on the 7th instant to take into consideration the expediency of extending aid to this object, the proceedings of which we give below:

RAILROAD MEETING.

Pursuant to a call of the Mayor, a public meeting of the citizens of Savannah was held at the Long Room of the Exchange, August 7th, 1849, at 12 o'clock M., for the purpose of considering the propriety of extending public aid to the construction of a railroad from the Central road to Augusta.

On motion of Major A. Porter, his Honor Dr. Richard Wayne, Mayor of the City, was called to the chair, and Edward J. Harden appointed Secretary.

The Secretary read the request of citizens and call of the Mayor for the meeting, whereupon Major Porter opened the meeting by some practical remarks upon the importance of the proposed connection of Augusta and Savannah by railroad from some point on the Central road to Augusta. He was followed by F. S. Barlow, Esq., in a strain of earnest eloquence.

Joseph S. Fay, Esq., then offered the following resolutions, which were seconded by A. Minis, Esq.:

Resolved, That the City Council of Savannah is hereby respectfully requested and authorized to subscribe to the Burke county railroad to the extent of \$200,000 if needful, to ensure its completion.

Resolved, That a committee of twenty-five persons be appointed by the Chair to district the city and canvass it thoroughly for subscriptions to the proposed road.

Resolved, That that committee report at an adjourned meeting to be held at this place on the 14th inst., at noon.

The resolutions were advocated by A. R. Lawton, A. Minis, R. R. Cuyler, John Stoddard, F. A. Tappan, and Edward J. Harden, Esqrs., and were unanimously adopted.

Mr. Cuyler offered the following resolutions which were also unanimously adopted:

Resolved, That a committee of Ten be appointed by the Chair to attend the railroad meeting to be held in the county of Burke in the month of September next, to confer with the people of Burke on the subject of carrying through the Waynesboro road.

Resolved, That we respectfully recommend that the Waynesboro company be forthwith regularly organized, it being our conviction that the Road can now be built.

The following committee of Ten were appointed by the Chair as delegates to said meeting:

R. R. Cuyler, F. S. Barlow, A. R. Lawton, A. Minis, W. P. White, J. W. Anderson, C. A. L. Lamar, J. L. Swinney, John Boston, H. K. Barroughs.

On motion of Mr. Cuyler, the Mayor was added to the committee of Ten.

It was proposed by Capt. John W. Anderson that the persons present be invited to subscribe, when it was ascertained that the sum of \$46,000 was made up.

The meeting then adjourned to meet again on the 14th inst.

From the feeling manifested in Savannah, we have no doubt but the amount to be furnished by this city can be relied upon. The Central railroad we presume will subscribe at least the amount it is called upon to furnish. So we see no obstacle to the construction of this road with as much despatch as is compatible with a work of this nature.

The above is undoubtedly a very important road for Savannah. It will give her an equal chance with Charleston for the trade of Augusta and the contiguous country, leaving it a prize to be ultimately carried off by the town possessing the superiority of natural advantages and in the energy and business character of its citizens.

On Gold, and Gold Mines.

BY WILLIAM BYRKYRE.

No. 11.—Gold Diggings, or Washings, and Gold Mines.

Continued from page 506.

But, to return to the subject matter, the gold of Scotland was found chiefly around the lead hills in Lanarkshire. Some of it was found here in the gravel beneath the moss, and much of it in rivulets, where pieces were picked up weighing upwards of $\frac{1}{2}$ lb. A piece in the crude state weighed 2 lbs. 3 ozs. troy. Occasionally a little of the metal is picked up to this day. A piece of gold, weighed 1.2oz., was recently found in Sutherlandshire. The discovery of gold in Ireland is but of a recent date. Previous to 1796 very little appears to have been obtained, but in the autumn of that year "a man crossing a brook found a piece weighing about 1.2 oz." It occurred in the Ballin Valley stream of the County Wicklow, near to the Croghan Kinshala Mountain. Government collected 78 13 lbs., which produced £3675. The gold, on the average, contained 9.8 per cent. of alloy, which was chiefly silver. The peasantry, on their own account, are supposed to have collected about £6000 worth. The metal here, as elsewhere, was obtained in from the most minute particles to lumps which weighed 7 ozs., 9 ozs., 18 ozs., and even 22 ozs. All attempts under the Government officers to find the lode were unsuccessful.

From what I have before stated, it is unnecessary to name all the substances in which gold is found. It will suffice merely to mention that it is obtained in large quantities in quartz, granite, gneiss, mica slate, clay slate limestone, magnesian limestone, and in alluvial deposits of manganesic oxid of iron, ferruginous sands and clays. Nothing more need be said of the directions of the lodes, or veins, in which it is found, than that it is obtained in every possible direction, and in a vast variety of positions.

In respect to collecting the gold from gold sands, the simplest mode unquestionably is that which has endured for thousands of years in Africa. On the west coast of that continent, for instance, the negroes after harvest begin to wash the sands, and a brown colored clay, in the dried shell of the gourd (calabash). Some care is requisite to prevent the gold being washed away, as it is often in a minute state of division. This operation, therefore, is consigned to the women. Where the inhabitants think there are greater deposits they dig pits for the metal; but a hoe and a spade, and two or three calabashes, are all that the negroes use. With common diligence much gold is collected; a person often having it in his power to collect £15 worth of gold in a season, even by the above crude apparatus.

The greater part of the gold of the ancients was obtained by washing alluvial soils in pretty much the same way as it is practised in the present day. And it is most likely that a portion of their gold was extracted, as it is just now, by the aid of mercury, as they were well acquainted with the properties of

this metal. No positive information, however, has come down to us that they used mercury in this way, but the above inference accords with what Pliny says on the subject of purifying gold by mercury, and is confirmed by the fact, that mercury was employed in the European gold mines when gold and silver existed in visible metallic particles, long before the application of mercury in Peru in 1516, where it was first used for the extraction of silver mineralised by sulphur, chlorine, or bromine; and it is further strengthened by Jameson's *Report on the Geology of the Punjab, &c.* (vide *Asiatic Journal* for 1843), where, in that little known and lately conquered territory, the gold washers use mercury to collect the precious metal, after which they submit both to heat, when the mercury is volatilized; which method may have continued as far back as the days of Alexander the Great.

Gold is now obtained with great skill in the north of Piedmont, near Mont Rosa. It is here raised from mines in the mountainous region which separates Piedmont from Switzerland.

The metal in that district is found in a mixture of iron pyrites, blenda, and galena. The workings are carried on by following the vein, which is not so hard as the gneiss which incloses it. When the ore is brought to the furnace, it is first broken and picked, and afterwards crushed smaller by a pair of stones, then amalgamated in mills of a simple and peculiar construction—the barrel system of amalgamation not having succeeded in this district. The loss of mercury is but one-quarter of the quantity employed, which is a little less than one per cent. of the crushed ore. The gold in the rough ore varies from 1 lb. in 2000 lbs. to 1 lb. in 100,000 lbs. This quantity, and the trifling expense of about £14 for a pair of stones, and four amalgamation mills, with other necessary apparatus, has been sufficient to keep the workings in activity for centuries. These mines are conducted by private individuals, who, by their enterprise, probably contribute annually 600 lbs. troy of gold to supply the wants of man. The profit to a proprietor occasionally amounts to £1100 per annum.

In Transylvania, gold is obtained in streams, or alluvial soil, also from ancient mines. The gypsies, who are numerous in that country, occupy themselves mostly in picking up the precious metal in streams, for which the Austrian Government exacts from every one so employed at least 19s. 6d. per annum. The most celebrated are near Zala-than, in the basin of the river Maros. A mine in this locality, called the Maria of Loretto, yields auriferous pyrites, which sometimes contains 28 lbs. of gold per cwt. of the ore. Some of the galena (sulphuret of lead) of the same place, contains about 1 oz. of gold, with 30 ozs. of silver, in a ton of ore; but the gold here is chiefly found in iron pyrites, abounds in decomposed porphyry. The metal is separated from the matrix by two methods. The first, and that which has been practised from time immemorial, consists merely in pounding the ore, and then wash-

ing it on inclined tables, covered with canvas—the fibres of the canvas detaining a considerable portion of the gold; while the earthly matter, and the greater part of the other metallic substances in the ore, are carried off by the water. This plan is similar to that practiced long ago by the aborigines of Peru, with the difference merely that they used the skins of the lama and the vicuna. The Brazilians have, for more than a century, used the skin of the buffalo this way; and the plan still obtains in at least one of the three English companies who work gold mines in Brazil; yet, though still in use, it is admitted that as much as 33 per cent. of the gold is lost.

The metal after being washed, as described, is usually collected into a wooden bowl, and then amalgamated in a mortar, and the mercury distilled, leaving the gold behind. In some of the valleys, it is customary for each family to have a trough and a washing table. The men raise the ore, while the woman break it, and attend to the washing of the schlich-pounded ore; and, where the ores are rich, the inclined tables are preferred to the amalgamation mills. In some establishments the ores are amalgamated in Tyrolian mills, and are found profitable when they contain 1 of gold in 533,900 of the rough ore—mercury being allowed to the extent of 1 in 7455. Most of the mines are conducted by Government; but some are carried on by private individuals, who pay 10 per cent. of the produce to the State.

According to Becker, in his *Handel's Lexicon*, the average annual produce of the gold mines of Transylvania for the last five years ending with 1834, was equal to 2140 lbs. 2 ozs. troy, and those of Hungary in the same period 1615 lbs. 10 ozs., and the other portions of the Austrian Empire yielded 105 lbs. 11 ozs., raised chiefly in Upper Austria and the Tyrol, the total quantity being 3561 lbs. 11 ozs. troy. The most recent intelligence regarding the mines of Transylvania and Hungary appeared in the *Annales des Mines* for 1845, tome vii.; M. Audibert, the writer of the memoir, states at page 96, that Transylvania produced gold in 1844 equal to 1880 lbs. 7 ozs. troy, and Hungary, 977 lbs. 5 ozs.—total, 2857 lbs. 3 ozs. troy, of which Lower Hungary, yielded 376 lbs. 1 oz.; Upper Hungary, 75 lbs. 2 ozs.; Nagy Banat, 452 lbs. 3 ozs.; Banat, 75 lbs. 2 ozs.—977 lbs. 5 ozs. The quantity of silver raised in the same period was 51,153 lbs. 5 ozs. troy. In this year the value of the gold obtained was less than that of the silver, but generally the former predominates. Although the mines of Transylvania and Hungary have been so celebrated for ages, they are quiet eclipsed so far as value is concerned, by the mines of Russia, Brazil, and of the United States, since one mine alone, the Gango Soco, belonging to the Imperial Brazilian Mining Association, produced in 1829) and within four years of the workings being undertaken by that company) 4190 lbs. of gold; and now the mines of Transylvania are surpassed by the increasing produce of the mines belonging to the St John d'el Ray company, they having

produced in the 12 months, ending with February of this year, gold to the amount of 2213 lbs. troy.—*Mining Journal*.

Mineral Cements.*

Roman Cement.—It is a remarkable fact, in the history of hydraulic mortars, which originates, as we have seen, with the Puzzolana and Trass† employed by the Romans, that the more the knowledge of their uses has been spread, the more substances have been discovered, which either act as hydraulic mortars themselves, or can be mixed as cements in the preparation of artificial mortar; so that what appeared originally a privilege accorded to a few favored spots only, can now be obtained almost everywhere. A strong inducement to study the nature and modes of occurrence of hydraulic lime, was created by the patent granted to Parker and Wyatt, in London, in the year 1796 for what they termed "*Roman Cement*." The materials employed in the manufacture of this cement, are the nodules, of an ovoid or globular form, which are found in the London clay, and known by the name of Septaria.—They are not confined to the banks of the Thames, but are also found on the isle of Sheppey and Wight, as well as on the coasts of Kent, Yorkshire and Somersetshire. The composition of these nodules has already been given. They are calcined in perpetual limekilns with coal, in which a very moderate and well regulated heat is carefully preserved. After calcination, the stones are ground under heavy edge-stones, to a very fine powder, which is sifted and then packed in casks for sale.

In the year X of the French Republic, Lesage pointed out the existence of similar cement stones on the coast of France, near Boulogne, and Drapier proved their identity with the English, by chemical analysis.

Roman cement is one of the most powerful hydraulic mortars, and is exceedingly valuable, not only on account of the rapidity with which it hardens, and this is effected in a very few minutes, but because when hardened in considerable masses, it is not liable to crack.

Since that time, similar calcareous marls have been found in numerous places, wherever prices have been taken to look for them, and have been used for similar purposes. To give an instance of this, Knde in Aachenburgh, examined a series of limestone from the Spessart, and found in four different places in the neighbourhood, limestone, which yielded a very tolerable mortar, and two varieties of which were excellent. Hydraulic lime has occasionally been met with in the same quarry as fat lime; and its nature not having been investigated, has been neglected as useless in consequence of the slowness with which it is slaked.

All artificial or natural hydraulic limestone are soluble (before as well as after calcination) in muriatic acid, with the separation of silicic acid, except when sand or some similar substance has been added to them.

* From the second volume of Johnson's edition of Knapp's *Chemical Technology*.
† Puzzolana and Trass, are porous volcanic, or pumice stones.—Eds. Cultivator.

ous halo which surrounds the names of Gouverneur Morris and DeWitt Clinton, one bright ray; but whilst we accord all honor to those great benefactors of their common country, we claim some tribute for gratitude for Joshua Forman.

It is not pretended that the last-named gentleman originated the idea of connecting the waters of the Hudson with those of Lake Erie. Morris, Ellicott, Clinton and others saw the importance of such a work, at an early day, but we claim for Joshua Forman, formerly of Onondaga, the honor of first bringing the project before the Legislature of his native State, New York, and of pushing its advancement so long as he continued a member of that Legislature. He and the late Judge Wright, of the same state and Legislature, were room-mates at Albany, and gave much of their time and attention to this great plan. If we mistake not, so early as the year 1807 Judge Forman introduced the first "resolution" on the subject; the enterprise, at first, found few friends; its projectors were in advance of their age, and but a few hundred dollar were appropriated for an exploration of the route. At a succeeding session a larger sum was granted, and the subject was attracting friends, when Forman left the Legislative Halls for the Bench, having been appointed first Judge of Onondaga County.—Clinton then took up the matter, and his herculean mind only grasped the difficulties of the undertaking to conquer them, and build for himself an undying fame.

We have often asked ourselves the question—How, when the trumped of fame was sounding its spirit stirring notes in honor of Clinton, one glad note was not vouchsafed to *Foreman, the Pioneer*?

We knew the subject of our notice well. More than thirty years we listened, with pleasure, and we hope with profit, to the emanations of his clear head and bright mind. We heard him detail his struggles for the "Canal;" how he wrestled with prejudice, how he confirmed the wavering and how he convinced the doubting.

Judge Forman projected and laid out the city of Syracuse; but long since he left the place of his adaption to seek new enterprises in the south, his energetic mind leading him to new projects and encountering new difficulties.

Smooth be the end of thy path, my old friend; and as you sink into the vale of years may thy spirit be comforted by the reflection that you have always been a true friend to your native state, and given your best years to its improvement, and the welfare of its people. The Destroyer of the Ephesian Temple lives in history—its founder is without a name. Such is fame!

G. C. McC.

Philadelphia, 12th Feb. 1849.

Georgia

Efforts are now making in this state to construct a railroad from the Central road to Augusta via Waynesboro' in Burke county. The length of the proposed road is 52 miles, and its estimated cost \$500,000. To raise this sum it is proposed that the city of Savannah shall subscribe \$200,000; and \$100,000 more to be raised by a subscription of its citizens. It is believed that the Central road would subscribe \$50,000 leaving only \$150,000 to be raised in Burke county and elsewhere.

A large and enthusiastic meeting was held by the citizens of Savannah on the 7th instant to take into consideration the expediency of extending aid to this object, the proceedings of which we give below:

RAILROAD MEETING.

Pursuant to a call of the Mayor, a public meeting of the citizens of Savannah was held at the Long Room of the Exchange, August 7th, 1849, at 12 o'clock M., for the purpose of considering the propriety of extending public aid to the construction of a railroad from the Central road to Augusta.

On motion of Major A. Porter, his Honor Dr. Richard Wayne, Mayor of the City, was called to the chair, and Edward J. Harden appointed Secretary.

The Secretary read the request of citizens and call of the Mayor for the meeting, whereupon Major Porter opened the meeting by some practical remarks upon the importance of the proposed connection of Augusta and Savannah by railroad from some point on the Central road to Augusta. He was followed by F. S. Bartow, Esq., in a strain of earnest eloquence.

Joseph S. Fay, Esq., then offered the following resolutions, which were seconded by A. Minis, Esq.:

Resolved, That the City Council of Savannah is hereby respectfully requested and authorized to subscribe to the Burke county railroad to the extent of \$200,000 if needful, to ensure its completion.

Resolved, That a committee of twenty-five persons be appointed by the Chair to district the city and canvass it thoroughly for subscriptions to the proposed road.

Resolved, That that committee report at an adjourned meeting to be held at this place on the 14th inst., at noon.

The resolutions were advocated by A. R. Lawton, A. Minis, R. R. Cuyler, John Stoddard, F. A. Tupper, and Edward J. Harden, Esqrs., and were unanimously adopted.

Mr. Cuyler offered the following resolutions which were also unanimously adopted:

Resolved, That a committee of Ten be appointed by the Chair to attend the railroad meeting to be held in the county of Burke in the month of September next, to confer with the people of Burke on the subject of carrying through the Waynesboro road.

Resolved, That we respectfully recommend that the Waynesboro company be forthwith regularly organized, it being our conviction that the Road can now be built.

The following committee of Ten were appointed by the Chair as delegates to said meeting:

R. R. Cuyler, F. S. Bartow, A. R. Lawton, A. Minis, W. P. White, J. W. Anderson, C. A. L. Lamar, J. L. Swinney, John Boston, H. K. Burroughs.

On motion of Mr. Cuyler, the Mayor was added to the committee of Ten.

It was proposed by Capt. John W. Anderson that the persons present be invited to subscribe, when it was ascertained that the sum of \$16,000 was made up.

The meeting then adjourned to meet again on the 14th inst.

From the feeling manifested in Savannah, we have no doubt but the amount to be furnished by this city can be relied upon. The Central railroad we presume will subscribe at least the amount it is called upon to furnish. So we see no obstacle to the construction of this road with as much despatch as is compatible with a work of this nature.

The above is undoubtedly a very important road for Savannah. It will give her an equal chance with Charleston for the trade of Augusta and the contiguous country, leaving it a prize to be ultimately carried off by the town possessing the superiority of natural advantages and in the energy and business character of its citizens.

On Gold, and Gold Mines.

BY WILLIAM BYRKNYRE.

No. 11.—Gold Diggings, or Washings, and Gold Mines.

Continued from page 506.

But, to return to the subject matter, the gold of Scotland was found chiefly around the lead hills in Lanarkshire. Some of it was found here in the gravel beneath the moss, and much of it in rivulets, where pieces were picked up weighing upwards of $\frac{1}{2}$ lb. A piece in the crude state weighed 2 lbs. 3 ozs. troy. Occasionally a little of the metal is picked up to this day. A piece of gold, weighed 1.2oz., was recently found in Sutherlandshire. The discovery of gold in Ireland is but of a recent date. Previous to 1796 very little appears to have been obtained, but in the autumn of that year "a man crossing a brook found a piece weighing about 1.2 oz." It occurred in the Ballin Valley stream of the County Wicklow, near to the Croghan Kinshala Mountain. Government collected 78 1.3 lbs., which produced £3675. The gold, on the average, contained 9.8 per cent. of alloy, which was chiefly silver. The peasantry, on their own account, are supposed to have collected about £6000 worth. The metal here, as elsewhere, was obtained in from the most minute particles to lumps which weighed 7 ozs., 9 ozs., 18 ozs., and even 22 ozs. All attempts under the Government officers to find the lode were unsuccessful.

From what I have before stated, it is unnecessary to name all the substances in which gold is found. It will suffice merely to mention that it is obtained in large quantities in quartz, granite, gneiss, mica slate, clay slate limestone, magnesian limestone, and in alluvial deposits of manganese oxid of iron, ferruginous sands and clays. Nothing more need be said of the directions of the lodes, or veins, in which it is found, than that it is obtained in every possible direction, and in a vast variety of positions.

In respect to collecting the gold from gold sands, the simplest mode unquestionably is that which has endured for thousands of years in Africa. On the west coast of that continent, for instance, the negroes after harvest begin to wash the sands, and a brown colored clay, in the dried shell of the gourd (calabash). Some care is requisite to prevent the gold being washed away, as it is often in a minute state of division. This operation, therefore, is consigned to the women. Where the inhabitants think there are greater deposits they dig pits for the metal; but a hoe and a spade, and two or three calabashes, are all that the negroes use. With common diligence much gold is collected; a person often having it in his power to collect £15 worth of gold in a season, even by the above crude apparatus.

The greater part of the gold of the ancients was obtained by washing alluvial soils in pretty much the same way as it is practised in the present day. And it is most likely that a portion of their gold was extracted, as it is just now, by the aid of mercury, as they were well acquainted with the properties of

this metal. No positive information, however, has come down to us that they used mercury in this way, but the above inference accords with what Pliny says on the subject of purifying gold by mercury, and is confirmed by the fact, that mercury was employed in the European gold mines when gold and silver existed in visible metallic particles, long before the application of mercury in Peru in 1516, where it was first used for the extraction of silver mineralised by sulphur, chlorine, or bromine; and it is further strengthened by Jameson's Report on the Geology of the Punjab, &c. (vide Asiatic Journal for 1843), where, in that little known and lately conquered territory, the gold washers use mercury to collect the precious metal, after which they submit both to heat, when the mercury is volatilized; which method may have continued as far back as the days of Alexander the Great.

Gold is now obtained with great skill in the north of Piedmont, near Mont Rosa. It is here raised from mines in the mountainous region which separates Piedmont from Switzerland.

The metal in that district is found in a mixture of iron pyrites, blenda, and galena. The workings are carried on by following the vein, which is not so hard as the gneiss which incloses it. When the ore is brought to the furnace, it is first broken and picked, and afterwards crushed smaller by a pair of stones, then amalgamated in mills of a simple and peculiar construction—the barrel system of amalgamation not having succeeded in this district. The loss of mercury is but one-quarter of the quantity employed, which is a little less than one per cent. of the crushed ore. The gold in the rough ore varies from 1 lb. in 2000 lbs. to 1 lb. in 100,000 lbs. This quantity, and the trifling expense of about £14 for a pair of stones, and four amalgamation mills, with other necessary apparatus, has been sufficient to keep the workings in activity for centuries. These mines are conducted by private individuals, who, by their enterprise, probably contribute annually 600 lbs. troy of gold to supply the wants of man. The profit to a proprietor occasionally amount to £1100 per annum.

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ing it on inclined tables, covered with canvas—the fibres of the canvas detaining a considerable portion of the gold; while the earthly matter, and the greater part of the other metallic substances in the ore, are carried off by the water. This plan is similar to that practiced long ago by the aborigines of Peru, with the difference merely that they used the skins of the lama and the vicuna. The Brazilians have, for more than a century, used the skin of the buffalo this way; and the plan still obtains in at least one of the three English companies who work gold mines in Brazil; yet, though still in use, it is admitted that as much as 33 per cent. of the gold is lost.

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produced in the 12 months, ending with February of this year, gold to the amount of 2213 lbs. troy.—*Mining Journal*.

Mineral Cements.*

Roman Cement.—It is a remarkable fact, in the history of hydraulic mortars, which originates, as we have seen, with the Puzzolana and Trass† employed by the Romans, that the more the knowledge of their uses has been spread, the more substances have been discovered, which either act as hydraulic mortars themselves, or can be mixed as cements in the preparation of artificial mortar; so that what appeared originally a privilege accorded to a few favored spots only, can now be obtained almost everywhere. A strong inducement to study the nature and modes of occurrence of hydraulic lime, was created by the patent granted to Parker and Wyatt, in London, in the year 1796 for what they termed "*Roman Cement*." The materials employed in the manufacture of this cement, are the nodules, of an ovoidal or globular form, which are found in the London clay, and known by the name of Septaria.—They are not confined to the banks of the Thames, but are also found on the isle of Sheppey and Wight, as well as on the coasts of Kent, Yorkshire and Somersetshire. The composition of these nodules has already been given. They are calcined in perpetual limekilns with coal, in which a very moderate and well regulated heat is carefully preserved. After calcination, the stones are ground under heavy edge-stones, to a very fine powder, which is sifted and then packed in casks for sale.

In the year X of the French Republic, Lesage pointed out the existence of similar cement stones on the coast of France, near Boulogne, and Drapier proved their identity with the English, by chemical analysis.

Roman cement is one of the most powerful hydraulic mortars, and is exceedingly valuable, not only on account of the rapidity with which it hardens, and this is effected in a very few minutes, but because when hardened in considerable masses, it is not liable to crack.

Since that time, similar calcareous marls have been found in numerous places, wherever pains have been taken to look for them, and have been used for similar purposes. To give an instance of this, Kittle in Aschaffenburg, examined a series of limestone from the Spessart, and found in four different places in the neighbourhood, limestone, which yielded a very tolerable mortar, and two varieties of which were excellent. Hydraulic lime has occasionally been met with in the same quarry as fat lime; and its nature not having been investigated, has been neglected as useless in consequence of the slowness with which it is slaked.

All artificial or natural hydraulic limestone are soluble (before as well as after calcination) in muriatic acid, with the exception of silicia, except when sand or some similar substance has been added to them.

* From the second volume of Johnson's edition of Knapp's *Chemical Technology*.

† Puzzolana and Trass, are porous volcanic, or pumice stones.—Eds. Cultivator.

Practical Remarks.—The hydraulic lime stones, when they do not contain a sufficient quantity of lime to be capable of slaking with water, must be very finely pulverised; it is only by this high state of division that a proper action can ensue. A thorough penetration of the siliceous portion by the lime is never entirely effected, but a certain proportion remains enclosed and removed from the sphere of action.

One point, which is very often neglected in preparing artificial hydraulic mortar, is the attention to the proper proportion between the slaked lime and cement. Both the ingredients must be mixed by measure or weight, and not merely estimated by the eye.

The best plan is to moisten the necessary quantity of cement first, and then mix the freshly slaked lime with it. The more uniformly and intimately both are mixed, the better is the result.

The hydraulic mortar employed in building the Eddystone lighthouse, was mixed by Smeaton from equal proportions of lime, slaked to powder, and Pozzolana. Trass and Pozzolana are generally mixed with half their weight of lime, as was the practice amongst the Romans. It is desirable to ascertain the best proportions by experiment in all cases where no certain knowledge of the nature of the two substances can be obtained.

Good hydraulic mortar whether made from natural limestone or composed of lime and cement, should not show any tendency to crack when hardened under water, even when no sand is mixed with it. It then forms a very dense and solid mass, which in a short time, neither suffers water to permeate it, nor is attacked by the water, but acquires a considerable degree of hardness. For this reason, it is well to use nothing but hydraulic mortar for those parts of walls which are constantly under water. If the mortar is not only required to harden, but also to bind well, a very important point must never be neglected, and that is to moisten the surfaces of the stones to which the mortar is to be applied. When this is not done, the surface of the stone (by its power of absorbing moisture,) dries the mortar and prevents proper adhesion from taking place. The joint then remains open to a greater or less extent.

It does not by any means follow, that because hydraulic mortar is the only durable material for building under water, it cannot consequently be used for dry walls. It is on the contrary, of the greatest service wherever protection is required against the infiltration of moisture and damp; and dwellings or buildings can often be rendered very much less damp by a judicious application of a hydraulic coating, a layer of this kind, when once hardened, is not calculated, like ordinary mortar, to attract moisture and allow it to pass through. The hydraulic mortar must, of course, when used for covering dry walls or otherwise, be kept moist and watered, until it has acquired its proper degree of hardness. If this is not attended to, a soft, friable, useless coating is the certain result. If moisture

enters from below, for instance, between the wall and the coating of mortar, it will continue confined there in consequence of the impenetrability of the latter, which, on the occurrence of a frost, will most certainly peel off and be destroyed. Care must also be taken that the mortar does not dry up of itself immediately in the air, in which case it contracts and cracks. It is, therefore, necessary to add sand or some other substance which obviates the shrinking. Hydraulic mortar will bear a very considerable quantity of sand without injury to its hardness; even as much as one and a-half times its own weight and more. This addition therefore, is important in an economical point of view. The grain of the sand employed, however, requires attention, as was the case with ordinary mortar; sharp, angular sand is decidedly preferable to blunt, rounded sand, and it is better to use a mixture of coarse with fine sand, than that the sand should be all of the same sized grain. The sand should likewise be as free as possible from earthly particles and dust. In mortar composed of lime and cement, the rule is, to proportion the sand with the quantity of cement used. Slaked lime will not bear more than a certain quantity of these substances, which quantity must not be exceeded, the cement itself being for the greater part inactive and playing the part of sand.

Hydraulic mortar that sets with sufficient rapidity, and to which a proper proportion of sand has been added, may be employed for casting tolerably massive objects, which are not subject to crack when dry. This enables hydraulic mortar to be employed for architectural ornaments which then combine great sharpness with durability, are very light as compared with similar figures of sandstone, and have the great advantage of being easily multiplied.

A similar application is that for casting water pipes, on the spot where they are required, as proposed by Gasparin. The mould employed is a linen hose, like those attached to the fire engines, a few meters in length, which is filled with water and closed at both ends. A thick kind of bolster is thus produced, over which sand is sifted, and it is then laid upon a deposit of hydraulic lime and covered by pouring over it the same substance. When the whole has hardened, the hose is drawn forward, about the length of one foot, being left inserted in the tube, and a fresh length is cast. Water courses, thus constructed, must however, have a certain amount of fall, or the sand cannot be washed out, and will impede the delivery of the water.

When hydraulic lime is mixed with small stones, or with shingles from the bed of a river, or the sea, walls can be directly constructed of it, and a mass is obtained which resembles the erections with ordinary mortar, and is called *beton* by the French.

At Toulon, a mixture was used for the construction of the harbour, consisting of 3 parts lime, 4 Pozzolana, 1 smithy ashes, 2 sand, and 4 parts of rolled stones or shingles.

The great strength of walls, constructed with hydraulic mortar, is most clearly shown

by the experiments undertaken with a view to break beams constructed of brickwork. A 25 feet long, and 2½ feet wide beam, constructed with 19 layers of brick, bound together by Roman cement, in which, here and there, parallel strips of iron were enclosed, was capable of bearing, when supported at both ends, a weight of 22 tons suspended from the middle, before it shows any signs of fracture.

Turn Tables.

ALEXANDER TURIFF, Engineer, Paisley:

Enrolled December 23, 1848.

The improvements introduced by Mr. Turiff, have reference, more particularly, to turn tables of large size, such as are employed in turning an engine and tender at once. The first portion bears upon the obtainment of steadiness and freedom from vibration during the passage on or off, of engines or carriages. The main fixed supporting centre of the table is carried by a polygonal cast iron frame, to which are bolted a series of cast iron radiating arms, the latter being again bolted at their contrary or outer extremities, to the inner sides of the trace rail segments, upon which the supporting or trace rollers are carried. The top of the main centre casting, is bored out to a slight depth to receive the slightly rounded end of the main centre journal, which is a short cylinder strengthened by feathers, and cast with a top circular plate for bolting to the upper surface of a rectangular open frame, carrying the centre guide rollers.

The slight concavity of the main centre admits of an easy adjustment on any required side, by means of a set of four retaining rollers; by the rectangular frame just mentioned, so that the whole table can be at once accurately set by moving in or out any one or more of the stud spindles of these rollers. The adoption of a short main centre journal also admits of tables being put down in situations where the ordinary deep centres are quite inapplicable, on account of the depth of masonry required. In the second place, the usual malleable iron radiating arms for binding together the framing, are entirely dispensed with, and in their place, the patentee employs two parallel beams running right across the table, and set a short distance on each side the main centre, so as to embrace the sides of the rectangular casting bearing the retaining rollers, and from these beams springs a strong rectangular framework of cast iron bolted to the external ring of the table. Thirdly, a substitute for the ordinary malleable iron circular framing, employed to guide the trace rollers, is provided. A double panelled cast iron ring of segments bolted to each other, and to the ends of the beams forming the rectangular framing, carries the trace rollers, of which ten only are shown in the drawing before us. The rollers are placed between the two panelled rings, and are retained by pedestal caps bolted underneath.

An important modification is also introduced as a preventive of all or most of the strain to which the framing of the common turn table is subjected, by the variations or irregularities of the top and bottom tracerail. The

upper rail is dispensed with, and the rollers are guided entirely by the bottom one, being fast on their axles, which revolve with them.

The arrangement of the parts forming the top ring of the table, as previously explained, produces a most substantial frame, involving much less labor and metal, than is used in ordinary tables. The table is turned in the usual manner, by pinions working into segmental racks, cast on the inner surface of the circular framing.

The claims are—"the constructing of turn tables with shallow main centers, fitted with adjusting rollers and shallow journal bearings; the dispensing with radial or spider arms; as also the usual malleable iron circular framing; substituting in lieu thereof, the framing described; the mode of placing or supporting rollers to the lower side of the upper cast iron segments; the constructing of tables with one trace rail only, and lastly, the general arrangement of the table top."

Utica and Schenectady Railroad—The excavation at the eastern end of the town of Little Falls, designed for the double track of the Utica and Schenectady railroad, has been completed, and the first locomotive was to pass through it on the 19th inst. The cut is made to pass through a mass of solid rock; is nearly 1000 feet long; the extreme depth is 35 feet, and it is 27 feet wide at the bottom. 30,000 yards of granite have been removed by blasting, continued for 17 months, and 1,600 kegs of powder were consumed in the work. Workmen are engaged in laying the parallel rails, and in a short time there will be a double track of the best quality of the heavy rail on the whole route. By this improvement, the worst and most dangerous curve on the road is avoided.—*Albany Argus*.

Concord and Claremont Railroad—This work is advancing with a rapidity unaccountable, considering the state of the money market of the country at the time. As early as the 10th of August it will be open to Contoocookville, ten miles from this place, and probably by the 10th of September to Warner, eight miles further.—*Concord Statesman*.

Sullivan Railroad—The annual meeting of the Sullivan railroad company was held at Charlestown July 17th. We learn that the old board of directors were re-elected.

The income of road since the opening in January has been about \$16,000. The travel in the month of June was 50 per cent. more than it had previously been.—The annual report was presented and read, which gave an encouraging statement of the present condition and future prospects of the road. As the report will be printed in a few days, we may hereafter give a more detailed statement of the condition of the company.

Cleveland and Buffalo Railroad.

At a general meeting of the stockholders of the Cleveland, Painesville, and Ashtabula railroad company, held at the Weddle House on the 1st inst., for the purpose of choosing Directors, Gen. Abel Kimball, of Lake Co. was called to the chair, and Heman B. Ely, Esq., appointed Secretary.

The following Directors were elected unanimously:

Hon. Alfred Kelley, of Columbus, Hon. Samuel L. Selden, of Rochester; Heman B. Ely, of Cleveland; Peleg P. Sandford, Esq., of Painesville; David R. Paige, Esq., of Madison; George G. Gillett Esq., of Kingsville; and Zaphna Lake, Esq., of Conneaut.

At a meeting of the Board of Directors subsequently, Alfred Kelley was chosen President, and Heman B. Ely Secretary. Mr. Kelley, however,

on account of other pressing engagements, declined acting as President; and the place is filled for the present by Heman B. Ely.

A committee consisting of Messrs. Lake, Gillett, Paige, Sanford, and Ely, assisted by Wm. W. Branch, Esq., were appointed to take the necessary measures and secure subscriptions to the stock of the Company, from Cleveland to the Pennsylvania State Line.

Within a few weeks the preliminary surveys will be commenced for the purpose of locating the road.

Fitchburg Railroad.

Receipts on this Road for July.—We believe, as a general thing, the railroad companies have done a light business this summer, as compared with their expectations, although most of them have made a gain on last year's business. All over the country the travel has been light, and on some of the New York and other roads the earnings are reported to have been less than last year. For the month of July, the earnings of the Fitchburg road amounted to forty-six thousand dollars, being an increase of about eight thousand dollars for that month over the same month in 1848.

Nashua and Worcester Railroad.

The annual meeting of this company was held at Worcester on the 12th instant. From the report of the Directors presented to the meeting, it appears that the cost of the road, including an estimated amount due for land damage, not yet adjusted, and a further amount necessary to be expended for additional buildings, is \$1,350,000; which is at a rate of \$20,670 the mile; the road being 45 55-100 miles in length.

The debts of the company amount to \$368,981; which includes the estimated amounts for land damages and additional buildings. The assets of the company are \$153,242; making the balance of debt over assets, \$215,739.

The whole number of shares of the capital stock, is 15,652. Of these, one-half were created by vote of the directors on the 17th of July, 1848, in pursuance of the authority given them by the stockholders at their last annual meeting. The shares created at that time were offered, in the first instance, exclusively to the stockholders. The number taken by them, or sold to different individuals, is 7250. The balance of the shares, together with a few of those originally subscribed for, and sold for non-payment of assessments and bought in by the company, were pledged and appropriated to the payment of interest due to stockholders, which amounts to \$30,000, and are sufficient for that purpose.

To realise funds which were required beyond the amount received from sales of stock, the road has been mortgaged to secure bonds to be issued under the amount of \$25,000. Of such bonds there have been sales to the amount of \$164,500; which make a part of the company's indebtedness.

The earnings of the road, from July, 1848, when only a small part of it was opened—from Clintonville to the Groton Junction—to July 1st, 1849, have been \$32,333. The cost of working the road for the same time has been \$36,778. More than one-half of the entire receipts has been during the last three months. In the month of June were a fraction short of \$10,000.

The road was in progress during the severest pressure of the money market, and like other roads similarly situated, its cost was somewhat increased from this cause.

This is a very important road to the manufactur-

ers of the large towns of Massachusetts and New Hampshire, as it brings them in direct railway connection with New York, which is one of the great markets for their products, and from which they receive large supplies of raw material. They can now forward to this market with the same ease and facility that they can to Boston. It cannot fail being advantageous to Worcester by vastly enlarging her connections with the country, and giving increased facilities to the extensive manufacturing interest of that city, which is now one of the principal manufacturing towns of Massachusetts, and which owes its importance almost entirely to the fact of her being the centre of an extensive railway system. It has been chiefly through the influence of Worcester that this road has been built. We believe too that this road will eventually pay well upon its first cost. Offering a new route for travel, some time must elapse before she can divert this from its old established routes, and turn it into a new channel.

The following is a list of its Directors:—

Pliny Merrick, of Worcester; Thos. W. Gillis, Thos. Chase, Nashua; Asa F. Lawrence, Pepperell; N. P. Smith, Groton; Jacob Fisher, Horatio N. Bigelow, Lancaster; Stephen Salisbury, William A. Wheeler, G. T. Rice, Isaac Davis, Worcester; Joel W. White, Charles Johnson, Norwich; Alexander De Wit, Oxford; Edward Lamb, Boston.

President, Pliny Merrick.

Chief Engineer, J. F. Miller.

Superintendent, J. W. Stowell.

St. Lawrence and Lake Champlain Canal.

A meeting of gentlemen favourable to the construction of the above projected work, was held, yesterday, at the Merchants' Exchange Room, when it was moved by J. Fisher, Esq., that the Honorable Joseph Bourret do take the Chair, and Mr. Theodore Hart was requested to act as Secretary.

The meeting having been constituted, John Young Esq., explained the object of its having been convened to be the appointment of a committee to meet and co-operate with the committee chosen at the late meeting at Troy, in visiting the site of the proposed Canal.

Moved by Sheriff Boston, seconded, by D. Torrance, Esq.:

Resolved.—That this meeting hail with much satisfaction the proceedings of the Citizens of Troy N.Y., at their meeting of the 21st instant, on the subject of connecting the waters of Lake Champlain and the River St. Lawrence by Canal, and will as far as possible, co-operate with them and others in carrying out so desirable and so important a work. Carried unanimously.

Moved by G. Cartier, Esq., M. P. P., seconded by D. Kinnear, Esq.,

Resolved.—That this meeting hereby appoint the Hon. Col. Tache, Jason C. Pierce, Esq., of St. Johns, William Dow, Esq., John Glass, Esq., Sheriff Boston, John Young, Esq., John Ostell, Esq., Jacob De Wit Esq., M. P. P., and Thomas Ryan, Esq., President of the Board of Trade, a committee, to meet the committee appointed from Troy, to visit the site of the proposed Canal, with power to add to their numbers; and to call another meeting of those interested in the proposed Canal, at such time as they may seem fit. Carried unanimously.

Mr. Kinnear, then, called the attention of the meeting to the indefatigable exertions of John Young, Esq., his energy and perseverance, in forwarding the great object they all had in view, of uniting the waters of the St. Lawrence with those of Lake Champlain, and of, thus, adding the final link to the grand chain of our canals, and concluded by proposing, seconded by Mr. Cumming, a vote of thanks to Mr. Young, which was unanimously carried. In returning thanks, Mr. Young, concisely, pointed out the vast advantage this canal, when constructed, would confer upon the trade of the St. Lawrence, and particularly upon that of our city.

The Hon. Chairman having left the chair and Mr. Sheriff Boston having been voted into it, the

thanks of the meeting was moved, by John Fisher, Esq., seconded by John Frothingham, Esq., to the Hon. Mr. Bourret for his services on the occasion. Carried unanimously.—*Hamilton Spectator.*

AMERICAN RAILROAD JOURNAL.

Saturday, August 18, 1849.

Affairs in Canada.

We have hitherto forbore the expression of an opinion respecting the great questions at present and for some time past, engrossing the attention of our Canadian neighbors. Our silence however must not be attributed to the want of attention to, or the absence of interest in the progress of events in the British Provinces. Their geographical position natural resources and habits, and characteristics of the great bulk of the people, who inhabit them are objects of the greatest interest, to the inhabitants of this country. That we have not occasionally alluded to the political occurrences in the Provinces has resulted in part from the want of reliable information and in some degree from the peculiar subjects to which this Journal is more particularly devoted.—When it is considered however, that many of the Eastern and Western States have a direct interest in the construction of most of the projected railways in Canada, we trust we shall be excused for offering a few remarks at the present time on the subject.

We would premise what we have to say by stating that our attention has very recently been directed to the subject by a Gentleman of intelligence, who has just returned from a tour of some six weeks through both sections of the Canadian Province. Our informant states that he lost no opportunity to make himself acquainted with the wants and feelings of the people in every part of the country. The difficulties under which the province appears to be laboring are both political and commercial. Political evils, when accompanied by commercial and general prosperity, as we often witness in the old world, will long be borne by a people, without ever a murmur, whilst they are sure to excite discontent in the minds of nations not sunk to a condition of degradation and apathy, when attended with great commercial distress.

The expenses of the civil government of Canada it appears, by statements made at the convention which lately assembled at Kingston, are at least three times greater than those of the State of New York, which is twice as populous and probably ten times as wealthy. This enormous disproportion in the expenditure of the province, as compared with this great state unquestionably arises from the difference in the two systems of government. The Canadian government is as nearly as possible in form, the transcript of that of the Mother country. But our neighbours are beginning to discover that it *only* corresponds in *form* and external appearance with that great fabric called the British constitution, and that they have neither the material, nor the means for practically carrying out and working so complicated and costly a machinery. They therefore very naturally ask themselves, "why should we cling so pertinaciously to a system, which experience has taught us can never be wholly transplanted into American soil? Why should we pay a governor \$35,000 a year to contribute to his private fortune when the President of the American Union only gets \$25,000? Why should we pay for the maintenance of three or four benches of judges and two sets of officers to manage the heads of departments—one for Canada East and another for Canada West—at the rate of from four to six thousand dollars each individual, whilst the largest State in the union as

well as the Federal government itself has only one set of supreme judges and one set of state officers?"

But as we before observed, these evils might long have been borne, how long it is difficult to say, had the province continued in a state of commercial prosperity. The removal, however of the incidental protection which the Colonies of England enjoyed in her markets for their staple products, by the free admission of foreign corn, has struck a death blow at the commercial prosperity of Canada in particular, her staple being wheat. She had just constructed at vast expense a series of ship canals from Lake Erie to the ocean, works which for magnitude and splendor, are not surpassed by those of the most opulent nations of the earth, when the sudden repeal of the British corn laws destroyed at a blow the source from whence these great undertakings were to derive their business. The province is thus left saddled with an immense debt contracted for unproductive works.

Canada is also suffering in every branch of industry for the want of railways, the great necessities of the age. We have frequently asserted it as a fact and have adduced numerous evidences in proof of its correctness, that a country not possessing railways can not compete with neighboring countries which have introduced them extensively, in producing any of the elements of national wealth. This fact is beginning to be felt by the Canadians. They see thousands upon thousands of miles of railway in successful operation in the various States upon their borders, and they witness the astonishing results they every where produce as well as the facility with which capital is here obtained for their construction. Is it at all surprising that they should inquire into the causes which have prevented their introduction into their own country? We have also had occasion to point out the admirable adaptation of Canada for a great system of railways, and the certainty of their yielding a handsome return to the shareholder, either from local business or from their connection with American roads already yielding large profits. In doing so however we have not been as pointed as we might have been in stating the real difficulty under which the Canadians as a people labor in procuring capital. We had no desire to throw a brand of discord into the province, feeling certain that sooner or later our neighbours would open their eyes to the true cause themselves. This they are now doing.

Canada whilst she remains a colony can never acquire such a degree of credit as to hold out any very powerful inducements for the investment of capital. Her government is regarded as in a state of transition and such acts as the rebellions of 1837 and 1839 and the riots and burnings of 1849 are pretty conclusive evidences of the correctness of this opinion. Canadians must not therefore be surprised that both English and American capitalists prefer keeping their money at home and contenting themselves with a less profit to laying it out in a country which has not yet acquired a settled and fixed condition. Just suppose that the British provinces should have to pass through an ordeal similar to that of the American revolution, what would become of investments of any kind? If what we are told be true that there is a small but desperate party in the Canadas which entertains views and prejudices similar to the faction which opposed American independence, such a struggle is not unlikely to happen. We trust however that the able and wise men who now rule England, will avert such consequences by voluntarily anticipating what all men admit

must sooner or later happen, and peaceably establish the whole of the North American provinces into independent nations. Our neighbors can then consult their own interests and feelings in reference to "annexation" to this country. Should they ask admission into our confederacy, we can assure them they will meet with a cordial reception.

If however they prefer a confederacy of their own, they may equally depend upon our friendship and cooperation in all enterprizes and matters of mutual interest. But we think it will be so obviously their interest to join our Union, that they will not be long in deciding in favor of this course. To make their great natural and artificial facilities for internal water communication profitable, it is absolutely necessary, that perfect free trade should exist between them and us. This they can scarcely hope for without coming into the Union.

There is one thing upon which we should like to set our Canadian friends right, or rather that portion of them whose predilections set strongly in favor of British connection, and that is the light in which they are in the habit of viewing the people of this country. These Gentlemen seem to regard us as the natural enemies of England, whereas our kindred, associations and interest all combine to render the two nations the natural allies of each other. We feel an equal pride with our brethren in Canada, in being the descendants of Britons. Indeed, if there is any difference, we have more to congratulate ourselves upon, as the elder branch of a common stock, in that we have raised up a great and independent Anglo-saxon nation on this side the Atlantic. We not only speak the same language but our laws, institutions, and the whole fabric of our society, both moral and political, are simply modifications of those of the mother country.

In reference to the material interests of the British provinces, we can assure our friends that they will find no difficulty in procuring the means to build the several projected lines of railway, and of establishing extensive manufactures when they have once taken their place among the independent nations composing this confederacy. But in saying this much we can further assure them that the matter rests entirely with themselves. It is the settled policy of the Federal Government not to interfere in any manner, either to hasten or retard the progress of events on the other side the lines.

We are informed that many Canadians object to annexation on the ground that slavery exists in a large number of the States, and that the present revenue of the Provinces, derived chiefly from customs duties, would go into the Federal treasury. To the first of these objections we would answer, that it is an erroneous supposition to think that they would compromise themselves on this point. Let the people of Canada and the other Provinces look at the position of this State, and of all the other free States, and they will perceive that the question of slavery is one which can in no way cast a reflection upon them. It is purely a State institution; and neither England nor any other nation has ever refused to make treaties or enter into alliances with other nations because they tolerated slavery.

As to the loss of the customs revenue, and any other sources of public income, we are fully convinced that this would be far more than counterbalanced by the increase of tolls from public works, which are the property of the Province, that would be immediately caused by the increase of business upon them. The impetus that would be given at once to the local business and enterprise of the Province by becoming States, and the rapidly increas-

ing trade of the west, which to a very large extent would be diverted, under a system of perfect free trade, through the Welland and St. Lawrence canals, would produce a revenue far greater than that which would be surrendered to the Federal government. Let the Canadians look at the revenues yielded by the public works of New York, and many other States, and they will see what will be the result in their own case under the new order of things. But the advantages will not stop here.—They will soon find that they will have a simpler, better and more economical government than they at present possess. They will see that it is possible to be governed, and well governed, under a thoroughly responsible system of government, at one-half or one third the present cost.

But we are disposed to carry the argument still further, and admit that the Canadians might lose more than they gain in the shape of revenue; even then they will be immensely the gainers by the change. The farmer would always have open to him a large and a certain market for his produce. The gradual establishment of manufactures would create a home market for such articles as will not bear transportation to a distant one. And the rapid introduction of railways would stimulate all kinds of industry, and raise the value of all property at least one hundred per cent., causing an equalization in its value over distant parts of the country, so that farms one hundred miles distant from market towns will be nearly as valuable as those in their immediate vicinity. It would not be difficult to demonstrate in figures that the entire value of real estate in Canada would be doubled, perhaps trebled by the results which a union with this country would produce.

Having said thus much, we shall look forward with interest to every movement of our neighbors, both in Canada and the Lower Provinces of Nova Scotia and New Brunswick.

Mr. Whitney's Railroad—New York Chamber of Commerce.

In looking over a morning paper a few days ago, to see what had transpired since the previous days' report of events, we suddenly came upon this formal announcement:—"the Chamber of Commerce upon Mr. Whitney's Plan of a Railroad to the Pacific," heading a long report signed by D. B. Ogden, Chas. A. Davis, Chas. King, L. Bierwith and Oliver State Jr, Committee of the New York Chamber of Commerce, all men of mark in this great city. Here, said we, is something from the right quarter;—here are the opinions of one of the most distinguished commercial bodies in the world sitting in judgment upon one of the grandest schemes ever proposed.—Here shall we find discussed and settled all those facts in relation to this great enterprise which come within the province of gentlemen standing at the head of the commercial and financial world—the manner by which shall be provided the ways and means for this great work—the sufficiency of those proposed in the various plans before the public—the office that such a work is capable of performing as an instrument of commerce, etc., all those facts which, in similar undertakings, are left to the determination of the man of business, as those which relate to the physical characteristics of a road, are to the engineering profession. With such impressions, we ran eagerly thro' the report to see what were the ultimate facts in relation to this part of the project determined by competent authority?

The report after stating the necessity of an internal communication with our Pacific possessions, gives a brief account of the various propositions be-

fore the country, to accomplish this object. The first is that of Mr. Whitney, of which we have presented our readers with its main features. Another plan is that of a post road simply for the conveyance of the United States mail and passengers by the construction of an ordinary road. The third is Boston plan, from its originating with P. P. F. De-grand of that city. This plan proposes the formation of a company with a capital stock of \$100,000,000, of which government is to subscribe one-third, and appoint one-third of the Directors. After individual stockholders shall have paid in \$2,000,000, which is considered as a pledge for the good conduct of the Directors, the United States Government is to issue its scrip, bearing interest, to the company for \$98,000,000 to complete the road, retaining the usual security upon the road, etc. It is also to cede to the company a strip of land ten miles wide on the north side of the road, a road-bed 100 feet wide, and the necessary lands for station houses and depots.

The objections that exist against these several plans are thus stated by this committee:

"Objections are urged against the plan of Mr. Whitney, that it is too great an undertaking for an individual, whether we consider the difficulties to be overcome, or the result to be accomplished, and that such a road should belong to the people or to the government for their use, except such share as may or should be held by states, or companies, or associations, for the purpose of practical management; doubts are entertained, arising from the past experience of some of the states, how far the sale of the public lands can be relied on to supply the means of construction, and it is feared by some that, after a short progress, this resource may fail. If, however, for a certain distance from the commencement of the road, the 192,000 acres on each 10 mile section, should sell for more than the cost of construction, it is thought provision should be made after allowing a reasonable compensation for time and trouble, to pay over the surplus to the Commissioner, to be applied, if wanted, during the progress of the work, or if not required for that purpose, then to await the decision of Congress; in order that on the one hand the road should not stop or be delayed for want of this fund, and on the other, if unexpected success should attend the sale of the lands, that the people might share the benefit. A further objection urged, is the unavoidable delay that it is thought must attend the making of such a road from the sale of public lands, most of them, as yet, beyond the verge of civilization, and the value of which must be derived from the settlements to accompany and follow the progress of the work.—Fifteen or twenty years is the general estimate of time for its construction. It is sometimes thought that a quarter of a century might be required for its completion.

As regards the post road or mail route, your committee are of opinion that roads of that kind, although they have proved so useful and beneficial in their days, may now be considered, at least for the present purpose, as behind the age; for the would not be likely to meet the wishes and expectations of our people. If nothing else was in contemplation, or could be accomplished, such a road would, if course, deserve consideration, and while, as a pioneer, it may find many advocates, yet even in that light, it would soon prove inefficient for the object in view, and might, and no doubt would, delay the commencement of the only permanent and efficient highway across the continent.

The objection to the Boston plan, apart from the opposition that may probably be enlisted against an act of incorporation by Congress, of the kind proposed, exist in the emission and use of so large an amount of United States Stock, as well in the creation of the debt itself, as the distributing effect it might produce in the general money market. Besides, this is considered in many respects too important a work to be accomplished by a corporation.—Your committee are also apprehensive that the expense of a work of this kind, constructed with the proceeds of the stock, for an incorporated company, would be too great for the objects in view. The tolls, in such case, must be remunerative, and, therefore,

high enough to pay interest and dividends, besides repairs and the current expenses of the road. It is accordingly feared that the rate of freight would be too high for the permanent interests of commerce to sustain. This road, intended to be a *short and direct* route between Oceans and Continents, must, in order to answer its great ends, become a *cheap* mode of conveyance for the products of a great portion of the world."

After having reviewed the several schemes above named, and stated its objections to them, the judgment of the committee is given as follows:

"Having thus stated the principal plans that have been proposed, together with the prominent objections respectively urged or entertained against them, your committee respectfully submit, that, in their opinion, the sales of the public lands appears to present the only means likely to prove sufficiently unobjectionable, or that can be deemed both attainable and available for constructing a railroad to the Pacific—for with respect to the delay that is apprehended from a reliance upon the resource, it seems evident that money alone could not be relied on to compass the means to construct a railroad of such extent through unsettled lands—population must be induced to accompany its course, when by the aid and facilities it would afford, the settlement of the lands would necessarily follow their sale, and as a demand for labor was created, both labor and subsistence would be furnished at the same time, and the future progress of the national road would be accelerated according to the favor it might receive or deserve at the hands of the people and their representatives."!!!

It then wound up with the following qualified endorsement of Mr. Whitney's plan:

"Your committee, therefore, are in favor, generally, of the plan of Mr. Whitney, as contained in the bill submitted to the Senate—with two exceptions. They think that the proceeds of the lands along the five miles of road which are allowed to be sold by Mr. Whitney, for his own use or benefit, should be accounted for; and the excess beyond the cost of construction for the ten miles, after allowing a liberal compensation for time and trouble, should be paid over to United States commissioners, to constitute a fund to be applied to the purpose of the road whenever required. They also think that the work itself should not belong to an individual or to any association of persons, but should become the heritage of the people."

Conceived in true mercantile spirit. Mr. Whitney to have nothing for his pains but a "liberal compensation" for his time and trouble, and nothing to do with the road after it shall be completed. The chamber however reversed this decision of the committee, for on the matter coming before this body—

Mr. P. M. Wetmore opposed the recommendation of the report which contemplated the withholding from Mr. Whitney the benefits that would result from the completion of the road and vesting the property in the United States. He did not suppose any man could be found who could devote his life and means to forward an enterprise of which the future would ruin him, and the success—if successful—must accrue to the benefit of others. Besides, it was inexpedient in his view that the Government should have any property or interest in the matter.

Mr. Ogden vindicated the report as just at once to Mr. Whitney and to the public. After further debate, Mr. Lee proposed the following resolutions as a substitute for the resolutions of the Committee, which were adopted:

Whereas, The construction of a railroad to connect the Atlantic with the Pacific, in a direct line across the Continent, has become of vital importance, and whereas the plan of Mr. A. Whitney, of New York, for the construction of such a communication, in its leading features, as well as the favor it has met with from a large portion of the people, disembarasses the undertaking from the sectional and constitutional objections which so often have impeded internal improvements. Therefore,

Resolved,—That we highly approve the great fea-

tures of Asa Whitney's plan for the construction of a railroad from Lake Michigan to the Pacific, and that we earnestly recommend its immediate adoption to Congress.

Resolved, That a copy of these resolutions be transmitted to our U. S. Senators and members of Congress from this district.

Mr. Lee then moved that so much of the report of the Committee as conflicts with the above report, be stricken out. On this question the vote was a tie, and of course the motion failed.

This resolution was then introduced and passed:—

Resolved, That the report of the select committee be accepted by the Chamber; but that in lieu of the conclusion arrived at by the committee, the above resolutions be adopted as the sense of the Chamber.

The Chamber then adjourned;

And for all the light it has thrown upon the subject, we are just as wise as when we commenced reading the report; not quite so well off, however, for such is the confusion of ideas in that part of the report which proposes to give the opinion of the committee, we confess ourselves a little bewildered in our attempts to decipher its meaning. We expected something different from this stereotyped unmeaning and wholesale approbation of the plan, when it is considered that history does not furnish a parallel to the vastness of the work proposed to be executed by a single individual. We had a right to expect that gentlemen occupying so conspicuous a position would take up and examine this subject in a manner worthy of it; in the same manner that they would any enterprise in which they are proposing to embark—to see whether it can be accomplished by the means proposed, or whether the end to be gained will justify the outlay. That instead of resorting to this natural process they should endorse in blank, as a "matured scheme," that of a person, who does not profess to be a competent judge in these matters from any previous education or training, who has not summoned in support of his views the opinion of those persons, who from such education and training, are alone capable of maturing and presenting a plan that shall be entitled to confidence—a plan which, in itself, contains admissions and statements which constitute a perfect *felo de se* to the whole scheme—is to us marvellous. That it should find such ready approval by public bodies before it has secured the sanction of a single engineer of standing among us;—and which, we have no hesitation in saying, no engineer would hazard his reputation in approving, is a good illustration of our credulity.

But even supposing the construction of the road possible on Mr. Whitney's plan, is there any probability that it would be constructed? Not the slightest. He gives government no guarantee that he will build it. He may abandon it when he chooses, and get one half of the sixty miles of the land set apart as fast as he goes. Now, it requires no argument to prove that the lands nearest to either terminus of the road are much the most valuable, and that they become less and less so as you leave these points. The cost of building the road also increases very rapidly as you leave the starting points. All the timber for the first 12 or 1600 miles of the eastern part of the road must be transported over the whole length of this line. Now if the lands can furnish sufficient means to build the whole road, those on the first 3 or 400 miles must be worth three or four times the cost of the road for this distance. The great value of these lands above the cost of the road running through them, must be looked upon as a reserve fund to build it through that section

where they are of less value, and the cost of building very great. Up to a certain point, therefore, by building the road he is accumulating means to carry it through that portion of the route which can furnish but little or no aid to it. When he leaves this point, he then begins to exhaust this reserve fund; so that the whole increased value of the lands set apart may be required for the ultimate completion of the road. Now will he push the road further than that point, beyond which he will exhaust the fund he has thus accumulated? He is under no obligation to do so. If he does, he will, from motives of benevolence and patriotism, and a desire to benefit his fellow man, be content to sacrifice his time and a fortune which he has in his grasp for these laudable objects. Such examples are too rare to lead us to believe that his will prove an exception. Such transcendent benevolence is not indigenous in New York soil. We do not believe that Mr. Whitney expects to lose one cent in the prosecution of his road if he obtains the privilege of commencing it, nor do we believe he would go one inch further than he finds it for his interest to proceed. He would undoubtedly locate the road for a few hundred miles in either end. He would take immediate measures to ascertain what would become the great commercial port of the Pacific. By running his road fifteen miles either north or south of this point, and building ten miles, this would give him the privilege of appropriating to 30 miles of country contiguous to the best port on the Pacific. Are the people of this country prepared to throw into Mr. Whitney's hands their best seaport for ten miles of railroad which may not be worth one cent to them when completed? We will believe no such thing. We think that upon a little examination they will see that in Mr. Whitney's proposition the advantage is all on his own side, and that his plan places it in his power to make an enormous speculation out of government, without any risk or liability on his own part, or any corresponding advantage on theirs.

"But" says Mr. Whitney, "government can lose nothing, even if I should build only a portion of the road, and receive thirty miles of the land as far as I go. The thirty miles it retains is made much more valuable by the road, than the whole would be without it. Therefore I may be well permitted to try the experiment, because if I fail, nobody is the loser." Now as far the Pacific terminus is concerned, we have shown that government may lose largely by granting him what he asks, and what it loses he gains. But for the sake of the argument we will admit that on the eastern end of the route, in case of failure on his part, the lands retained by government on the line of the road as far as it extends, would be made as valuable as the whole would be without it; and that consequently it would lose nothing by allowing him to undertake his experiment. The conclusive answer to this is, that if government is to adopt a system of railroad construction to increase the value of her wild lands, it is its duty to make the best bargain it can. If one hundred miles of road can be built for a strip of land fifteen miles wide, there is no reason why Mr. Whitney should have thirty miles for the same service. Government should adopt the same policy that it pursues in similar cases, let out the contract to the lowest bidder, and drive the best bargain it can make.

Before we had thoroughly examined Mr. Whitney's plan, our general impressions were enlisted in favor of it as strongly as any person's could be. We were, as every body else is, impressed with the

importance of opening a railway communication across the continent. We believed that the public lands should be made to furnish the means, if possible; and taking for granted the various propositions laid down by him, the conclusions to which he arrived seemed plausible enough. We now feel satisfied that the favorable opinion entertained by the public for it, rests upon no better foundation than did our own, and we are as fully satisfied that a careful examination into its merits will impress it as strongly with its impracticability as it did us.—Believing it to be entirely impracticable, we feel it our duty to state our conviction and do what we can to prevent government from embarking in a scheme which will involve them in a mortifying failure, and defeat for years the very object it is seeking to accomplish.

Remarks on Patent Inventions.

[A very able article on the Progress of Mechanical Invention is given in the last number of the *Edinburgh Review*. It is a valuable exposition of the mania that has begotten many persons for taking out patents for the most perilous inventions, founded upon gross ignorance of the common principles of mechanics. We are induced to transfer to our columns a lengthened abridgement, of the paper, in the hope that it will in some measure arrest the folly of inventors, and prevent many artful scheming parties palming upon the public pretended inventions, for the purpose of getting up a company and duping the subscribers out of thousands, for a patent that is not worth a straw.]—*C. E. and A. Journal*.

The Review very properly observes that—
"The simple perusal of their own specifications aided by a very moderate degree of scientific knowledge, will suffice to prove that, nine times out of ten, all the labor and expense that have been lavished upon the production of these cunningly devised engines could result in nothing but total failure. Nor do the inventors appear to profit by example. In spite of the abundant warnings held out to them in the fate of their predecessors, they persist in adopting the same inefficient means, the same defective construction; or in hopeless attempts to extort from some natural agent the performance of tasks for which it is manifestly unfitted. Nay, the identical mechanism, that has broken down a dozen times in other hands, is once more made the subject of new patents, by men who are not only ignorant of the simple scientific principles which would have taught them their folly, but who do not know the fact that the selfsame ideas have long since been worked out, and abandoned as impracticable.—Without skill to shape their own course, they cannot perceive the scattered debris that might warn them of impending shipwreck. It is credible that ingenious men, who have seen or heard of the suspension tunnel, and the electric telegraph, should still waste years in search for the perpetual motion? Yet such is the fact; and one such machine, at least, may even now be seen in London, by those who have more faith than knowledge, pursuing its eternal revolutions.

In the majority of instances, we apprehend that these inventors are but little acquainted with the practical details of the branches of art or manufacture whereupon they exercise their ingenuity. They attempt to do better than other men, things which they do not know how to do at all.—And if, perchance, some remark be hazarded as to their want of experience, they consider it sufficient to reply, that A. K. Wright was a barber, and Cartwright a clergyman; that Sir William Herschel taught music before he became the celebrated astronomer; and Sir Michael Faraday passed the earlier years of life in practising the handicraft art of bookbinding.

Considering that the state of the law renders the privilege of a patent both expensive and difficult of attainment, and that the whole cost, in addition to that required for completing the invention, must be incurred before any benefit can possibly be derived;—it becomes an inquiry of some interest to trace the motives that led men, many of whom are sufficiently needy and busy already; to embark upon enterprises so hopeless. One chief cause may, perhaps, be detected in that prosperity to gambling which is so

unfortunately so prevalent in every stage of civilization. In literature, as in manufactures—among members of the learned, the military, and even the clerical professions, as among mechanical inventors and merchant adventurers,—the reward of industry are divided into great prizes, and blanks. Success admits the aspirant within the dazzling circle of wealth and fame; failure condemns him to oblivion, and too often to penury. Whatever may be the effect upon individuals—and to him who has aimed high, even failure is not without its consolations—there can be little doubt, that in a national point of view the results are advantageous. The general standard of excellence is raised. When more men "dare greatly," more will achieve greatly. A large amount of talent is allured to engage in active careers, and to endure in patience their inevitable fatigues and disappointments; while from time to time, discoveries and works of magnificent novelty and utility are contributed as additions to the stores of national wealth.

Abstract science, until a comparatively recent period, was the almost exclusive occupation of all men claiming to rank among the "sect of the philosophers." With the brilliant personal exception of Watt, they appear to have considered it beneath their dignity to carry out their learned theories into any practical or profitable employment. Great mechanical ingenuity they no doubt displayed; but it was devoted to the construction of instruments adapted to scientific research, some of which, it is true, have since been found of utility to the general public. A few investigations were diligently prosecuted which promised to be of national benefit, such as those relating to the longitude, chronometers, and the lunar theory; but they were entertained rather as favorite scientific puzzles, inherited from past generations, than as problems whose solution would prove vast commercial good. Davy's safety lamp was almost an exception, at the time it appeared: and people wondered to hear that Herschel had made anything in the vulgar way of money by his telescopes, or Wollastam by his platinum.

The "curiosities of the Patent Rolls" would furnish materials for a copious chapter in the same work devoted to the exhibition of the eccentricities of intellect. Even the titles affixed as labels to a multitude of inventions suggest very curious reflections. In the list of patents registered during a part of 1846-47, we find, along with a family of contrivances for personal and household uses, one for an "anti-emergent rat-trap;" others for "improvements in bedsteads,"—in pianofortes, saddles, and pen-holders; for "a new fastening for shutters;" or securing corks in bottles; and for "certain improvements in the manufacture of spoons." Articles of dress supply their quota. We have improvements in "sewing and stitching;" "a new mode of applying springs to braces;" improvements in "hats and bonnets;" an "improved apparatus to be attached to boots and shoes in order to protect the wearer from splashes of mud in walking;" and along list of inventions connected with the application of gutta percha.

It is a theory rather in favor with inventors, that many of the most brilliant discoveries have been made by accident; and indeed the examples are sufficiently well known, of apparently fortuitous occurrences giving birth to very wonderful realities.—But if we could inquire more accurately, we should probably learn that the lucky accident had but set in motion a certain train of thought in an already prepared mind; while by far the majority of cases exhibit to us the new discovery elaborated by reiterated trials and improvements from its rude original. A word dropped in casual conversation suggested an idea to the mind of a clergyman (Cartwright) of practical and benevolent tendencies; which, under the influence of contradiction, became hotstrong enough to absorb all his energies for the production of a power loom. On the other hand, we hear of a practical manufacturer (Radcliffe) becoming convinced that it was possible and desirable to effect a certain operation by machinery instead of manual labor; and shutting himself up with workmen and tools for many months, until he emerged from his seclusion with a warp-dressing machine, to testify to the success of their prolonged exertions.

Even the simplest looking contrivance require knowledge, especially mathematical knowledge, of no ordinary degree at every step. The mere calcu-

lation, for example, of the best form to be given to the teeth of wheels, which are intended to transmit motion reciprocally, requires a process of analysis beyond the competence of ninety-nine in the hundred even of educated men. In more primitive stages of the mechanical arts great nicety was not required. The cogs were then rudely notched in the peripheres of the wooden wheels by a saw or chisel. But now that more perfect workmanship is necessary, the mechanist must form the surface of the teeth into such a curve, that they shall roll instead of rubbing on one another, as they successfully come in contact, and the friction and wear of material be thus reduced to a minimum. It is true that many of these calculations are already prepared and published in tabulated forms, and therefore the inventor is not called upon to calculate them for himself.—but few can hope to become successful improvers, who are not at least competent to understand their nature, and able to determine the particular points of every new contrivance where such considerations become important.

Were it not that no exercise of tyranny would be more fiercely resented than any attempt to interfere with the true born Englishman's privilege to throw away his time and money at his own pleasure, we could suggest the appointment of certain boards of examiners, whose approval should be first secured before any invention, purporting to be novel, could be admitted to the expensive honors of a patent.

A more popular suggestion has been made, that every patentee should be required to deposit in some public museum an accurate model or specimen of his invention; which would thus prove highly useful as an object of interest and instruction to others, as well as by rendering more easy of determination any litigated question of priority. We should anticipate this further advantage from,—the attempt to construct his model would often leave the inventor self-convicted of the inutility of his scheme and save him much disappointment. Even the preparation of an accurate drawing often has a salutary effect. Mr. Babbage relates that in the constructing of his calculating machine, not one single portion of the works, although these were of extraordinary complication, required an alteration after it was once made, owing to the admirable care which had been bestowed upon the drawings.

The *liminary principles* (by which term we propose to specify everything, whether quality or accident, which tends to limit our progress towards perfection) may be divided into two great categories,—including, first, those derived from the natural properties of matter; and secondly, those arising from the construction or arrangement of the mechanism necessarily employed. The high importance of the former class is at once manifest. Difficulties which arise from construction may be overcome or eluded; but the task is very difficult where we find that Nature herself raises the barrier in our path. Man has succeeded in rendering almost every quality of every various form of material substance available for some purpose of utility. On certain occasions only, and for certain purposes, some one or other of these qualities will be found to stand in the way of his success.

Chemistry has gone far towards establishing the hypothesis that all natural bodies are susceptible of assuming three forms—the solid, fluid, and gaseous,—according to the degree of heat by which they are effected. At all events, it is certain that heat exercises, in various proportions, such an influence on the constituent atoms as to destroy or diminish their mutual attraction; and even when the mass does not subside into fluidity, it loses its strength and cohesive properties, and becomes disintegrated. The uses to which this property of matter have been applied are infinite. Let us see how it may become a *liminary principle*.

It is supposed that the possible heat of a burning atom (in which of course we shall find the theoretical limit) is very far above the highest known temperature attained in our furnaces; and it would consequently follow that we might more nearly approach that limit by varying the arrangement of the fuel and the supply of air for combustion. This has been accordingly done, until we have found our progress stopped by the impossibility of discovering any substance whereof to build our furnaces, which will bear the heat. Porcelain, firebrick, and plumbago, in various combinations are

adopted; but they either crumble or sink down into a pasty mass, as the fire is urged. The qualities of matter itself here act as a complete *estoppel*; and if we would experimentalize further upon the phenomena of caloric, we can operate only on a minute scale by means of the gas blow-pipe, or the heated arch evolved from charcoal points interposed in a galvanic circuit. But for this limit, many useful purposes might be accomplished, by the mutual actions or changed forms of material bodies when subjected to the intense action of heat. For instance, in the case of platinum, we might then separate it from its ores by the ordinary methods of smelting and fusion; in place of being compelled to adopt the laborious and costly process of solutions in acids. The steam-engine offers an example nearly parallel. The power of a steam-engine depends primarily upon the area of surface exposed to the action of the fire, and the intensity of the fire itself. In marine and locomotive engines, where space must be economised, the practical limit is fixed only by the degree of heat; and this, of course, must be kept below the utmost limit which the material of the boiler furnace will endure. As yet, there has not been discovered any material better fitted for this purpose than iron; and we have made our fires as fierce as the melting point of iron will permit: even now, the fire-bars are destroyed even upon the first journey.

Farther than this we obviously cannot go, so long as we use water for the power-producing agent. Attempts have however been made, to conquer the difficulty by taking advantage of some other properties of matter in its relation to heat; based upon the fact that the "evaporating point"—that is, the degree of heat at which fluids expand into vapour—is found to differ considerably in different liquids, just as does the melting point of solid bodies. It would therefore appear probable that, by filling the boiler with alcohol, which boils at 173°, or with either boiling at 96° Fahrenheit, the tension of the vapor and consequent power of the engine, could be increased without increasing the heat of the furnace. As both of the above named fluids are expensive, it was first requisite so to contrive the machine that no loss should be experienced, but the whole vapour be recondensed and returned to the boiler. For this purpose a variety of ingenious contrivances have been suggested, the earliest of which, and one perhaps as effectual as any other, was patented by Dr. Cartwright, in 1797; while new forms of mechanism, with the same object in view, are even still appearing on the patent rolls from time to time.—Whether the ingenuity of man could do, has probably therefore been done: but the practical utility of all these contrivances was destroyed by the influence of other properties of matter altogether overlooked, although of necessity involved in the question.

To be continued.

The Portland Company.

We invite the attention of railroad companies and all parties wanting Engines, Cars or other machinery to the advertisement of the Portland Company in the present number of the Journal.—From the Portland Argus we take the following account of it:—

PORTLAND COMPANY.

The stockholders of the Portland Company held their annual meeting at their works on Tuesday, the 10th inst; the attendance of stockholders was very large.

The reports of the Directors and Treasurer were read by John A. Poor, Esq., President of the company.

We invite the attention of our readers to the report of the Directors of this company, in to-day's paper. It is drawn up with evident cautiousness, and may be relied on as a true statement of the affairs of the corporation.

It is creditable to the officers that they have succeeded, in spite of the heavy pecuniary pressure of the past year so well.

The Portland Company is the largest experiment in home manufactures ever undertaken in this city. The result shows what can be done by well-

directed enterprise. Portland may yet become an important manufacturing city, if our capitalists will but turn their means in that direction. We ought to be the great market of the state for all those articles now supplied by Boston and New York; and in fact we are rapidly tending to that desirable point.

The report contains suggestions and arguments upon the general subject of home productions worthy of the most careful consideration of the people generally.

The reports were unanimously accepted. The stockholders made choice of the following gentlemen as Directors for the ensuing year: John A. Poor, George Warren, J. B. Cahoon, Chas. Jones, A. W. H. Clapp, Horace Felton, T. R. Jones.

The board is the same as last year with the exception of T. R. Jones, Esq., who takes the place of John Fox, Esq., who declined. Mr. Poor has since been re-elected President of the board.

We quote the following extracts from the report of the Directors above referred to:—

"It is a fact worthy of note, in speaking of the progress of this enterprise during the unusual pressure in the money market, that very few shares have been disposed of in the market, and few, if any, at a sacrifice.

And in this connection, we take pleasure in saying, that the Treasurer has been able to meet all the engagements of the company without any forced sale of stock, or the payment of a single dollar for extra interest.

The company have turned out from their works, 10 Locomotive Engines, 9 Passenger Cars, 3 Mail Cars, 22 Earth Cars, 30 Platform Cars, and 40 Box Freight Cars, and a steamboat and stationary Engine, and a large amount of work in various forms, including repairs for the Atlantic and St. Lawrence R. Co., castings, and other descriptions of manufacture.

The car department has turned out work to the amount of \$41,064 93—the Engine department, \$181,603 70. Besides these amounts, there have been turned out from the Foundry over 150 tons of chairs, and a large amount of other castings, not charged to either the Car or Engine department.

The permanent investments of the company have cost—

Real Estate, wharves and bridges.....	\$12,628 29
Buildings.....	35 447 36
Tools.....	33,588 59

Total.....\$81,665 24

There have been expended during the past year, on

Real Estate,	\$1,185 74
Buildings,	2,369 99
Tools,	7,805 44

\$11,361 17

Taking into view the extent and favorable location of our real estate and buildings, and the approved pattern and workmanship of our tools, the Directors are of opinion that a more favorable investment for this branch of manufacture could not now be made; nor can any similar one more favorable be found in any part of the country. With a new Engine, soon to be put in operation, (now in progress in the shop) we shall have the means of executing readily orders for work, equal to any demand likely to occur for some time to come."

Some Engines from this shop recently passed through this city on their way to Ohio.

Horace Felton is Superintendent of this Company, and

James C. Churchill Treasurer, Agent and Clerk.

Michigan Southern Railroad.

The following gentlemen have been elected Directors of the Southern (Mich.) Railroad Co: George Bliss, Esq., of Springfield, Mass, President; Charles Noble of Monroe, Secretary; Joel Rathbone of Albany Treasurer; Elisha C. Litchfield of Detroit, Asst. Treasurer, and Charles Butler of Newburgh,

George Bliss of Springfield, Mass, John Stryker of Rome. N. Y.; Joel Rathbone of Albany, Edwin C. Litchfield of New York, were appointed Finance Committee, on whom were devolved the executive duties of the Board. Two parties of engineers have been engaged for several weeks in surveying the road for its extensions west-ward, one between Hillsdale and Coldwater, and the other in Indiana. Arrangements were made at the same time looking to the extension of the road to the pier at the Lake of Monroe.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON, Superintendent.

JAMES C. CHURCHILL, General Agent and Clerk.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO., No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO., Iron Merchants,

Schuykill 7th and Market Sts., Philadelphia. 1y33

August 16, 1849.

Extension of the Baltimore and Ohio Railroad.

Proposals are invited for the Graduation and Masonry of the part of this road not already under contract between Cumberland and the Tygart's Valley river—a distance of about 103 miles. The number of sections now to be let will be about 58; of which 23 occur between Cumberland and the mouth of Savage River—18 in the glades, and the remainder on Raccoon and Three Forks creeks. The work will generally be moderate, although there are a number of sections worth the attention of contractors accustomed to heavy jobs.

Specifications and plans will be ready at Cumberland, on and after the 27 of August current. The proposals, addressed to the undersigned, will be received at Cumberland up to Saturday the 15 of September inclusive. Further information may be had at the Company's Office in Cumberland. Full testimonials will be required from those unknown to the undersigned.

By order of the president and directors.

BENJ. H. LATROBE, Chief Engineer. August 9, 1848.

For Sale.

A TURN TABLE, thirty feet in diameter, made by Aldrich of Worcester, nearly new, and in good order, will be sold at a low price, enquire of

JONA. EDWARDS, President.

Troy and Green bush Railroad, Troy, New York.

July 28, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be cash, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors, C. CROZET, Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

Samuel Kimber & Co., COMMISSION MERCHANTS

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite A Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc. July, 27, 1849.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13-18-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.

2. For the construction of the connection of the Company's canal with the James River at Cartersville.—This work will consist of a timber dam across James river, the excavation of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.

3. For the construction of the connection of the Company's canal with the James river near new Canton.—This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.

4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.

5. A wooden bridge across James river at Bent Creek 670 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the tide water connection and Mr. John Cooty, the engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23d of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN,

Chief Engineer J. R. & K. Co.

Richmond, July 18, 1849.

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; *Deeds, Conveyances, Agreements, Assignments, etc.* Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall St.

Situation Wanted,

AS an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

LEWIS BURYER,
64 Avenue B, New York.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
NO. 1 NEW STREET, NEW YORK.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works, Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
65 Broad street.

New York, June 1, 1849.
The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by 1 Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsberrie.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will be prompt attention. **J. F. WINSLOW, President** Troy, N. Y.

ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L. Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—**Curtis & Hand,** 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.

All fit to re-lay. For sale cheap by **PETTEE & MANN,** 228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

¾ Round and square, to 6 inches.
¾ Flat " " 4 "

Ovals, half-ovals and half-round.
Hoop, band and scroll iron.

Nail plates, superior charcoal Horse shoe,
Iron, sheet and Boiler iron,
Tire iron for locomotives.

Railroad spikes,
Pig iron of superior quality for chilling.

do. for foundry purposes.

For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street.

Sole agent for the New Jersey Iron Co,
June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO., 22 South William street, New York.

February 3, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO., 45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN, 41 Broad street.

March 29, 1849. 3m.13

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md.,

Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.*
Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN, Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
100 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catoctin " " "
250 " Chikiswalungo " " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.
GOODHUE & CO., 64 South street

New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent, Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at fact prices, of **Erastus Corning & Co Albany;** **Merrill & Co.,** New York; **E. Pratt & Brother,** Eastment Md

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS, FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER, Patentee.

28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship **Hendrick Hudson,** from London, made by **Billingsley, Mial & Co.,** and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2 1/2 feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON,

5 1/2 Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE, a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y, at Beaver Meadow, Pa. 20tf

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY, Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS, Reading, Pa.

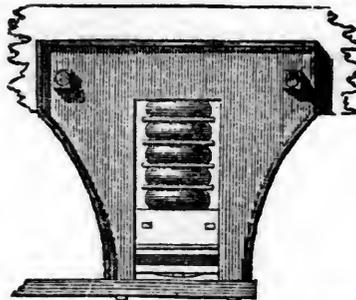
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton. May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by the parte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. Their patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so; and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE, 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

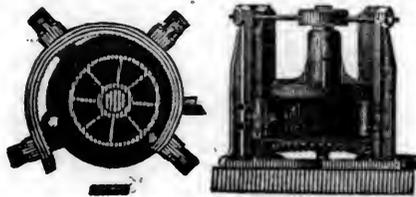
2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

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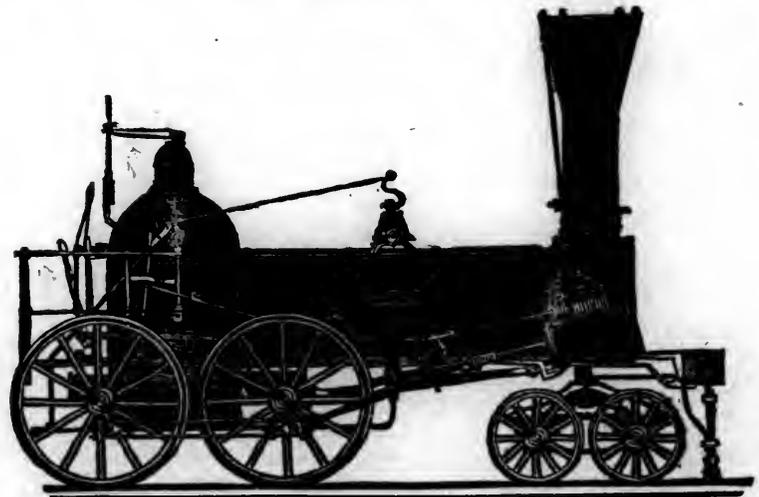
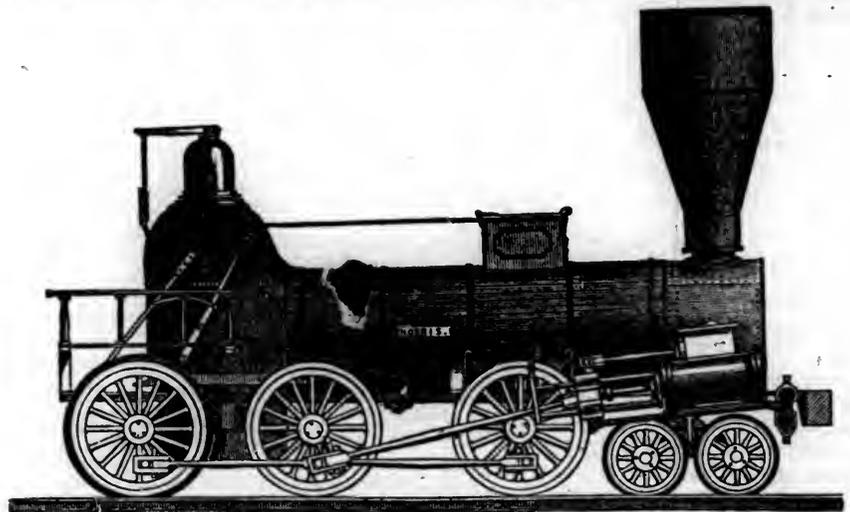
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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, August 25, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 513.

NEW YORK

The Orange county mining district covers a surface from seven to nine miles wide, in a northwest and southeast direction, and about twelve miles long from the New Jersey State line towards the northeast. The Ramapo river and valley passes in a southerly direction through the centre of it, separating it into two portions. The eastern contains the mines, that lie in the western slopes of the Dunderberg Mountain, and the western those bordering the metamorphic limestone and slate formation.—They are all contained in the granite and gneiss rocks, generally ranging in a NNE. and SSE. direction, which is the course of the great belt of primary rocks, as well as of the ridges in which they lie. Variations, however, to a north and south, or northeast and southwest direction are not unusual. The ore occurs in immense stratified masses, like any other rock of igneous origin, or it lies in beds inclined between the layers of gneiss. What would

be critically defined a vein, is not found here, unless the strings and leaders of ore from the great deposits into the adjoining rocks may be so considered.—But I am inclined to believe the nice distinction between beds and veins is not here applicable—that as there is no question concerning the origin of these ores—that there is no more doubt as to their being rocks of igneous intrusion than that such is the origin of trap rock—so whether the injected matter happened to flow along between the strata of gneiss where there was the least resistance, or filled new channels forcibly opened across these strata, we have no reason for designating one of these deposits by a name implying a limited quantity of ore, and the other by a different name significant of its connecting with inexhaustible sources of it. Prof. H. D. Rogers, in his account of the same features in their continuation in New Jersey, considers all the deposits as veins injected through the gneiss, after this rock had received its present inclined position. The grounds, on which he bases this conclusion, are the great irregularities in the thickness of the same vein, sometimes swelling out into bunches 18 to 20 feet wide, and then suddenly contracting to the smallest dimensions again. This is a peculiarity of veins, not of beds, properly so called, which are only included strata. Then, too, the proportions of ore and gangue in the veins vary continually, and masses of the wall rock frequently occur included in them. I have observed also of these mines, as well as of those west of Lake Champlain, that the deposit of ore is frequently covered by a horizontal 'cap' of the same rock, which surrounds it; that this cap completely cuts off the vein over considerable surface, and that sometimes the same vein is thus cut off several times at different elevations in the mine, the caps forming horizontal platforms of rock, which are altogether irreconcilable with any theory of these deposits being included strata.* When the term bed is used therefore in speaking of any of them, it will not be in its strict limited signification.†

* I have been told that near Rockaway, in New Jersey, one of these caps was thirty feet thick;—a shaft carried through it struck the vein again in the line of its regular course.

† The subject is obscure, and I do not know that it will be made any more clear by the following extract, translated from the work of A. Burat—*Geologie Appliquee*, p. 131:—"Repositories often termed bed-veins (filons-couches) to designate either their apparent conformity with the stratification, or their interpolation between the two classes of rocks, and

The only ore of these mines is the magnetic oxide of varying proportions, of peroxide and protoxide of iron;—of the former generally somewhat more than 69 parts in 100. It is for the most part of rather compact structure, sometimes granular, but very rarely in such coarse grains as is common with many of the ores of Clinton and Essex counties. Very fine crystals of the ore in different modifications of the octoedron are common, and sometimes they are found in the form of a cube. These crystals, the purest form in which any iron ore occurs, contain 72.18 per cent. of iron; the remaining 27.82 parts being oxygen. If there were such an ore as a pure protoxide, it would contain 77 per cent of iron; but 72 per cent. is the most ever found. If assayed in the dry way seem sometimes to give more, it is because the button is 'cast iron,' which always contains some carbon and generally other foreign matters. The impurities in the mass of the ore reduce its percentage to from 50 to 63 of cast iron, which is its yield in the blast furnace. With these impurities the ores smelt better, than they would if free from them, as such would require large additions of similar matters to bring down their percentage to about 50 of metal in the charges of mineral substances; and even then a furnace never works so freely, as when these foreign matters are already combined with the ore. The weight of the ore when pure is about five times the weight of water, which would give 312 lbs. to the cubic foot. It may be calculated at 300 lbs. or about three and a half tons to the cubic yard.

The gangue of the ore is quartz, with which it is almost universally mixed, and with which in its pure state, as silicic acid or silica, it is not unfrequently chemically united. In either case this intimate mixture of siliceous matter is highly favorable to the easy reduction of the ore in the blast fur-

consequently a real conformity with the shape of the igneous masses whose contour they follow, belong almost all to the class of irregular repositories. They have in fact neither the fixed bearing nor the continuity of true veins, towards which, however, they tend to pass. Like veins they have a determined direction and dip; but the continual irregularities of the roof and floor, which have no real parallelism, the nature of the gangues, in fine, the inner structure, rarely symmetrical, refer them rather to the class of protruded masses." Of these the author gives examples of some that are inexhaustible and of others that are limited in extent, and recommends the subject to the most patient and profound study.

nace. If not present in the ore it must be added in some form as a flux, either in sand, siliceous clay, quartz, or siliceous limestone. These melting separately from the ore, the action of each upon the other to produce a glassy cinder and clean globules of cast iron, cannot be so ready, as when the particles of flux and ore are found combined in the same mass. Silica, then, an essential element in the reduction of these ores, is their common gangue.

Sulphur in the form of iron pyrites or bisulphuret of iron is very generally present, often in such quantity as to destroy the value of the ore. Its effect is to make the iron *red-short* or brittle when hot;—and so powerful is it, that even a mere trace of it in bar iron is sufficient to affect its quality, when in other respects the iron would be of superior character. Karsten found iron would not weld, that contained only 31 parts of sulphur in 100,000 of iron. But even this substance so powerful to do harm, is not, I imagine, without its use in these ores. Many of them are exceedingly hard and of close texture, strongly resisting the ordinary means of reduction, which, to be rapid and effectual, requires that the materials should readily separate and mix together.—The iron pyrites is subject to decomposition on long exposure to the air or to the roasting process; and being diffused through the mass of ore, it leaves this more porous and open or crumbly and loose. Ores of this character, too sulphurous to work when taken from the mine, have after an exposure to the weather for years, proved of very superior quality. Roasting is not quite so effectual, but it considerably diminishes the percentage of sulphur, and the ores may then be mixed in some proportion with others of different qualities.

Phosphoric acid is rarely absent from these ores, though its percentage is as rarely given in the published analyses. According to Karsten, there is no iron, which does not contain phosphorus. Mr. Hayes also informs me that such is the result of his researches, and farther that it is in no instance united to the iron, but to the metallic bases of the earths contained in it.* If its effect were as injurious as that of sulphur, no country, so to speak, observes Karsten, could furnish strong iron. Its property is the reverse of that of sulphur, the iron, which contains of it more than six parts in 1000 being subject to break by blows when cold; and with one part in 100 the bar cannot be bent cold at a right angle, and is then called *cold-short*. Three parts in 1000 make the iron harder but do not weaken it.† It has generally been considered that all the phosphoric acid in the ores and fuels was converted in the blast furnaces into phosphurets, and in these states combined with the iron only. But Berthier has met with phosphoric acid in the scoriae, from which iron containing phosphorus had separated, which experiment he considers conclusive against the received opinion.‡

* A paper read before the British Association for the Advancement of Science, in September, 1837, by Dr. Thompson, gives analyses of six varieties of cold blast iron and of the same number of hot blast iron, in which phosphorus does not appear as an element, though besides iron the other substances estimated are copper, manganese, sulphur, carbon, silicon, aluminium, calcium and magnesium. The absence of phosphorus was a subject of remark and surprise by members of the association. The paper may be found in the xxxiv vol. of the American Journal of Science. In 14 analyses of charcoal-iron and 7 of coke-iron by Berthier, phosphorus appears in only three of the former and one of the latter.

† Manuel de la Metallurgie du Fer., vol. 1 p. 155.
‡ Traite des essais par la Voie Seche, vol. II., p. 336.

Ores containing an excess of phosphoric acid may be turned to good account by mixing them with others having too much sulphur. The evil properties of each then neutralize each other, and the result may be a good iron, neither red nor cold-short.

Titanium, in the form of titanitic acid combined with iron,§ is as common an ingredient of magnetic ores as phosphoric acid, and its percentage is as rarely given in the common analyses. This is to be regretted, for it is more important to be certain how much of these two last named substances is contained in the ore, than to know its percentage in iron. They both escape detection unless particularly looked for; and they both are rather difficult to estimate correctly. The sum of the parts making about the whole is no evidence of the completeness of an analysis of iron ore; for the titanitic acid may go in part with the silica and in part with the oxide of iron; and the phosphoric acid with the latter. Analyses of magnetic iron ores, where particular attention is not directed to these substances, can therefore be considered of little value. Titanium is not known to exert any injurious influence upon the character of the iron made from ores containing it; but when these contain a certain percentage of titanitic acid—probably more than eight per cent., they are extremely refractory in the blast furnace; melting easily enough, but chilling in the hearth without separation of the iron from the cinder, and with no flow of liquid cinder. Whether this substance is of any service whatever, I have never been able to ascertain.

A great variety of minerals occur in these veins of iron ore. Next to the quartz the most common perhaps is *hornblende*, which in small quantity may be serviceable as a flux rather than injurious. When in too great proportion it is easily separated, as are the other minerals by stamping and washing;—by which process also the ore is better prepared for the furnace. *Feldspar* and *mica*, the other minerals composing the gneiss, are also common in the ore; and besides these are a variety of the siliceous minerals, which, without being necessary constituents of the gneiss, accompany it and the ores here and in New Jersey and at the mines near Lake Champlain. The most common of these are *sahlite*, *augite*, *coccolite*, and sometimes *epidote* and *serpentine*.

These ores are worked—some open to the day like a quarry; but as most of the beds are only a few feet wide, lying in the hills inclined generally at a steep angle to the horizon, excavations of the width (or thickness) of the ore bed follow down its slope, often extending several hundred feet in length and a hundred or more in depth. Pillars of ore, left for the purpose, and wooden props sustain the roof; but at some of the veins this work has been badly conducted, and the roof has settled down, greatly obstructing all subsequent operations. It is too often the case at our mines in different parts of the country, for the sake of cheap mining for a little while, we sacrifice the permanent value of the property, and perhaps endanger the lives of the workmen. The actual termination of these veins either in length or depth is never found; they are sometimes abandoned in one direction or the other, from the vein becoming poorer in quality or quantity of ore. Still beyond the poor spots they are not at all unlikely to turn out rich again. Where a vein cutting through a hill comes out upon its side, it is well to open it by a level driven in as low as possible; this

§ According to Berzelius: but Rose considers that it occurs as a sesqui-oxide of titanium, corresponding to, and isomorphous with, peroxide of iron.

always affords a free passage for the water, which is often more expensive to raise than the ore itself. As this work requires an outlay, for which there is sometimes no immediate return, it is too often neglected. The expense of mining the ores varies, according to their position and freedom from water, from twenty-five cents to a dollar and a quarter.—To include powder and timbering and raising the water a dollar and a half may be a fairer allowance; but this ought to pay for working the hardest ores in beds no more than five feet thick.

The ores are made use of in some small bloomy establishments and in blast furnaces. The malleable iron made in the former is red-short or cold-short according to the character of the ores used, or it is a very soft tough iron free from these qualities. The pig iron of the blast furnaces is sometimes foundry iron, sometimes forge iron. The former is often the very best No. 1 iron, so that it is used for castings requiring great strength; much of it has been made into cannon, and some qualities of it are in demand for the manufacture of malleable castings. The forge iron also stands well in the market for its particular uses.

The *Greenwood Furnace* is in the northern part of the valley on the northern slope of the Dunderberg Mountains. The power for raising the blast being furnished by one of the streams, which flows down its sides. It is a furnace well provided with hot blast apparatus, kilns and all the modern improvements for making iron. Its ores are the magnetic ores from its immediate vicinity and from the western side of the Ramapo. They produce a superior quality of iron, which always commands the highest market price.

Townsend's Furnace.—This furnace was built about 11 years since, on the Ramapo river. The Erie railroad now passes within less than a mile of its site. The stack is 45 feet high with boshes of 12 feet. The height of the hearth is from 4½ to 5 feet. It is of round form 7 feet diameter at top and 2½ feet at the twerens. The tunnel head is four feet diameter. The blowing apparatus consists of two cylinders 6 feet long and five feet diameter, which are driven by a water wheel of 26 feet diameter, at the rate of 5 to 6 revolutions of the wheel per minute. The blast is carried into the furnace through the twerens at a pressure of 1½ lbs. to the square inch.—Charcoal costs about 6½ cts. a bushel. The magnetic ores from the mines of Mr. Townsend are hauled about 5 miles. They cost for mining only about twenty-five cents; the mine is described to me by Mr. Townsend as covering an extent of 50 acres, over 20 of which, the soil being removed, the surface is seen wholly composed of ledges of the ore. For hauling this ore to the Erie railroad the expense is 75 cts. per ton. Since this furnace was built it has never been out of blast more than six weeks at a time, nor made a blast of less than two years duration, nor more than two years and ten months. Its production is from five to eight tons a day; and the iron is highly esteemed for its superior qualities.

The Erie railroad being now completed to the vicinity of the bituminous coal mines of Pennsylvania, their products may be profitably brought to be used with these ores, when charcoal has become a more expensive item than it is at present. Anthracite too from the northern coal fields of Pennsylvania may be brought over the same road, taken from its intersection with the Delaware and Hudson Canal.

The other furnace in Orange county built by the son of Peter Townsend, Esq., is on the outlet of Long Pond near the line of New Jersey, and but

2½ miles from the Sterling ore bed at the head of the pond, from which it is to be supplied. This furnace, 45 feet high and 14 feet boshes, is intended to run either with anthracite or charcoal. It was built in 1848.

There are several forges on the Ramapo for making bar iron directly from the ore. The following account of the operations at the forge lately belonging to Mr. Dorr of Boston may give some general information concerning this business. Five open fires (bloomery) may make 350 tons of bar iron a year. The ore from the Sterling ore bed, 8 miles distant, costs at the mine \$1 per ton, and \$1 additional for hauling. Two tons make a ton of iron. Charcoal costs only about 5 cents per bushel, and from 175 to 275 bushels are consumed to the ton of iron according to the finish of the bar. The iron much of it is very soft and tough, and has been used in the manufacture of iron in Massachusetts.

H.

A mine of magnetic iron ore near Southeast, Putnam county, and the *Kronkite Mine* in Orange county, a notice of which was omitted in the last number of the Journal, will be described in the next number.

H.

Copper Ores of Lake Superior.
Continued from page 513.

The country around Portage Lake, and thence extending to the Ontanagon river, I have examined only about the heads of Trap Rock, Salmon Trout, and Misery rivers. All the small streams flowing into the lake within the above limits take their rise on the northern slopes of the trap ridge not more than ten or twelve miles from the lake. The ascent to the summit is very gradual, and rocky precipices like those which characterise other portions of the ridge are rarely found. For this reason good exposures are wanting for the discovery of veins; and though their existence is rendered certain by finding abundance of fragments of veinstones, including particles of copper in the streams, and even lumps of copper also, the great depth of soil and superficial matters will long continue to conceal the metallic treasures beneath. This district is remarkable for its fine growth of timber, both of hard wood and pine; indeed, almost every where on the trap range, at a distance from the less fertile lands of the lake, are found white pines of the largest size scattered among the beautiful groves of sugar maple and birch. The maple flourishes with unwonted luxuriance on the rich soil, which overlies the trap rock; and its wood attains a solidity and beauty not known in the same tree of warmer latitudes.

No mines of importance have been opened in the region except about the heads of Fire Steel and Flint Steel rivers. This seems to be, from the accounts I have gathered, a region of unusual promise. It is already occupied by several companies, which, however, for want of capital, or for being interested in other localities, have hitherto done little to develop it.

The two most prominent mines are the *Algonquin* and *Douglass Houghton*. The few data I have of these were given me by J. R. Grout, Esq., a gentleman well known for his extensive acquaintance with the mines of this region; and in whose judgment and opinion on all points connected with them much confidence is justly placed.

The *Douglass Houghton* mine is situated about 16 miles from the lake, on the head waters of Fire Steel river. The company have purchased 200 acres, and the whole amount of their expenditures on this and other locations has been about \$20,000;

only \$1800 of which was for the mining operations on this tract. The vein is a quartz and calcareous spar vein, two or three feet wide. It pursues a parallel course with the ridge instead of across it, as do the veins on Keewena Point, and dips about 65° towards the NW. It is included between bands of amygdaloid, whose position conforms to that of the stratified rocks, which repose upon the trap. The line of division between the veinstone and the wall rocks is well defined. On the face of the cliff the vein has been opened in three places: 60 feet below its top a level has been driven in 26 feet, from which 9 tons of ore have been obtained, estimated to contain from 40 to 50 per cent. of copper. The character of this ore is so rich, that in connection with the permanent nature of the vein, great confidence is entertained that the mine will prove to be a very valuable one.

The *Algonquin* mine is two miles and a half northeast of the Douglass Houghton, and 16 miles from the lake. A vein is here exposed on the surface, from which 125 tons of ore have been raised, which is estimated to average about 15 per cent. of copper. Like the vein just described, it runs longitudinally with the ridges, and is included in the bands of amygdaloid, having the same underlay with these. Such is the character of all the veins of this region. Their relation to the including rocks classes them in the same category with the great iron ore veins of northern New York and New Jersey as well as the zinc mines of the latter state, all of which are included between the strata of gneiss-rocks of these districts. In the geological reports of the New York Survey it is left an open question whether these are to be regarded as true veins or imbedded strata of uncertain reliance; and in New Jersey a high foreign authority has inspired with some a doubt as to the continuance of the zinc ores for the same reason. Prof. H. D. Rogers in the New Jersey State Geological Report, however, inclines to regard them in the light of permanent veins; and such facts, as their always having the structure, composition and contents of true veins, with ores scattered in particles and in threads through the wall rocks, leave little room to question their identity with true veins of injection, and consequently their reliability for permanence. This must particularly be the case with veins, whose metalliferous portions are solid metallic masses, and whose repositories are rocks of undisputed igneous origin. I have given farther attention to this subject in my articles on the iron mines of New York and New Jersey, now in course of publication in the Railroad Journal. The present number has particular reference to this subject.

The position of the copper mines now under consideration is unfavorable as regards transportation, being so far in the interior. But as several promising localities are found in the same vicinity, it is not improbable, that when the mines are farther developed, a plank road will be constructed to the lake, for which the even face of the country and abundance of excellent timber afford the most convenient facilities.

H.

Remarks on Patent Inventions.

These regard the relative bulk of the vapor produced from corresponding quantities of different fluids, and the proportion of heat absorbed or rendered latent in each during the process of vaporisation. The calculation is sufficiently simple; and the result effectually annihilates all hope of advantage, either potential or economical, from the ethereal or alcoholic engines. Thus, to convert a given weight of water into steam, 997° of heat are required as what is called "caloric of vaporization." The same quan-

tity of alcohol will become vapor with 442°, and sulphuric ether with only 302°. But to set against this apparent gain, we find that the specific gravity of steam (air being = 1) is .6255; vapor of alcohol 1.603; ether 2.586; and the result may be thus tabulated.

	Caloric of Vaporization.	Spec. Grav. of vapor.	Useful effects of caloric.
Water	997°	.6255	100.000
Alcohol	442°	1.603	8.776
Sulph. Ether	302°	2.586	7.960

The disadvantage of the latter fluids will be farther enhanced by the circumstance that, being lighter than water, a larger boiler will be required to hold the same weight of vaporific fluid:—i. e., a pound of water, when evaporated, will form about 21 feet of steam; while a pound of ether will require a large boiler to hold it, and will only form 5 cubic feet.

Weight is one of the properties of matter which in practice we encounter chiefly as an obstacle of inconvenience, tending to increase friction, to resist motion, and generally to crush and destroy. Meanwhile, the limits of its range are comparatively narrow—that is to say on one side. We can, indeed, rarely a gas until its weight disappears in infiniteenuity; but we very soon find ourselves at the extreme verge of any possible increase of specific gravity. The most ponderous substance known is not quite twenty-two times heavier than water.—And yet there are many purposes for which bodies of greater weight might be made useful. If, for example, closer or deeper search amid the stores of the mineral kingdom should lead to the discovery of some substance bearing the same proportionate gravity to platinum, that platinum does to cork, how many possibilities of improvement would be placed within our power! A thin sheet of such a substance interposed among the keel timbers of a ship, would give stability and other sailing qualities at present unattainable. Blocks of it would afford sure foundations for piers, bridges, and all marine works.—It might then be found no longer impossible to establish a lighthouse on the Goodwinds. As a regulator or reservoir of power—for counterpoises, pendulums, and fly-wheels; for all purposes where percussive force is required; and in steam-hammers, pile-drivers, and shot of long range, the utility of such a substance would be enormous. In each and all of these subjects, we are limited by the limits of specific gravity in our materials.

The "Strength of Materials" is an element that enters into almost every calculation of the mechanist; and it is found to constitute not only an absolute limit to all possibility of advance in certain directions, but also a relative limit universally, when we attempt to reduce beyond certain proportions, the size, weight, and cost of our mechanical erections. Its variations also are extensive both in degree and condition. Some bodies offer strong resistance only to certain modes of attack. Impervious on one surface, they will yield and splinter into laminae under a slight blow upon another. Some will bear pressure to an enormous extent, but are easily torn assunder; others resist the diuulent forces, but crumple under a light weight. A very extensive variety of substances possess a fibrous texture, and are endowed with vast strength to resist a strain in the direction of their length, but are much weaker against a lateral or transverse force. This difference is found to vary to an infinite extent; from that of certain metals where the advantage is only four or five per cent. in favor of the direct resistance, to the vegetable and animal fibres, such as flax or silk, which possess enormous tenacity, combined with most complete flexibility.

The variations in the natural properties of bodies have given infinite scope for the exercise of human ingenuity. In the erection of engineering works, and in a still higher degree in the contrivance and construction of moving machinery, the combination of theory and practice is perpetually exhibited in surprising perfection. By nice calculation of the opposing forces, together with great practical skill in the mechanical details of construction, we can now attain a result in which abundant strength is united with the utmost possible economy of space and material. There is no waste; no addition of useless and cumbrous weight; all irregular strains are skillfully counterbalanced, and the greatest pressure distributed over the points of greatest resistance,

Experience has entitled us to place implicit confidence in the scientific precision of our engineers.—Every day we trust our lives and fortunes, without misgiving, into situations where a slight error in the calculations, or a slight defect in the workmanship, would inevitably lead to some terrible catastrophe. How little do the crowds who throng the deck of a Thams or Clyde steambot, or who allow themselves to be hurried along at fifty miles an hour in a railway carriage, reflect upon the delicate conditions which must have been fulfilled—the complicated mechanical problems which must have been solved, in order that they might accomplish their journey in security. A multitude will gather upon a suspension bridge without fear or danger, although the rods by which the massive roadway and its living freight are sustained appear as mere threads in comparison with the mass they have to support: while, if any one reflects at all upon the matter, it is to assure himself that every possible amount of pressure has been theoretically provided for; and that, practically, every separate bar and joint has been severely tested, so that no single flaw in the material, or defect in the workmanship can have passed without a detection. Fribourg, before the civil war of the Sonderbund had given it a political notoriety, was celebrated chiefly for its wire bridge, hung at an altitude of nearly 100 feet between two summits. "It looks," says a recent traveller, "like a spider's web flung across a chasm, its delicate tracery showing clear and distinct against the sky." Diligence and heavy wagons loomed dangerously as they passed along the gossamer fabric.

The force that enables a suspension bridge to sustain itself is, what we have called the *cohesive* force, and is due, we must suppose, to some variety of the attractive principle among the corpuscular atoms, which causes them to resist a separating or divalent strain. In ordinary bridges and among the usual erections of architects, on the other hand, the pressure to be considered is that which crushes the parts together. To resist this, the piers of the bridge must have strength sufficient to support the loaded arch; and the pillars of the cathedral to sustain the fretted vault that rests upon them. In this case we find that the strength that arises from the cohesion of the atoms between themselves is increased by that due to another quality of matter—namely, its incompressibility. When any solid body yields to a crushing weight, the consequent effect must be, either that its particles are actually pressed into a smaller space; or that, being made to exert a wedge-like action upon one another, the exterior layers are forced out laterally. The addition to a band or hoof will then bring the incompressibility of the atoms more fully into play; and bodies that are endowed with slight powers of cohesion may thus be rendered enormously strong. Indeed we find that fluids, in which the cohesive force is practically at zero, cannot be crushed by any pressure we can exert, provided the hoop or tube that surrounds them be secured. Now the interior atoms of every substance under pressure are more or less thus hooped in and strengthened by the exterior. To the strength from cohesion is added that from incompressibility; and this effect is produced in a rapidly increasing ratio as the sectional area of the body is enlarged. A cube of lead suspended from its upper surface and held together only by cohesion, will break down if larger than 180 feet to a side. If standing upon one side as a base, it might be made of infinite size without danger of fracture from its own weight.

We may conclude, therefore, that the total force of resistance is amply sufficient to answer any call we are likely to make upon it. It is certain, at all events, that we have not, as yet, built up to the strength of our actual materials. Our marble and granite columns will sustain ten times the weight of any edifice the present generation can wish to erect. Or if not, they will use iron. The theoretical limit to the span of our bridges is that only at which the voussours of stone or iron would crumble under the intensity of pressure. The cost and inutility of even approaching to such a limit, will always assign them much narrower dimensions: though large enough, nevertheless, to admit of the accomplishment of that magnificent project—of which the first design is due to the genius of Telford—for spanning the Thames at Westminster by a single arch. Such a work would be worthy alike of the age and the site; and we see no reason why it

should not be undertaken, and completed at least as soon as (supposing promises to be kept in future only as heretofore,) the last stone is laid upon the Victoria Tower. The tubular bridges now in course of erection by Mr. Stephenson, upon the Chester and Holyhead line of railway, will probably remain for many years unsurpassed, as specimens of science and engineering skill.

The hypothesis that the force of cohesion is proportional to the area of section, leads us to the ordinary rule of practice—that as the magnitude is increased, the strength increases as the square, and the strain as the cube of the dimensions. The proportions consequently which offer abundant strength in a model, must be materially altered when the design is executed at full size. When any of the parts are intended for motion a new element is introduced, from the inertia of the moving masses; and thus both the size and the velocity of our machinery are confined within definite limits. To extend these limits, it is often necessary to solve the most complicated problems, of dynamics, and to follow the train of motion through an intricate series of action and reaction. We must simplify and reduce the number of moving parts, and so adjust the *momentum* of the inertia, that the resulting strain shall be neutralised, or reduced to a minimum: and where it is necessary that the direction of motion should be reversed, we must accomplish this object with no such sudden or violent shock as would dislocate the machinery. The difficulty of this attempt in many instances is proved by the heavy motions and hideous noises that accompany the working of almost all newly-invented mechanism, and of the simplest machines found among nations less skilled than we are in the arts of construction.

It is equally unscientific, and almost equally dangerous, to give too much strength to our constructions as too little. No machine can be stronger than its weakest part; and therefore to encumber it with the weight of a superfluous mass, is not only to occasion a costly waste of material, but seriously to diminish the strength of the whole fabric, by the unnecessary strain thus produced upon the parts least able to bear it. This fault is one which is most frequently discoverable in new machinery; and which when once adopted in practice, retains its hold with the greatest inveteracy. It requires no common powers of calculation, and not a little faith, for men to trust to the safety of structures which have apparently been deprived of half their former strength.

There can be no better proof of the difficulties which oppose the adoption in practice of any new principle of construction or configuration, than that exhibited in the history of ship-building. In no creation of human labor was it more necessary to secure the greatest possible strength from the minimum of material; as none were required to possess such vast bulk in proportion to their mass of resistance, or were exposed to more violent varieties of strain and shock, in the natural course of their service.

The men who superintend the public dockyards were often well versed in mathematical science: and were certainly acquainted theoretically with the common axiom, that among right-lined figures, the triangle alone will preserve its form invariable by the rigidity of the sides, without depending upon the stiffness of the joints. Yet none until a recent period, worked out the axiom into its very obvious practical development. For centuries were our ships constructed on principles which caused the whole frame work to be divided into a succession of parallelograms. Every series of the timbers, as they were built upon from the keel to the decks, formed right-angles with their predecessors and with their successors; so that the whole fabric would have been as pliable as a parallel ruler, but for the adventitious firmness given by the mortices, bolts, and knee-pieces. At least three quarters of the available strength of the materials was possibly altogether thrown away. The safety of the whole was made to depend upon its weakest parts; and when decay commenced through process of time or the action of the elements, every successive stage in its advance made the progress more rapid, since the wear and friction increased in double proportion as the fastenings became weak and loose.

Among the properties of matter are some that we may term subsidiary or incidental: qualities which we may be said to discover rather than to comprehend;

and whose agencies are of a secret, and as it were stealthy character, so that we cannot always predict their recurrence or calculate their force.

The fluid and gaseous bodies present many instances of these perplexing phenomena. While investigating the conditions under which solid substances enter into solution; the rise of liquids through capillary cavities; the motions of camphor and other bodies when placed on the still surface of water; the phenomena of crystallisation: the condensation of gases in charcoal; or the inflammation of hydrogen when in contact with minutely divided platinum—in these and similar cases, we encounter on every side a series of anomalies which as yet baffle all our efforts to group the incoherent facts into a consistent theory. For the present, therefore, we content ourselves with the functions of empirics and registrars. We must observe and collect the facts which may hereafter furnish a clue to the labyrinth; confident that when that clue is once seized, every step will not only bring us to some result of practical utility, but will reveal yet another example of the divine symmetry of nature.

The limits that are set to improvement by difficulties of construction, or the arrangement of mechanism, require a very different species of analysis from that which has for its object the properties of natural substances: and the terminal problems are susceptible, in general of merely relative solutions. Seldom may we be able to say absolutely—"So far can we go, but no farther." But we are often able to decide among the great objects for which machines are intended—economy, rapidity, and safety,—how far the necessities of each can be accommodated, so as to produce the result of most advantage. Yet even here your verdict can seldom be considered as final. The introduction of a new material, or the suggestion of a new combination of parts, may at once render easy the improvements that have baffled the ingenuity of man for generations. The history of invention is full of such examples. It would be a curious inquiry to trace how many contrivances have been delayed for years from the mere want of knowledge or skill to execute the works; and obliged as it were to lie fallow until the cunning of the workman could sufficiently correspond with the ingenuity of the inventor. When Hadley first constructed the quadrant, still known by his name, for a long period it was perfectly useless in the determination of the longitude, as the indications could not be depended upon to a greater accuracy than 50 leagues. But after Ramsden had invented his "dividing-engine," the graduation was so vastly improved, that even in the commonest instruments an error of five leagues was seldom to be feared. The minute measurements of angular distances by the micrometer were long subject to similar difficulties. The instrument waited, as it were, for Wollaston's discovery of the means to procure platinum wire so fine that 30,000 might be stretched side by side within the breadth of an inch. The limit which was reached by this discovery was followed by another pause. Then came a new advance, owing to the beautiful invention of an eye-glass composed of double refracting spar, so mounted as to revolve in a plane parallel to the axis of refraction, and give, by the gradual separation of the two rays, a measurement susceptible of almost infinite delicacy.

So in the history of the steam-engine. Boulton and Watt had been long partners, and the theory of his great machine was almost perfect, when Mr. Watt still found that his pistons fitted the cylinders so ill as to occasion considerable loss from leakage. In 1774, Mr. Wilkinson, a large iron-master, introduced a new process of casting and turning cylinders of iron. Watt at once availed himself of them, and in a few months the inaccuracy of the piston "did not any where exceed the thickness of a shilling." The wonderful perfection since attained may be seen in a rotary steam-engine patented within the last few months. The steam-chamber presents a sectional plan, somewhat resembling five pointed Gothic arches set round a circle; the outline being formed by ten segments of circles, all referring to different centres. The piston has to traverse round this singularly formed chamber, preserving a steam tight contact at both edges; and such is the accuracy of the workmanship, that the leakage is barely perceptible.

Steam, as applied to locomotion by sea or land, is

the great wonder-worker of the age. For many years we have been startled by such a succession of apparent miracles; we have so often seen results which surpassed and falsified all the deductions of sober calculation,—and so brief an interval has elapsed between the day when certain performances were classed by men of science among impossibilities, and that wherein those same performances had almost ceased to be remarkable, from their frequency—that we might be almost excused if we regarded the cloud-compelling demon with somewhat of the reverence which the savage pays to his superior, when he worships as omnipotent every power whose limits he can not himself perceive. It is not surprising that inventions, designed to improve the forms and applications of steam-power, should constitute a large percentage of the specifications which are enrolled at the Patent Office. Even in France, we learn that within a period of four years, the following number of patents, connected only with railway construction, had been obtained:—In 1843, 19; 1844, 22; 1845, 88; 1846, 131; total 260. Of these we are told that not above three or four have been carried out so as to realise advantage to the inventors, and all of these were of English origin.

The number of English patents is, of course, considerably greater; but we doubt whether the proportion of successful ones has been at all higher. Ingenious men have never expended their energies upon a subject where the splendor of past or possible success has so effectually dazzled their imagination, and rendered them unable to perceive the great difference between the relative and the absolute limits of possibility. Because science had failed to predetermine the point at which higher performances became impossible, they too often began to consider it superfluous to invoke her aid at all—forgetting that the problems are quite different ones—to decide between the relative merits of two modifications of mechanism, and to define the ultimate capabilities of either. There is no more striking example of this tendency than is exhibited in the controversy between the two great systems of railway traction—the locomotive and the atmospheric. This controversy has already cost the public incredible sums; and has, moreover, been so dexterously managed, that even now, if the money markets were to return to a very possible state of plethora, a plausible prospectus and a new patentee would find it no difficult task to organise another company, and to get subscribed fresh hundreds of thousands towards carrying out an experiment which ought never to have required more than a few months' trial and a short length of working line for its final settlement,—for the principles according to which the experiment must succeed or fail, had been determined long since; and it is a fact equally sad and strange, that among the very numerous patents relating to the atmospheric railway, there is not one that touches upon the real turning point of the question. What was called the "longitudinal valve" or opening, through which was established the connection between the piston travelling within the exhausted tube and the train of carriages, formed the *piece de resistance* for the inventors; and very many and clever are the contrivances we find specified for improving or dispensing with this valve. And yet the valve itself entered but as a subordinate function into the equation by which success or failure was to be determined.—Granting that its construction was theoretically perfect, and all friction and leakage annihilated, the main principle, which depend upon the laws that govern the motions of elastic fluid, was left wholly untouched. The history of science, nevertheless, contained records which should have prevented this mistake. One hundred and sixty years ago, M. Papin, one of the earliest inventors of steam machinery, invented a motive apparatus involving this identical principle, and which, when tried, was found wanting. The machine alluded to was described by the inventor as "an engine for pumping the water out of mines by the power of a moderately distant river." His plan was to erect upon the stream or waterfall a series of force-pumps by which air was to be condensed into a reservoir. From this reservoir a close tube, some miles in length, was to be carried over hill and valley from the brink of the river. It was supposed that the condensed air would travel along this tube, and could be applied at the mine, through appropriate mechanism, to keep the pumps going. M. Papin is said to have tried his

invention upon a large scale at Westphalia; and it is certain that a similar engine was erected in connection with one of our own Welsh mines; and in both cases with equally ill success. The machines at the useful end could never be got into motion. The condensers on their side worked powerfully, but the blast of air at the distant extremity would hardly blow out a candle; and although it had been calculated that the condensation would be transmitted along the tube in less than a minute, it was found upon trial that the slight impulse which arrived at last had been three hours on the road. As a last attempt, the motion of the air-pumps was reversed, and the effect tried of employing an exhausted tube. But this mode proved as inefficacious as the other; and the experiments were finally abandoned.

In the process of weaving by the power-loom we find an analogous example of velocity limited by the broken or altering motion of the acting forces. The rapidity with which the shuttle can be thrown from side to side between the threads of the warp, is limited by the strength of the woof-thread it carries across. When the strain is so great as to cause more than a certain average number of breakings, the net product of the machine will be increased by working at a lower velocity. By a recent improvement, the shuttle is made at every vibration or 'shot' to commence its motion slowly and increase in velocity as it proceeds; thus diminishing the strain upon the thread and economising time, even in the four or six feet that constitute the average extent of each 'shot.' And by this means the looms are sometimes worked at a rate of 180 threads per minute, or 3 in every second. This will constitute the absolute limit of speed under the existing form of construction. To extend it we must introduce a new principle, and discover some method of weaving the tissue in a cylindrical web; when the oscillation of the shuttle might be transformed into a continuous revolution, and the strain upon the woof, arising from the perpetual stoppage and change of motion, be annihilated.

Royal Society.

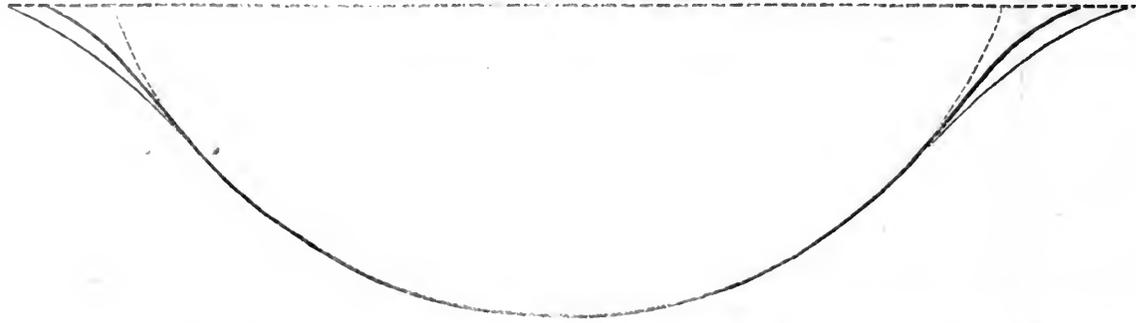
May 24, 1849.—"On the Direct Production of Heat by Magnetism," by W. R. Grove, Esq. The author recites the experiments of Marrian, Beaton, Wertheim, and De La Rive, on the phenomenon made known some years ago, that soft iron when magnetized emitted a sound or musical note. He also mentions an experiment of his own, where a tube was filled with the liquid in which magnetic oxide had been prepared, and surrounded by a coil; this shows to a spectator looking through it an increase of the transmitted light when the coil was electrized. All these experiments, the author considers, go to prove that whenever magnetization takes place, a change is produced in the molecular condition of the substances magnetized, and it occurred to him that if this be the case, a species of molecular friction, heat might be produced. In proving the correctness of these conjectures difficulties presented themselves, the principal of which was that with electro-magnets the heat produced by the electrized coil surrounding them might be expected to mask any heat developed by the magnetism.—This interference the author considers he eliminated by surrounding the poles of an electro-magnet with cisterns of water, and by this means, and by covering the keeper with flannel and other expedients, he was enabled to produce in a cylindrical soft-iron keeper, when rapidly magnetized and demagnetized, a rise of temperature several degrees beyond that which obtained in the electro-magnet, and which therefore could not have been due to conduction or radiation of heat from such magnet. By filling the cisterns with water colder than the electro-magnet, the latter could be cooled while the keeper was being heated by the magnetization. The author subsequently obtained distinct thermic effects in a bar of soft iron placed opposite to a rotating permanent steel magnet. To eliminate the effects of magneto-electrical currents, the author then made experiments with non-magnetic metals and with silico-borate of lead, substituted for the iron keepers, but no thermic effects were developed. He then tried the magnetic metals nickel and cobalt, and obtained thermic effects with both, and in proportion to their magnetic intensity. Some questions of theory relating to the rationale of the action of what are termed "the imponderables" and to terrestrial magnetism then were dis-

cussed; and the author concluded by stating that he considers his experiments prove, that whenever a bar of iron or other magnetic metal is magnetized, its temperature is raised.—*Mechanic's Journal.*

Hints on Canalting.

Modern practise adopts a segment of a circle for the cross section of a canal, but a very considerable experience in works of this class has led us in our more recent practice to reject this section. Both theory and observation define a different form. An observer will recollect that a river bank is worn by the water into a succession of little steps or shelves, and that these shelves show a general contour approaching very closely to the convex side of a curve. These convex curves at the sides will be found on examination to run at the bottom of the stream into a concave curve, the depth of a stream decreasing until the bottom meets the sides, the middle being as every one knows the deepest part of the section. These observations are in exact keeping with the theory of the case. In flowing streams the velocity of the water, as shown in the article on the Mississippi Floods in the number of the Journal for 16th June, is least at the bottom, and increasing gradually at every point above that is greatest at the top. In canals this is especially so: for here the causes of motion that exert any material influence are the force of winds and the impact of boats, the former being applied solely at the surface, the latter, owing to the section of boats is least at the keel point a little above the bottom while in consequence of the breadth of beam at that level it is a maximum at the surface of the water. The velocity then is very nearly nothing at the bottom, and increasing gradually above that point is greatest at the top; and consequently the velocity of the water being the measure of the wear and tear, the wear and tear on the banks of a canal increase in intensity for every foot above the bottom. This consideration suggests an embankment whose contour shall be a line of constantly increasing resistance, and surely therefore the concave contour running from a horizontal line at the bottom into an almost vertical line at the top is the very reverse of the theoretical contour—the degree with which earth recedes from its angle of friction being evidently the measure of its strength to resist erosion. Therefore the concave curve is the worst possible section for the stability of the earth slopes of canals. The slope of continually increasing resistance may however be held to imply either a right line or a convex curve, according to the law by which the resistance increases. If the rate of increase be constant, the increase going on in an arithmetical progression, such a rate defines the slope as rectilinear, but if the increase go on by any other law the slope must assume the form of a convex curve; and therefore the latter as including within it the stability of the straight line would be found, all other things being equal, the safest to be adopted in practise. Indeed did not the case as being to a certain extent a question of wave motion involve too much of abstract reasoning for a popular discussion, the line of resistance defined by the conditions of a canal might be shown to be the convex side of a certain curve, probably part of a parabola. This theory therefore agrees exactly with observation: it shows that while a concave segment is the worst possible profile for the earthwork of a canal, the best profile for the sides are as deduced also from observation, first a convex curve, and secondly as the next nearest approach to this, the right line. The difficulty and delay of putting in the convex section may be considered to unfit it for practise, and therefore as combining a great part of the advantages of that section without much of its inconvenience, we have in several miles of cutting adopted the rectilinear slope rounded off at the level of the water. The following cut will explain this question more fully: the dotted line represents the usual or concave cross section, the light unbroken line the cross section of theory and observation, as described above, and the heavy unbroken line the nearest approach to this that the writer found convenient in practise.

Cross Section for Canals.



In carrying out this section it will be found judicious to put in rough model slopes from a template at certain intervals along the cut, and if great accuracy is required a line stretched from corresponding points on two model slopes may be made to approximate to the accuracy of the sliding gauge. We have found in the course of our experience, that a little care and expense in the regularity and finish of the slopes have always had a good effect on the item for subsequent maintenance; indeed it must be very plain that a rough irregular slope by its abrupt resistance to the motion of the water will be constantly caving in while a smooth regular slope being exposed to merely the sliding wash of the water, may be kept in repair at a comparatively trifling cost. The slope may be put in perfectly true by means of a plumb attached to the template, the angle of the plumb with the profile of the template being the intended inclination of the slope.

The course of a canal is the next particular in which we have been lead to deviate from, or rather to modify the usual practise. A line of canal should consist as nearly as possible of straight lines, subject of course to the proper economy of construction. When however a deviation from the straight line is made absolutely necessary by local circumstances the straight line should be blended as in railroads by regular curves of as large radii as consistent with the circumstances of the case. Even in laying down the course of a canal in a contour line around a hill, the writer of this has found it always judicious, to break it into a series of straight lines, uniting them by circular segments. The care necessary in laying down these curves is not of course as great as in laying down curves for railroads; and as they are generally of frequent recurrence it may be useful to some of the readers of the Journal to describe a method of laying them down easily and quickly.—Calculate by scale from the working plan of the line, the length from the point where the two rectilinear directions produced will cut, to the point where one of these directions becomes a tangent to the curve uniting them; and by the same means calculate also the radius and chord of the curve. Describe then a curve answering to these dimensions on as large scale as possible; and having divided the chord into lengths 30, 40, or 50 feet, calculate by the scale the lengths of the several perpendiculars from the the chord. Lay down on the ground from this data a peg at each end of the chord of the required curve, and having divided the chord into the lengths determined on previously, mark off the several perpendiculars calculated from the enlarged plans by other pegs: having in this way fixed the several loci or points of the curve, a chord stretched around the pegs will show the course for lockspitting. Care must be taken in laying down curves in this way to have all the lengths of the perpendiculars laid off at right angles to the chord, as a small deflection to either side will destroy the regularity of the loci: in long perpendiculars it will be found necessary, in order to come at the right an-

gle closely, to sink a peg on the chord at say 18 feet from the starting point of the perpendicular, and with the ring of a measuring tape on this peg while the mark for 54 ft. is held at the starting point to sink another peg at the end of the 30th foot: a line drawn from the latter peg to the starting point of the perpendicular, will be at right angles to the chord.—Any other multiples of 3, 4 and 5 will answer the purpose equally well with 18, 24 and 30. The advantages of his method of laying down curves, for water-ways is that its simplicity brings it within the skill of an overseer or ganger, allowing the engineer to attend to the more important parts of his duties.

Earthwork is generally the most important item in canalling; and anything that may tend to economy on that head must be at all times interesting to the profession, and especially so at the present moment with such a magnificent work as the St. Lawrence and Champlain ship canal about to absorb a large proportion of the capital of the country. We will offer some few remarks on this item in canalling.—The contractor where one is employed, or the engineer where a work is executed directly by himself, will find it advantageous to divide the whole into a series of lots, letting each to a ganger as representative of ten or twenty men. The means of carrying out this system may be defined most clearly by detailing them as pursued by the writer in a line of very heavy unbroken excavation, the spoil being all wheeled on an average of about 45 yards.—After lockspitting both sides of the intended cut, the whole was divided into the shortest lengths consistent with the proper distribution of the men. Pegs were sunk at the beginning, middle, and end of each lot; and these being connected with a fixed benchmark were all numbered by notches on the head, the depth of cutting below each being registered in the instruction book of the overseer in charge of the division to which the depth referred. The means of ascertaining these depths, though of course familiar to many members of the profession may yet be of some interest to others; and we will therefore explain it for the information of the latter.

DUNGOLMAN NAVIGATION—DEPTHS FOR THE NEW-CASTLE CUTTING.

No. of Peg.	Staff.	Line of Collimation.	Reduced Level.	Level of Bottom.	Depth of Cutting.	Remarks.
1	2-18	96-24	94 06	80-20		B. M. No. 9.
2	5-29		90 95	80-30	10 65	Pegs sunk at intervals of 352 feet: and the rate of inclination being 1 1/4 ft. per mille is 0-10 per peg.
3	7-32		88-92	80-40	8 52	
4	6-48		89-76	80-50	9 26	
5	4-00		88 34	80-60	7 64	
6	7-45		88-79	80-70	8 09	
7	6-32		88-92	80-80	8 12	

These particulars are taken at random to illustrate the method of ascertaining the depths of cutting, the initial depth been taken carefully from the working section. After having registered the cuttings in the overseer's book a boring was next made in each lot, and when circumstances required such, two or three borings were made in each. The material was then registered for the several lots, and the price of each lot determined from the registry in the following manner.

- Lot 1.—60 feet wide at top, 40 at bottom and 9 ft. deep.
- Loam—2 1/2 ft.—quantity in lot—at—p. yd.—amt.—
- Stiff blue clay—3 ft.—Do. —at—p. yd.— do.—
- Hard gravel—3 1/4 ft.—Do. —at—p. yd.— do.—
- Total amount—

The quantity of each material was calculated from the intended section for the depth furnished by the borings; and as a fixed scale of prices for raising the several kinds of material from any one 'lift' between top and bottom was adopted throughout the whole number of lots, the results produced by each gang, being by this means referred to one and the same standard, furnished some very interesting facts in manual labor—facts which we shall state hereafter in the pages of this journal. Having had the particulars of each lot registered in the overseer's book in the form of a contract, and a copy made of each of these forms, the lots were let in regular succession each to a gang-leader chosen by themselves as representative of a gang of men. This gang-leader, nominated by ourselves for his intelligence and good character, subscribed the contract of his gang on the part of the gang of men, and the overseer endorsed it on the part of the employers.—At the end of each fortnight the work was measured, and the amount excavated during the fortnight paid for at the rate fixed for the material excavated and the depth from which it had been raised. There was no necessity for withholding any deposit as security for the finishing of the contract, inasmuch as the contract was so regulated that, the bottom 'lift' and the harder material being paid for proportionably higher than the upper lifts or softer material the part of the contract remaining unfinished at any period of its execution furnished as nearly as possible as good a rate of pay as any other part of it. Boulder stones, being measured on the bank, were paid for by the cube yard at the difference between the average price of the lot and the value for material of that sort. Plant and tools were supplied by ourselves. The overseer was instructed to direct the gang-leader in laying in the 'runs,' placing his men, distributing the excavation, the lifting, the wheeling, and instructing the men generally in all the details of an economic system of labor. When rock occurred the blasting also was done by task, the quarry men only being paid by the day. The boring was done by the foot; and the repairs of jump-

ers, hammers, tamping irons, etc. were also paid for by the foot bored. Of fifteen hundred men engaged on these works only from 15 to 20 were employed otherwise than by task; and this fact will show that a system so injurious to the men and expensive to the employer, as the day-work system may be almost entirely dispensed with by a little skilful management.

Every practical Engineer and contractor is quite aware of the demoralising influence of day-work; and the evil, affecting indeed both workman and employer, is so very great to the workman that we lay great emphasis on the benevolence as well as the economy of adopting the task-system, where at all practicable. On the works referred to above, the morals of the men were singularly served by this system of labor. The gangs were roused to increased exertion by the direct interest they were given in their labor, and by the competition in which each gang was placed with that next above and next below it. Owing too to the inducements offered in such a case to the industrious man, and the sense of responsibility felt in his position as a contractor, a remarkable change took place in the character of the men after passing through a few pay days under this system. Indeed, so well disposed and disciplined were the whole force employed on the works, that after some eight or ten weeks we were enabled to reduce the staff of superintendance to very nearly one-half, and to execute the work, with a higher remuneration to the men, at prices varying from 20 to 30 per cent. less than those adopted in the outset.—A man of good character, every one acquainted with labor is aware will, all else being equal, do far more work within the same time than a man of bad character; and in connection with this we can offer no stronger recommendation of the task-work system than the fact, that, having been referred to by a police inspector in reference to an outrage committed in the neighborhood as to the character of the men employed on a certain portion of the work, we answered the inquiry quite to his satisfaction by a reference to the pay sheets of that particular division.

M.B.H.

Pennsylvania.

York and Cumberland Railroad.

Messrs. Editors—Our citizens, I am sure, will be gratified to learn, as the result of a personal inspection of the whole line, that this most important work is in a state of rapid progress, and that its completion, quite within the stipulated time, is placed beyond a doubt. This highly satisfactory condition of the work is mainly attributed to the judicious course pursued by the company, in letting out the road in one aggregate contract, to a highly efficient, experienced and responsible firm, Messrs. Gondor, Burke and Co. The iron, which is to be the bridge or U rail, and weighing sixty pounds to the yard, has been contracted for, in England, and it is to be all delivered in Baltimore before the first of March next.

The Stockholders will also be pleased to learn that this investment is destined to be directly profitable to themselves, as well as promotive of the general interests and trade of the city. A sum equal to six per cent. per annum on its cost is now offered to the company, as an *annual rent* for the use of the road, to take effect from the day of its completion.

The Executive Committee, through whose persevering exertions, in connection with the President and Directors, the money was raised and the company organized, are certainly now entitled to claim an honorable discharge; there pledges have all been faithfully and honestly redeemed, and the money is now being applied by the company with the most rigid and scrupulous economy to the construction of the road, and I have not a doubt that the most sanguine expectations of its projectors will, in the end be more than realized.

The success of this undertaking, as well as the

present highly satisfactory condition of the other various and important enterprises in which our city is engaged, serve to demonstrate that Baltimoreans are quite as competent to judge of and manage their own business successfully as the people of any other section of the Union.

The fact is too frequently lost sight of by our desponding and nervous citizens, that Maryland was a pioneer State in the system of Internal Improvements, and that she has exhibited a higher degree of liberal enterprise and expended her capital much more freely in this way than any other State in the Union, in proportion to her population and means. She had to purchase at a high price, the experience by which other sections of our country have since profited so largely; but she now has the experience and is using it.

We have every thing we could ask to encourage and stimulate us to prompt, vigors and manly exertion, and if Baltimore be distanced in the race, and fail to reach the highest point of commercial greatness and prosperity, it will be owing entirely to the absence of the qualities, without which she has no claim to success.—*Baltimore American.*

Tennessee.

East Tennessee Railroad.—We should not be very much surprised, says the Mountain Eagle to see a locomotive enter the State of Tennessee in the direction of Knoxville, before one penetrates it in the direction of Nashville. We were up the line a short distance, a day or two ago, and were astounded at the forward state of the work. There are at this time, a force of four hundred hands operating on the first sixteen miles of the road, as we learn from Mr. Prichard, the Engineer in charge of the work. Gen. Green, the contractor of the Road, passed through our town on Friday last, on his way North, to perfect some his arrangements for the elevation of Dalton and the improvement of East Tennessee and Northwestern Georgia. We wish him the most abundant success. If he succeeds in effecting one half of his plans—we do not mean to express a doubt of his success.—*Atlanta Intelligencer.*

Virginia.

South Side Railroad.—We learn from the Petersburg Intelligencer of the 7th inst. that the Petersburg Railroad Company has effected a contract with Mr. Jas. Dunlop, of Petersburg, (who is agent for an extensive iron manufactory in England,) for heavy T rails sufficient to relay this track as far as the junction of the Greensville Railroad. This (says the Intelligencer,) with the iron already laid, will make 45 miles, which will complete the rebuilding of their road as far as their heavy trade is carried. At a meeting of the City Council of Petersburg on the 1st of August, M. G. W. Bolling offered the following preamble and resolution, which were unanimously adopted:

The people of the town of Petersburg, in town meeting assembled, having on the 20th day of July, 1849, instructed the Common Hall to subscribe for 1,000 shares of stock in the South-Side Railroad Company, on behalf of the town, in addition to the amount of the Petersburg Railroad stock already subscribed. Therefore,

Resolved, That the Mayor be, and is hereby authorized and directed to subscribe, in the name of the Corporation of Petersburg, for an additional one thousand shares of stock of the South-Side Railroad, in obedience to the said instructions of the town meeting of the 20th of July, 1842.

We understand that this company was organized on Wednesday last by the election of the following officers:

William Pannill, of Petersburg, President.
Robert P. Bolling, George W. Bolling, and Archibald G. Mellwaine of Petersburg, John W. Gilliam of Dinwiddie, and Edwin G. Booth of Nottoway, Directors.

Efforts are to be made to commence operations on the work speedily, and with that view the President has already advertised that the Board of Directors will proceed on the 1st September to the appointment of an Engineer.

Indiana.

Madison and Indianapolis Railroad.—The receipts and expenditures of the Madison and Indianapolis railroad company, for the six months ending June 30, 1849, were as annexed:—

MADISON AND INDIANAPOLIS RAILROAD.	
Transportation of freight and passengers	\$114,103 94
“ United States mail	1,488 36
“ Iron and timber for new track	2,814 00
From old brass &c., sold	255 41
From wood sold	25 00

Making a total of.....\$118,686 91
Actual expenses.....\$57,824 27
Add loan of 1848 repaid,..... 6,000 00—63,824 26

Net earnings.....\$54,862 65
Divided at four per cent..... 51,000 00

Surplus.....\$3,865 65

The payment from permanent funds during the six months have been as follows:—

For new track	\$50,622 67
“ Construction Accounts	11,040 98
“ Ground for Madison Depot	13,427 56
“ Improvement of Plane	5,313 99
“ Wharf at Madison	1,484 12
“ Madison Passenger House	537 82
“ New machinery, (purchased in 1848)	20,772 20

Making a total of.....\$109,198 34

There has been laid, since the opening of spring, about eight miles of new heavy rail; and the materials are all provided, and, with the exception of the iron, (which is now arriving,) are on the ground to complete eleven miles more, which will finish the heavy rail to Edinburgh by the 1st of September.

The earning for the first six months this year, exceed those for the corresponding six months in 1848, \$18,983 25, which was principally from the freight-busness of the company.

New Hampshire.

Manchester and Candia Railroad.—The first meeting of the grantees of this road was held in this city last Saturday, and was fully attended. Richard O. Ayre was chosen Chairman, and David Currier of Auburn, Clerk. The charter was unanimously accepted. The grantees fixed the capital stock at \$150,000. Messrs. R. H. Ayer, J. T. P. Hunt, W. G. Means, and I. C. Flanders of this city, F. G. Stark of Bedford, A. W. Haven of Portsmouth, H. Cronbie of Auburn, T. W. Gillis of Nashua, and J. D. Patterson of Candia, were chosen a Board of Managers, to manage the affairs of the corporation till \$100,000 of the capital stock shall have been subscribed, when they are to call the subscribers together for the choice of Directors and transaction of other business.

Mr. Hudson.

The papers are filled with speculative statements respecting Mr. Hudson's property and liabilities, but little reliance can be placed upon them. It is certain, however, that he has been selling property to meet the heavy demands for restitution made upon him. *Herald's Journal*, which is generally well informed, has the following:—

Landsborough Estate	£470,000
Baldersby ditto	108,000
Orton Grange	80,000
Newby Park	22,000
Albert Gate	18,000
In Clay Cross Colliery	30,000
“ Newcastle Glass Works	50,000
Furniture at Albert Gate and Newby Park, say	20,000
Plate purchased and presented to him, including Mrs. Hudson's jewels	15,000
Left him by Mr. Botterill, an estate bringing in £1,500 per annum	32,000

£845,000

This is exclusive of his shares in the York, Newcastle, and Berwick, the York and North Midland, the Midland, the Eastern Counties, and perhaps other railways.

"It is evident from the above sketch, that had Mr. Hudson been contented with the profits he could have fairly made, he might have realised some £200,000 or £300,000 and been now respected, whereas the possibility, if not the probability is, that all may be wrested from him to make restitution for improper conduct, and he himself die in poverty as well as in disgrace.

We hear that he has lately sold the Octon Grange for £80,000 having given £70,000 for it.

A letter from Mr. Close, the Secretary of the Berwick line, was posted in the Stock Exchange on Thursday, accompanying returned transfers, of shares in that Company refused to be registered, which Lawrance, Cazenove, and Co., of London, had sold for him.

Yesterday the following letter was received by Mr. Slaughter, Secretary to the Railway department of the Stock Exchange :

"York, Newcastle, and Berwick railroad.
Secretary's Office, York, July 26th, 1849.

"Dear Sir,—In reply to yours of the 25th inst, I beg to inform you that the answer I wrote to Mr. Furlonger, on the 23rd instant, was in consequence of directions from the Committee of Inquiry. The transfer of the shares being passed this day, further explanation is unnecessary.

(Signed) "John Close, Secretary.

"Mihill Slaughter, Esq., Stock Exchange, London."

AMERICAN RAILROAD JOURNAL.

Saturday, August 25, 1849.

The Iron Trade.

This great branch of national industry continues very much depressed, without any prospect of immediate improvement. Nearly every mill in the country for making railroad bars, if not every one, has suspended work : and we may calculate upon a general abandonment of the manufacture of pig and most kinds of bar iron, unless it is further protected by the revenue laws of the country, or unless an entire revolution takes place in our social condition, bringing about the same state of things that we now witness in Great Britain, the country from which we draw most of our supplies of this article.

It is a remarkable geological fact, that most of our beds of iron ore in this country are remote from the sea shore, and also from our most available coal fields. On the other hand, the Scotch and Welch beds of ore and coal are contiguous, and are in the immediate vicinity of tide water; consequently the iron made from them can be laid down at as low a cost for transportation, as the iron from most of our furnaces. We enjoy, therefore, no protection by virtue of our position, and all that we have is by virtue of the duty of 30 per cent. ad valorem, which is by no means equal to the advantage enjoyed by the English manufacturer, in the low rate that his money and his labor cost him, compared with the American manufacturer; for it must be borne in mind that the cost of the raw material is not more than one-eighth or one-tenth of the whole cost of a ton of iron. The pay of the English operative is measured by what is necessary to feed and clothe him. Americans, at present, will not work at this rate of wages; they will turn their hand to something else, or lie idle rather. The result is, that our iron manufacturers must quit their business or fail. Only these two alternatives are presented to them; and we regret to say that one of the two is being followed with great rapidity.

"But," says the free trader, "this is all right; let us buy where we can buy the cheapest, and if we can buy English iron at a less sum than we can make iron ourselves, the difference is just so much saved, in a national point of view. We must turn our attention to the production of something else that we can produce at a less cost than we can buy it at. We shall then know just where we stand, and our labor will then be the

most profitably employed. Here is a simple and undeniable truth to stand upon; and the moment we leave it we are involved in error, and in the broad road to partial legislation, by which one branch of industry is taxed to support another that cannot stand without it, on its own merits." Very well, let us examine this fundamental principle laid down by the free trader, and see where it will lead us.

Whatever is true of iron, is true of every other article of general consumption, which we can purchase at a less cost than we can manufacture. It is our true interest, therefore, to devote ourselves to agriculture, in which, from the peculiar state of things in this country, we can probably compete in most kinds of products with any nation on the globe. In some parts of Europe they probably can produce wheat at a less cost than we can in this country; but in most other products we excel them. To the production of these articles, therefore, according to the free trader, our industry and capital should be devoted.

As we must buy then from other nations what they can produce at a cheaper rate than we ourselves, we must pay for these things by the sale of those products in which we have the advantage over them. But it appears that many of our most valuable agricultural products, such as hay and potatoes and the coarse grains, from their great bulk compared with their value, derive their value from the demand that exists for them in the immediate vicinity of their production.—Many of our States are better adapted to the production of these articles than anything else. They therefore have nothing to offer the English, Welch or Scotch manufacturer in exchange for his products.—They can produce an abundance of those articles for which their soil is adapted, and would find no difficulty in supplying their wants, if those having the articles in which they stand in need would exchange them for hay or potatoes. But the cost of transportation forbids the idea of sending them to Europe. If the manufacturer would come to this country and set himself down in their midst, then this exchange of products could be effected at their full value, and the farmer would have it at once in his power to supply all his wants, by a ready sale of what his farm was adapted to produce. The effect of high duty is to say to the English manufacturer, "if you wish to supply our farmers with iron, you must take in exchange what they produce, and if you cannot afford to transport these products to the scene of your own operations in England, you must transfer your establishments to this country, where you can purchase them without being subject to the cost of transportation."

We cannot better illustrate the advantages of a home market, than to take the case of a farmer in the interior of Virginia, and compare it with what would be his condition, if placed beside some of the large manufacturing establishments in Great Britain. In his present condition, all his abundance only enables him to supply his ordinary wants, without giving him the means of gratifying those that belong to his higher nature. The dense forests by which he is surrounded are regarded only as an evil, as they must be removed before he can till the soil on which they stand. Every kind of agricultural product, adapted to his soil and climate, he can produce in the greatest profusion; but only so much of these are valuable as are necessary to the support of his family. All his neighbors are similarly situated with himself, and he is too far from market to send his surplus to it. The price they would bring there would not pay the cost of transportation. His lands, though fertile in the extreme, are worth but little, because they can furnish him with only what he can eat and wear. They may cover the finest beds of iron and coal in the country, without being a cent more valuable, as these cannot be worked on account of the low price of foreign iron and coal. Now place the same man, surrounded by the same external circumstances, in some of the densely populated manufacturing districts of Great Britain. All those articles which were formerly worthless, and some of which

were impediments to his industry, now become the most valuable. The forest, which once cost him so much labor to destroy, his hay, potatoes, grain, his beef and pork, all meet with a ready sale at the highest prices. He is now made rich by the sale of the surplus which once rotted on his farm, and he is in a position not only to gratify his ordinary wants, but those of a higher nature—in fact, he now possesses whatever wealth or society can bestow, and his lands have become, in consequence, fifty times more valuable than before.

But the same demands exist in Great Britain for his products, whether he remains a farmer in Virginia, or whether, as we have supposed, he is transplanted into that country. It is precisely the same in both cases. The only difference is, that in the latter case he is not subject to the cost of transportation, which in the former was an effectual bar to the supplying this demand. It is the nearness to, or distance from, a market, that determines whether his productions are valuable or worthless.

The greater number of our most valuable productions then can never be made the subjects of a foreign commerce, even under a perfect system of international free trade. Cotton and breadstuffs must always make up the great sum of our agricultural exports.—Our local position and the adaptedness of our soil and climate to the culture of this plant, undoubtedly secures to us the monopoly in the growth of cotton.—Such is the ground maintained by the cotton planter. European nations must, from this cause, draw their main supplies of cotton from the United States, equally, whether we adopt the free trade or protective policy. With regard to breadstuffs, Great Britain is the only country in Europe that offers any market for them, and all we can expect here is the privilege of making good a short crop, or supplying the little deficiency that may result from an ordinary one. Under the most favorable circumstances for us, we can export to that country only a very small portion of our surplus of these articles. But the adoption of free trade would not increase even our exportation of breadstuffs.

The commercial and financial policy of Great Britain is now clearly defined. Superior skill, and her great advance in the mechanic arts, enabled her, by many years to anticipate all other nations in the use of the steam engine, and in the introduction of labor-saving machinery as manufacturing agents. These gave her a monopoly in almost every branch of manufacturing, and enabled her to supply the whole world with her fabrics at her own price. So long therefore as she could control the markets of other countries, her manufacturing interests from the enormous profits they were able to make, could well afford to pay high for food, as well as for the raw material of their fabrics. She therefore gave, by the most restrictive legislation, to her agricultural interests, the monopoly of supplying her manufacturing population with food, and subjected to high duties all the material which formed the basis of her manufactures. This system of legislation was not felt to be a hardship till the manufacturers began to lose the monopoly they formerly enjoyed. Stimulated by her example, other countries, formerly dependent upon her, commenced the work of manufacturing, which was encouraged by their respective governments by an imposition of a revenue duty upon the foreign article; and Great Britain not only found herself shut out from the markets she once enjoyed, but found those nations rivals in foreign markets for the sale of those very goods for which they were once dependent upon that country. If she had superior skill, and possessed the advantage in all the great elements of manufacturing industry, the enormous prices she was compelled to pay for food for her operators, and for the raw material for her fabrics, more than counterbalanced her superiority in these respects. Great Britain undoubtedly possesses greater capacities for cheap manufacturing than any nation in the world. She has an abundance of labor at the lowest cost, an enormous amount of capital, skilful artisans and mechanics, cheap

motive power in her numerous coal fields, and the best climate in the world for the development of a vigorous physical constitution. Having lost the position she once enjoyed from the policy of other nations who have copied her example, she now finds that her true interest lies in adopting a policy precisely the reverse of what she once pursued. Her monopoly in manufacturing can now only be restored by breaking down all barriers to trade and commerce, and leaving the manufacturing establishments of each country to succeed or fail, according as they possess or lack the elements of success when compared with each other. In such a contest there can be no doubt that Great Britain would come off victorious. Universal free trade is therefore the sovereign panacea for the ills under which she is laboring from the depressed condition of her manufacturing establishments, and the general adoption of this policy the only thing wanting to restore her ancient manufacturing monopoly. As a part of her policy she will therefore continue to admit free of duty, breadstuffs and cotton, which enter so largely into the cost of her products, because if she would succeed in her new line of policy she must possess every element of cheap production. Any course that our government should adopt therefore in the protection of its manufacturing establishments, would have no influence for some time at least, upon her present policy. She will continue to purchase our staples just as largely, whatever policy we pursue.

"But," says the free trader, "why should we be compelled to pay a premium to the American manufacturer in the increased price we are obliged to pay for his products, and give him a monopoly which we refuse to Great Britain, by which he can amass a fortune at our expense." Granted that you are obliged to pay a higher price for what you are compelled to purchase; we think that we have conclusively shown that you are more than made whole by the wider markets that are opened for you products. Protection gives you what you lacked before—means of payment. But we deny that protection gives the manufacturer any monopoly in the true sense of the word. Take for instance the cotton manufacturer in the United States. Has he any monopoly? Not the least. Every man among us may commence this business at once if he chooses. Would the exclusion of coarse foreign cottons give him such monopoly? No. There is an abundance of capital in this country, and capital will always flow in that direction where the most money can be made, till it ceases to offer any greater return than money invested in other pursuits. In the long run, by the operation of a law as certain in its results as the law of gravity, the cotton manufacturer is paid just as well and no better than the iron manufacturer, the wheat grower, or the cotton planter. There is no more mystery about one of these occupations than another. Each one will invite capital just so far and no farther, as it can pay better or as well as the other. There can be no monopoly therefore in the production of an article for which every portion of the country is well adapted, and in which there is perfect freedom for competition.

"But," says the free trader, in the last resort, "the protected article costs us more than the imported one." We will admit that such may be the case, but we contend that the reverse is more likely to happen. Was Great Britain content with a fair profit, when she enjoyed in monopoly in manufactures? No. She made us pay three or four times more than the cost of her goods. She had the control of the market, and wrenched every cent out of us that she could get. If she regains it, will not the price of her products be measured exactly by our wants, and by our inability to help ourselves? In this respect is not the past history of that country a sufficient guide for the future? With the adoption of free trade, will she adopt a system of universal benevolence, and sell her products at just what they cost? This is not her history. For centuries her whole aim has been to make every other people either by her arms, or her commercial policy, subservient to

her interest, to draw from them the means to support her enormous civil, military and church establishments; to make all other nations hewers of wood and drawers of water to her nobility, her hierarchy, and her privileged classes; and her new doctrines of free trade have for their only object the continuance of this supremacy, and her monopoly in free trade would be as onerous to us, and as much to be dreaded, as was the monopoly of superior skill, wealth and position.

We think therefore that we have conclusively shown that the principle of free trade will secure us nothing that we do not now enjoy. That the adoption of further protection will not necessarily increase the cost of the articles we protect, while on the other hand, the encouragement of manufacturing establishments among us would vastly increase the value of every man's property within their influence. That even if he was compelled to pay a higher price for what he wants than the English manufacturer would ask, these very establishments create for him the means of payment which he lacked before, and increase his ability to buy ten fold; and we cannot but hope that arguments so simple and plain as these we have given, and at the same time so conclusive, will have such an effect upon the next Congress, as to induce that body to extend a suitable protection to so extensive and important an interest to the whole country as that we have been advocating.

Boston and Maine Railroad Company.

Our readers will recollect that on the 28th day of May last, a meeting of the stockholders of this company was held at Exeter, New Hampshire, to decide upon the question of accepting the act of the Legislature of Massachusetts, authorising the issue of six thousand shares of capital stock. At this meeting much dissatisfaction was manifested by the stockholders in the company, in consequence of the great reduction in the value of its stock, which, in common with other roads in this state, had recently taken place from their ascertained inability to continue the payment of the usual high rate of dividend. Waving therefore any action upon the question immediately before the meeting, the stockholders came to the determination, to institute a thorough and rigid examination into the affairs of the company for the purpose of getting at their true condition, and determining the value of their property; and a committee consisting of Edward Crane, John S. Wells, Albert Smith and John Lowe, Jr., were appointed to whom were referred the following vote, with instruction to report upon the same at an adjourned meeting, viz:

Resolved, That the act of the Legislature of May 2d 1849, authorising an increase of the capital stock of this corporation, be referred to a special committee of five members thereof, with instructions to examine all the books, accounts and proceedings of the corporation and its officers, and to report to an adjourned meeting, the result of such examination, embracing the following facts and information:—

- 1st. The capital stock already issued.
- 2d. The amount absolutely sold, and the sum paid in for the same.
- 3d. The amount, if any, conditionally or otherwise disposed of—to whom—for what consideration—and the present situation thereof.
- 4th. The amount actually expended for construction, distributed under proper heads.
- 5th. The amount of debts of the corporation, distinguishing the ascertained and liquidated debts—floating and unsettled debts, and contingent and disputed claims.
- 6th. The proposed and unfinished works of the corporation, together with estimates of the probable cost of each, so far as the same should be made a charge upon capital stock.
- 7th. A schedule of all the property of the Corporation, real and personal—the nature of the title thereto, whether in fee, by lease or otherwise—where situated—the income derived from it, with their opinion of the expediency of selling or leasing any part of the same.

8th. What retrenchments can properly be made in the expenditures of the corporation.

9th. Their opinion as to the amount of capital necessary to be created to complete proposed and unfinished works, which they may deem advisable to have completed, and set the corporation free from debt; and also such information as it may be considered important to lay before stockholders; and that said committee be also instructed to prepare and present at said adjourned meeting, such rules, restrictions, and recommendations in addition to those now in force, for the consideration and adoption of the stockholders then assembled, as they may deem for the interest of the corporation; and said committee shall have power to examine persons and papers, and employ a clerk if it be found necessary, to prosecute the inquiries embraced in this vote.

The committee have acted upon the matters submitted to their investigation, and have presented their report to the public; and as it contains matter of great interest, and as the uniform depreciation of railway property in Massachusetts is undoubtedly referable to similar causes, and the results it has established are equally applicable to other roads, and as the report presents in a connected form, the history of the progress and operations of one of the leading Massachusetts railroads, we shall make no apology for presenting the substance of the report to our readers.

The Boston and Maine railroad has been constructed under authority of various acts of the several States of Massachusetts, New Hampshire and Maine. It extends from the city of Boston to the town of South Berwick, Maine, where it unites with the Portland, Saco, and Portsmouth railroad, a distance of 7½ miles, having 19½ miles of double track, and branches to the towns of Midford and Methuen, in Massachusetts, and Great Falls, New Hampshire, amounting to 10½ miles, making an aggregate of 85 miles of road in addition to the double track.

The amount of capital authorised to be issued by the several states is as follows:

BY ACTS OF MASSACHUSETTS.	
In 1833, March 15th.....	1,000 shares
1835, April 7th.....	2,000 "
1837, April 5th.....	1,000 "
1839, April 3d.....	1,500 "
1844, March 16th.....	5,000 "
1845, March 7th.....	1,000 "
1846, March 3d.....	5,000 "
1849, May 2d.....	6,000 "
	22,500
BY ACTS OF NEW HAMPSHIRE.	
1835, June 7th.....	6,000 shares.
1839, July 2d.....	5,000 "
	11,000
BY ACTS OF MAINE.	
1836, March 30th....	12,000 shares
	12,000
	45,500

Of this number there have been issued at different periods, 36,720 shares, of which 1,000 shares have been pledged to the state of Massachusetts, and 153 shares to the Haverhill Savings Bank, as collateral security for debts due from the corporation, all of which are held without right to dividends, leaving 35,567 shares actually issued and sold,

As follows, viz:

1835, June, to	} (at par.) 2378 shares.
1838, June	
1838, June 10th, (at \$60 p. sh'e)	622 "
1840, February 1st, (at par.)	66 "
1840, " 20th, (at auction average a \$75	
	10 630-1169) 1170 "
1841, July 19th, (par.)	30 "
1842, January 1st,	1945 "
1843, January 2d,	114 "
1843, July 3d,	160 "
1844, January 1st, (at par.)	1721 "
1844, July 1st,	956 "
1844, October 21st, (at \$8 advance per share.)	100 "

1844, November 11th, (\$75 ")	1456*	"
1845, January 14th, (\$10 ")	20	"
1845, " 16th, (\$10 ")	20	"
1845, February 5th, (at par.)	5196	"
1845, April 12th,	2	"
1845, July 10th, (\$10 advance per share.)	1190	"
1846, January 1st, (par.)	42	"
1846, February 4th \$10 $\frac{1}{2}$ & 11 ")	24	"
1846, " 6th, (\$11 " ")	11	"
1846, " 10th, (\$10 $\frac{1}{2}$ " ")	7	"
1846, July 1st, (par.)	3912	"
1847, January 1st, (")	40	"
1848 " 1st, (")	5938	"
1849, " 1st, (")	5826	"
	<u>35,567</u>	

Cash received from sales of stock, \$3,475,054 52
 Due for assessments from sundry parties, 1,200 00

Total amount of capital stock, \$3,478,054 52
 Average amount received for each share, \$97, 78, 8-10.

The whole of the above stock has been unconditionally sold.

It thus appears, that, of the 45,500 shares of stock which have been granted to this corporation, 35,567 shares have been sold, 1153 pledged as security for debts, and that eight thousand, seven hundred and eighty shares are, therefore, now subject to issue and sale.

Amount expended for construction.

Graduation and Masonry.....843,532 27
Bridges.

For bridges between Boston and Wilmington.....203,470 83
 For the remainder of the route.....155,213 05
Superstructure.

The items under this head in the Treasurer's books up to June 11, 1849, amount to..935,201 50
 -----935,201 50

Machine Shops.

Cost of Island on Charles River, and Engine House & Machine Shops on same.112,385 41
 Freight House and Machine Shops at Andover, now abandoned.....22,091 12
 Machine Car Shops and Engine House at Lawrence.. 77,508 02
 -----211,084 55

Depots and other buildings..206,186, 21
Land, Land Damages and Fencing.

In Massachusetts.....551,768 49
 In New Hampshire.....118,844 31
 In Maine.....10,739 79
 -----684,352 59

Motive Power.

Locomotives.....121,050 00
 Cars of all kinds.....178,250 00
 -----299,300 00

Deduct difference between Superintendents and Treasurer's statements..... 6,981 64
 -----292,318 36

Miscellaneous.

Engineering and other expenses.....259,508 85
 Showing aggregate outlay for construction up to June 1, 1849.....3,791,808 21

Estimated cost of proposed and unfinished work.

To complete the double track to Lawrence 22,388 46
 For Depot at South Andover..... 8,000 00
 " North " 4,000 00
 " Methuen..... 3,000 00
 " Lawrence..... 34,000 00
 To complete Methuen Branch..... 8,000 00

Total for completing unfinished and proposed work.....\$80,388 46
 Estimated amount required in course of

* Being the stock of the New Hampshire, Massachusetts and Maine railroad.

the next two years to put the road in good condition.....45,895 84
 The real estate owned by the company, and not used for road is valued at....311,134 15
 Of which the committee advise a sale of what is valued at.....27,650
 The amount of rent upon the property of the company is..... 8,034 00
 Personal property in addition to the items above given is stated as follows:
 Lumber valued at..... 1,500 00
 Wood.....28,004 79
 Stationary Boiler at Andover. 2,000 00
 Stock in Car and Machine Shop.....41,684 77
 Stock in Penobscot Steam Navigation Co.....17,500 00
 2000 tons rails..... 90 00
 27,343 sleepers.....10,937 20
 Other Items..... 425 20
 -----192,051 76

So much for a naked statement of the financial affairs of the company without reference to its debts. The committee then proceed to the subject of—

RETRENCHMENTS.

To this branch of their investigation, the committee have devoted considerable space. The machine shops of the company, at Boston and Lawrence, for making engines and cars, in the opinion of the committee, demand extensive curtailment. The shop (and tools) in Boston cost \$77,585 97, and the annual expense of keeping it in operation is \$87,310 03, 92 men a month on an average being employed.

The cost of shop and tools at Lawrence was \$60,008 02, and it is operated at an annual expense of \$77,104 16, 76 men a month, on an average being employed.

The cost of labor and the materials in these two shops, for 18 months prior to 1st of June last, was 246,621 20, and the total value of cars and engines manufactured in them during that period was \$88,075—leaving a balance against the shops of 158,546 20. It appears, however, that other work, to the value of about 75,000 dollars, was done, which ought to be credited to the shops. With this credit, there would be a deficit of over 80,000 dollars.

In relation to this matter, the committee say that they are clearly of opinion, that such manufacturing establishments, even under the most judicious management, are not expedient as appendages to railroads. From the most diligent inquiry, they have not been able to learn, that any railroads which have embarked in such experiments have realized an adequate remuneration therefor. That they have examined several in the vicinity of Boston, and found none to be compared in extent, to those of the Boston and Maine railroad. The shop at Roxbury, belonging to the Providence railroad, is conducted as well at least as any other. It is small, and operated in the most systematic and economical manner by Mr. Griggs, who is both Engineer and Clerk. His average force upon all works on wood and iron has been but 30 men, with which he has constructed eleven first-class Locomotive Engines, within the last four and one-half years—three of them having been put upon the road the past year. He has also done all the repairs upon the road, and made the Frogs, Switches, &c. In June last, he reduced his force to nineteen men, including himself. The motive power for operating all his machines, cost less than \$800; whereas, that in two establishments of the Boston and Maine, cost about \$12,000.

Before forming a definite opinion as to the proper course to recommend for your adoption, in regard to these establishments, the committee prosecuted their inquiries into the concerns of several of the large establishments in the vicinity of Boston, under the

management of private individuals.

In the car shop of Messrs. Davenport, Bridges & Kirk at Cambridge, the average number of employees is 150; and the aggregate monthly amount of the pay roll is \$5400. With this force they turn out work to the amount of \$300,000 annually.

From the statement of the operations of the Boston Locomotive Works (late Hinckley & Drury,) as made to us by their Treasurer, Mr. Childs, there were manufactured at their establishment, in the eighteen months prior to July 1, 1849, ninety-nine locomotive engines, together with stationary engines and supplies, for railroads and other corporations, and private individuals, amounting to \$820,157 97.

For the same period, their outlay for labor was....\$177,874 96
 " " " materials..... 503,198 86
 -----\$681,073 82

Leaving for profit, interest, insurance, and taxes.....139,084 15
 -----\$139,084 15

The information derived from these investigations, has satisfied the committee of the inexpediency of continuing the manufacture of engines and cars; and in the large outlays made to carry on the operations of the engine and car shops, they think they have discovered one of the principal causes of the present condition of the finances of the company; and that with the retrenchments and curtailments, which can be properly applied therein, a very great saving may be made to the road.

The undersigned have endeavored to discover by a careful examination of the records of the proceedings of the Directors, how it was, that the large expenditures for the construction and furnishing of these establishments, were permitted; but they have been unable to find any authority therefor, by any vote of the Directors, therein recorded. No plans or estimates in relation to them are therein referred to and the committee are therefore, irresistibly left to infer, that they were carried on without any plan or estimate submitted to the Directors for their actions, or any vote directing or permitting them. Indeed, some of the Directors have so informed the committee; and the President himself has declared, that "he had never stepped his foot over the threshold of the car shop at Lawrence."—But they find, that all the bills for their construction, and for the elaborate and costly machinery and tools contained in them, have been presented and paid.

A list of the several employees of the company connected with the road and the shops, with the pay of each is given in the report. From this it appears that the total number of employees is 430, and that their aggregate pay is \$177,313 50. The committee believe that by a proper distribution of labor, and a systematic concentration of business in the different departments that many important savings may be made, aside from what would follow the reduction of force in the manufacturing establishments. The subject of free passages is considered and some important facts stated in reference to the same. In May last including the free passages to the stockholder's meeting, 5,017 passengers were carried over the road without fare; in June there were 3,193; and in July 2,390. They recommend extensive curtailments in the free list and that it be confined to the directors of this road and of the various roads connected with it. In relation to the amount of new stock necessary to place the company out of debt, they recommend an issue of \$6,220 additional shares, which will raise the capital stock to \$4,100,054 52. This it is believed

will amply provide for all the necessities of the company. The committee recommend that in future all repairs of the road and the appurtenances thereto, and all alterations, improvements and reconstructions, buildings, bridges, engines and cars hereafter made be charged to working expenses;— and further that a sufficient annual sum should be set aside as a sum to keep the road in a permanent good repair.

Two full and valuable tables of the receipts of the road are given, from which it appears that the total amount of receipts for the year ending June 1st, 1849, was \$484,511 90. Expenses of the road in this period \$240,691 14.

In regard to the future prospects of the road the committee state after having specified some of the sources from which an increased business may be expected to be derived, "that no one can reasonably question the ability of the corporation under an improved management of its affairs to earn for its stockholders an ample dividend upon their capital." They have annexed to their report a map of the road, "showing its position in the great chain of railroad which unites Boston with the remainder of New England, Canada and the Great West." At the close of their report the committee present the following suggestions:

1st. "The annual report of the directors should contain for the information of the stockholders as well as the public a full and perfect exhibit of the receipts from every source; and of all expenditures charged to construction, running expenses, depreciation or other objects, so that the true condition of the corporation may be fully understood.

2. "No construction of buildings, bridges or road should be permitted until perfect plans and specifications and estimates of the cost of the same shall have been submitted to and approved by the Board of Directors, and deposited with the Treasurer of the company for future reference.

3d. "These, and all other works upon the road where it is practicable, including the manufacture of the motive power, should be done by contract and not by days work.

4th. "After the completion of the road the construction account should be closed.

5th. "Liquidation should be shunned as far as practicable; but when unavoidable should be brought to a close within the shortest possible period."

The committee then recommend to the stockholders the adoption of certain resolutions, expressive of the opinion of the policy to be pursued in future in the management of the road. As these have been adopted in the main by the stockholders at a meeting for the purpose of receiving their report, we subjoin them as amended by the meeting.

RESOLUTIONS.

Resolved, That the Directors be advised to issue six thousand two hundred and twenty shares of the capital stock of this corporation, at one hundred dollars each, to be distributed among the stockholders, in the proportion of one share of new, to every six shares of old stock, held by any person, on the first day of September next; and that the sum of six hundred and twenty-two thousand dollars, being the par value of said additional shares, together with a sufficient amount of the assets on hand to be disposed of, be specifically appropriated to the following objects, viz:

For restoring the earnings of the road, heretofore applied to construction,	\$101,615 28
" Bills payable,	203,154 54
" Outstanding Accounts,	140,671 82
" Bonds,	26,000 00
" Completion of additional track to Lawrence,	22,358 40
" Completion of Methuen Branch,	8,000 00
" Constructing a passenger station at	

Andover,	8,000 00
" Constructing a passenger station at Methuen,	3,000 00
" Constructing a passenger and freight station at N. Andover,	4,000 00
" Constructing a passenger and freight station at Lawrence,	35,000 00
" Contingent and disputed claims, to be paid when adjusted,	93,145 75
	<hr/>
	\$649,975 70

And no change or transfer of the whole or any part of the aforesaid appropriation, shall be made, from any one or more, of the above objects to another (except the interest which may have accrued upon debts,) without the consent of the stockholders previously had and obtained, upon a statement in writing by the Directors, setting forth the reasons for making such change: And it shall be the duty of the Directors to present to the stockholders, at their annual meeting, A.D. 1850, a specific and detailed statement, to be contained in their report, showing how the aforesaid appropriation has been applied, and affixing the sum which has been expended upon each object.

Resolved, That after the expenditure of the sum received for the aforesaid new stock, and also the sum of twenty-seven thousand nine hundred and seventy-five 79-100 dollars, from the assets aforesaid, the "Construction account" of the corporation shall be closed, and that thereafter the Directors, and other officers of the corporation, are prohibited from contracting any debt, to be charged to capital stock.

Resolved, That all bills against the company, both for expenses and construction, shall hereafter be approved in writing, by the President or a Committee of Directors, appointed for that purpose, before they shall be paid by the Treasurer; who shall in all cases receive payments due to the company, and cancel all claims against it, thus approved.

Resolved, That the Treasurer be directed to keep an account of all the receipts, at each depot and station, specifying the items of each, to be inserted in the annual report to the Directors.

Resolved, That the Directors be required to present in their annual reports, a tabular statement of the names of the conductors, engine men, and ticket masters in the employment of the company, specifying the compensation of each—the number of the firemen, of brakemen, and of the baggage masters, Mail carriers, employed upon the line, with the average compensation of each class—the number of men attached to each station, not in the aforesaid classes, their duties and compensation—and the number of laborers upon the line of the road, not attached to any particular station, with the average and total amount of their pay—all expenditures charged to construction, running expenses, and depreciation, or other object, so that the true condition of the company may be fully understood.

Resolved, That the force in the shops at the island be reduced to an adequate repair force.

Resolved, That the manufacture of engines and cars be discontinued, except so far as may be necessary to employ the force at the island, when not engaged upon repairs.

From what we can learn, the report was received by the stockholders with general favor; and the views expressed by the committee adopted with unanimity. The committee appear to have discharged their duties with great industry and fidelity, and the action of this company in instituting the investigation, will exert a very beneficial influence upon all other roads in Massachusetts, for we have no reason to suppose that the affairs of the Boston and Maine road, have been managed worse than roads generally in that State. They have all, with one or two exception perhaps, been constructed and managed on the same system. And any reforms applicable to one are applicable to the whole.

The report censures the management of the road in two particulars: in the expenditures on account of engine and car shops, and in allowing too large a free list. It may have been culpable on these two matters; yet we think if such be the case to the

extent charged by the committee, that the report may be calculated to do the Directors injustice, by impliedly making their management responsible for the great depreciation in the price of stock, which has taken place within a year or two past. With the exceptions above named, it does not appear that the Directors have mismanaged their trust, or that their conduct have made the stock in the road any less valuable. The great mistake was the payment of higher dividends than the business of the road, compared with its ultimate cost would justify. The public were thus lead to put an erroneous estimate in the value of the stock, and it is that class who purchased under these circumstances who have cause for complaint, not the original stockholders, whose stock is nearly as valuable as it ever was.— We would here express our surprise that the committee should censure the directors for not issuing the 2780 unissued shares at a time when the stock commanded 18 per cent. premium, thus taking out of innocent purchasers who has no means of ascertaining the value of the property they were buying, 16 per cent more than its true value. We certainly think this suggestion of the committee is more culpable than any conduct we have seen on the part of the directors. As a general rule, we think that the conduct of the directors of the Massachusetts roads, has been guided by a desire to promote the interests of the works entrusted to their care.— They have made many mistakes undoubtedly; it is impossible that it should have been otherwise.— Railroads have been but recently introduced among us, and the best kind of management had to be developed from experience in working them. Taking all circumstances into consideration, our railway system has been remarkably well managed, and preeminently successful. Much more so than that of any other county. A year or two since a mania existed in Massachusetts on the subject of railroads. They were the true philosophers some that were able to turn everything into gold. All classes were affected by this mania; and any road proposed, was sure to pay, and no one supposed that any extravagance would diminish the dividends of those constructed. Under the influence of this delusion, roads were started that never should have been commenced, and undoubtedly much money was wasted upon lines already constructed. Directors felt and acted just as the public felt and acted. If they had not yielded to this impulse, they would have been more blamed than they are now. All parties have now recovered from the influence of this mania, and the poor directors are made responsible for all the mischief which resulted from it.— We object to this. We wish to see every class in the community take its share of the blame in which all are equally involved.

Alabama.

Mobile and Ohio Railroad.—The Mobile Register of 11th inst. says: We have the pleasure of announcing that the Directors of this Company closed a contract yesterday with Messrs. W. D. Riddle & Co., for the construction of seventeen sections of the Mobile and Ohio Railroad, commencing at the Eight Mile Creek and extending to Cedar Bluff, a distance of twenty-six miles. The Road is to be graded and timbered, and put in condition to receive the iron rails, at the cost of about \$160,000.

Connecticut.

Norwich and Worcester Railroad.—The reported receipts of the Norwich and Worcester railroad company for the month of July, 1849, amounted to \$19,585 15; against \$18,564 16 for the same month in 1848, showing an increase this year of \$1,120 99.

Georgia.

The Burke County Rail Road.—The Georgian says: "The amount of stock subscribed thus far is \$110,000, and will doubtless be increased to \$150,000, of private subscriptions alone. It may exceed this amount. With the subscription promised by the city, the sum raised here will exceed \$300,000, more than half sufficient to build the road. There is no doubt of its early commencement and completion. We have not heard from our friends in Burke county or Augusta, but are assured each will do their duty."

Vermont.

Rulland and Whitehall Railroad.—The grading commenced on Monday of last week. Before the travelling season next summer, this road is to be in running order, opening the communication to Saratoga from Boston, via Keene, Bellows Falls, Rutland and Whitehall; and ten miles in distance short of the Albany route, through the Western road.

AMERICAN PATENTS.

Tyler's Patent Safety Switch.

To the travelling portion of the public, switches are questions of life and death: if the humanity of railway directors fail to make them alive to the importance of improvements in those contrivances, surely their personal interests should not. Tyler's patent safety switch is the very best means we have seen for preventing those distressing accidents which occur every day to the great disadvantage of railways as means of travel, and as business investments. The switch referred to consists of a frame working on a pivot where the tracks diverge and carrying a few feet of the main and siding track.—A lever attached to the frame moves the switch over and hither, the motion terminating at two points; one bringing the main track of the switch to correspond with the main track of the line; the other bringing the siding track of the switch to correspond with the siding track of the line, and in such a manner that *whether the switch be placed for the siding or for the main track the frame presents an unbroken line of rail.*

We repeat that this is the best switch we have seen. The testimony of several railroad men throughout the country endorses our opinion—that while some minor improvements may be suggested in the details of it, Tyler's patent safety switch is decidedly the best switch yet invented, as the stops at which the lever-motion ends place the frame, provided only that the motion be made to end at one or other of the stops, in a position to make an accident, so far as the switch, main-track and siding are concerned, a matter of utter impossibility.

M.B.H.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufacturer.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,

cor. Steuben and Water sts. Albany.

August 24, 1848.

NOTICE TO

Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,

No. 24 Commercial St. Boston.

August, 16, 1849.

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TO CONTRACTORS.

Extension of the Baltimore and Ohio Railroad.

Proposals are invited for the Graduation and Masonry of the part of this road not already under contract between Cumberland and the Tygart's Valley river—a distance of about 103 miles. The number of sections now to be let will be about 58; of which 23 occur between Cumberland and the mouth of Savage River—18 in the glades, and the remainder on Raccoon and Three Forks creeks. The work will generally be moderate, although there are a number of sections worth the attention of contractors accustomed to heavy jobs.

Specifications and plans will be ready at Cumberland, on and after the 27 of August current. The proposals, addressed to the undersigned, will be received at Cumberland up to Saturday the 15 of September inclusive. Further information may be had at the Company's Office in Cumberland. Full testimonials will be required from those unknown to the undersigned.

By order of the president and directors.

BENJ. H. LATROBE, Chief Engineer.

August 9, 1848.

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Robers, Chief Engineer of the company.

Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Strangham, the Resident Engineer of the Western Division.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburg, August 11, 1849.

To Contractors.

SEALED PROPOSALS will be received until 12 o'clock, noon of Monday, the 3d day of September next, for grading, bridging and laying the superstructure of the road on all those sections embraced in the first division of the railroad, extending from Milwaukee to Waukesha 19 miles.

Plans and specifications can be seen at the office of the company, at any time after the 25th inst., between the hours of 9 a.m. and 5 p.m.

BYRON KILBOURN, President.

Milwaukee, August 6, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,

C. CROZET,

Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanical Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,

Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; *Deeds, Conveyances, Agreements, Assignments*, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburg Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meridith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

**Samuel Kimber & Co.,
COMMISSION MERCHANTS**

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July 27, 1849.

**Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,**

No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,

NO. 1 NEW STREET, NEW YORK.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848. 6m*

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,

PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—

SAFETY AND ECONOMY.

**NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,**

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manning & Lee,

GENERAL COMMISSION MERCHANTS,

NO. 51 EXCHANGE PLACE,

BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.

IRON.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig Iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuykill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

J. F. MACKIE,

Nos. 85 and 87 Broad St.

New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,

68 Broad street.

New York, June 1, 1849.

The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2½ by 4 Flat Bars.

25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Garscherrie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.

No. 4 So. Front St., Philadelphia.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best fagotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Separated—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.
October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 23, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by
A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory, **PARK WORKS, SHEFFIELD,** Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round. Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps. Genuine "Sykes" L Blister Steel. Best English Blister Steel, etc., etc. All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York. Also by their Agents—**Curtis & Hand,** 47 Commerce street, Philadelphia. **Alex'r Fullerton & Co.,** 119 Milk street, Boston. **Stickney & Beatty,** South Charles street, Baltimore. May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad. All fit to re-lay. For sale cheap by **PETTEE & MANN,** 223 South St., New York. May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.
½ Round and square, to 6 inches,
½ Flat " " 4
Ovals, half-ovals and half-round.
Hoop, band and scroll iron.
Nail plates, superior charcoal Horse shoe,
Iron, sheet and Boiler iron.
Tire iron for locomotives,
Railroad spikes.
Pig iron of superior quality for chilling,
do, for foundry purposes.
For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street, Sole agent for the New Jersey Iron Co, June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York. February 3, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month. Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality. **REEVES, BUCK & CO.,** 45 North Water St., Philadelphia. March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp. They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street. March 29, 1849. 3m.13

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md., Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper. *American Pig Iron* of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.* Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Brom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by **ICHABOD WASHBURN,** Worcester, Mass., May 23, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
100 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catoctin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.
Locomotive and other boiler iron furnished to order. **GOODHUE & CO.,** 64 South street. New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed. **JOHN F. WINSLOW, Agent.** Albany Iron and Nail Works, Troy, N. Y. The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merrill & Co., New York; E. Pratt & Br: 100, Ed: 100, Md.

LAP—WELDED WROUGHT IRON TUBES

TUBULAR BOILERS, FROM 1 1-2 TO 8 INCHES DIAMETER. These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers. **THOMAS PROSSER,** Patentee. 28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mial & Co., and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2 1/2 feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5 1/2 Pine street, New York,

Sole Agents for the New England States and New York.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them outside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR

Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

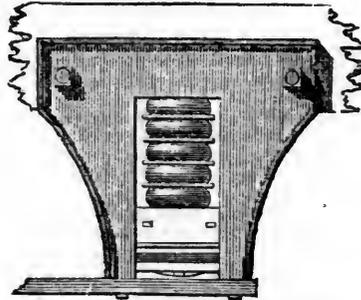
Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849.

6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by extraneous statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs James Lee & Co., 18 India Wharf, Boston.

May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849.

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,

142 Front-street, NEW YORK.

Orders for the above will be received and promptly attended to at this office.

32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawings, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

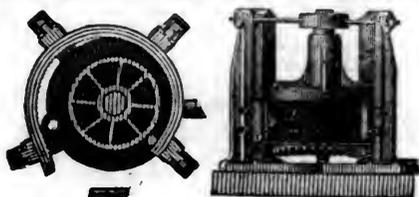
5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shinglers', or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

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March 12, 1848. }

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WORKS.

DAVENPORT & BRIDGES,

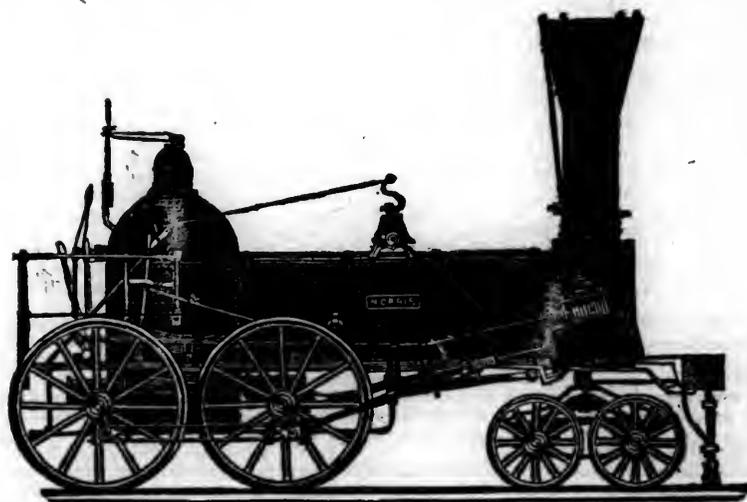
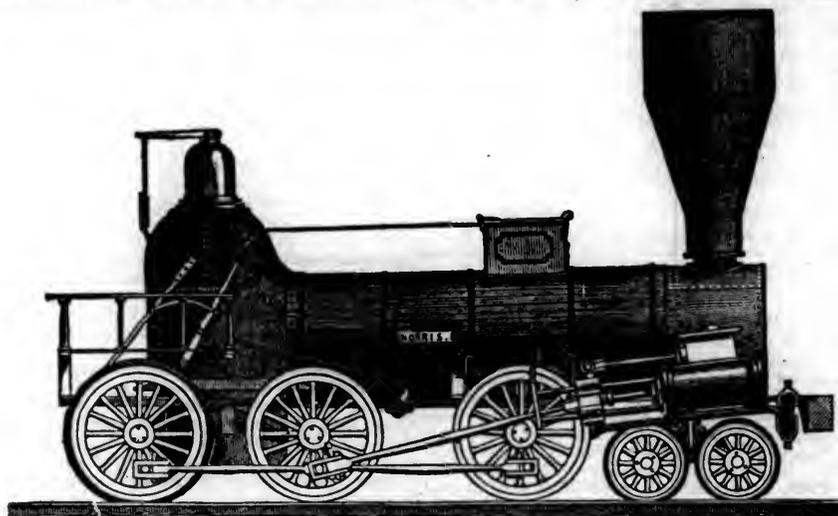
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And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

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NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, September 1, 1849.

Iron Ores and the Iron Manufacture of the
United States.

Continued from page 529.

NEW YORK

Other Veins of Putnam and Orange Counties.—

Since my examination of the veins of iron ores in Putnam and in Orange counties, some further developments have been made, which add no little to the known mineral resources of this region.

The first of these is the discovery of another vein of magnetic ore, near that of Simewog Hill, in Southeast, described on page 511. It is between 2 and three miles from the Harlem railroad towards the Hudson river. The vein is described as being much larger than that of Simewog Hill, and affording ore of similar quality and excellent appearance. From its abundance it is thought it can be mined and put on the railroad as cheaply as that of the vein crossed by the railroad. A considerable quantity was taken out last winter, with the intention of being carried to Boston, to be used in the

puddling furnaces of the Massachusetts Iron Company. These, however, suspended work before the ore could be forwarded. It is probable the iron ores of this vicinity will ere long prove a considerable source of revenue to the Harlem railroad by the additional transportation they will create.

The Cronkite mine in the highlands has been known for many years: but its importance has only been lately developed by the enterprise of Mr. Wm. Bushnell of Poughkeepsie. It is described by Prof. Mather in the State Geological Report, as situated $\frac{1}{2}$ miles southwest of West Point—that there were two veins separated by a sheet of rock, and traced 50 to 80 rods in a NNE. direction. It had furnished 800 tons of rich ore some 35 years previously, and this had been proved to be of superior quality. The veins were found to vary from a few inches to ten feet in thickness. Their dip was 70° towards the WNW.

In making some experiments last year as to the promise of the mine, it was discovered that the two small veins formerly wrought were but prongs of a very large body of ore, which had not before been known. The two small veins, and two other newly discovered, nearly parallel to them, projected out from this body towards the southeast somewhat like fingers from the hand, and between them were interposed gneiss rock. One of these newly found fingers, or prongs was no less than 16 feet thick, and the main body 25 feet. The ore throughout this great thickness is rich and of an excellent character of magnetic ore. Its structure is columnar, like most of the ore of Orange county and of New Jersey; and at the surface this tendency to separate into columnar fragments affords no small facility in mining, the cost of which is now only 40 cents per ton.

Operations having been but lately commenced, only about 700 tons of ore have been extracted; but the condition of the vein is such, that any amount required may be obtained; for there is sufficient room for working large numbers of miners; and the high elevation of the bed above the drainage around will always keep it free from water. The ore is taken by a road of easy down grade to the river, a distance of three miles, at an expense of about 75 cents per ton. The other expenses of handling and freight to the other side of the river at Poughkeepsie, are 28 cents. It is used mixed with the Fish-kill hematites in about equal proportions of each; and the iron produced is highly esteemed for foundry

dry purposes. There has been no occasion yet to test its qualities for puddling, though there seems to be no reason to doubt it should equal other forge pig made of similar ores. The furnace is now running at the rate of about 13 tons a day.

From the great dimensions of this bed of ore it is evident it may safely be relied on for enormous supplies; and to obtain them so near the Hudson river must certainly be regarded as an extraordinary piece of good fortune. It is well that this has fallen into hands, that will not allow the ores to lie like those of the Forest of Dean mine, (which is on the same range, but farther back from the lake), of no use to their owner and none to the numerous persons, who might derive support by the working of the mines and the smelting of the ores. The estimate I have given of the cost of making pig iron from the Forest of Dean ores on the river will not vary essentially from one applied to the ores of the Cronkite mine.

Mr. Bushnell has also discovered another vein of magnetic ore, a mile nearer the river, which he has opened and proved to be 12 ft. thick. This was not noticed in the State Geological Reports. A third vein he has obtained in Butter Hill Clove, opposite Breakneck, three-quarters of a mile only from the river. The vein is $3\frac{1}{2}$ feet thick and the ore is good. All these mines are very advantageously situated above the water courses of the vicinity; so that no expense of drainage will be incurred.

In the course of the coming winter, I trust I shall be able to present to the readers of the Journal a more detailed account of the mines and furnace operations of Mr. Bushnell.

Staten Island Ore Beds.—From New Brighton to Richmond is a range of hills composed of serpentine, which extends in a northeast and southwest direction through the centre of the island, and forms its most elevated portions. The serpentine is much disintegrated, and is very subject to crumble away on the surface. Over large areas the rock is sometimes exposed in this loose state, giving an aspect to the region like that of the "Bare Hills" about Baltimore, which are composed of the same material. On the serpentine, and forming superficial deposits in it, are varieties of hydrous peroxide of iron, and sometimes some spathose proto-carbonate, like the carbonates on the shores of the Chesapeake. The hydrous oxides seem to be formed from the decay of the rock and the removal of its magnesia—oxide of chrome being found as one of its constituents

adds to the probability of this being the case. The silica of the serpentine frequently remains behind with the oxide of iron—the two mechanically mixed forming a refractory ore, too poor to be of any economical value. This variety is found almost everywhere over the surface of the serpentine; some of it has the appearance of pot-metal, and rings like a bell; some of it is cellular, the cavities lined with small crystals of quartz. Scattered over the surface are found loose pieces of purer ore, as hematite, equal in quality to the best hematite of the Housatonic valley; but no where do these pieces lead to any extensive deposit. So numerous are they, however, in many places, that one is strongly disposed to attach much importance to them, and to be unwilling to admit, that they cannot be procured in large quantities. The various forms of stalactical, manillary and botryoidal structure are often as beautifully exhibited in these scattered fragments, as in the most extensive mines of the ore. Another very unusual form of hydrous peroxide of iron, or hematite, is found in larger deposits. It is of oolitic structure, formed of rounded grains, like shot, set in a ferruginous paste. The lumps, of all sizes less than a man's head, lie packed away closely together, with little foreign matter, or they are mixed with large quantities of ferruginous earth, from which they require to be screened. The whole rests either as a stratum of varying thickness upon the surface of the serpentine, or occupying a large nest in the soil, which rests upon the rock. Near the Moravian Church, on the road to Richmond, about four miles from Stapleton, is a large exposure of the ore covering the greater part of the bare hill. The rains have cut deep gullies through the deposit into the serpentine, and exposed the thickness of the ferruginous stratum. In the deepest place, this does not exceed six or eight feet, and towards the top of the hill it rapidly diminishes to nothing, the underlying serpentine coming to the surface. Several hundred tons of the ore have been taken away at different times. Five hundred tons were carried two years since to a furnace near Philadelphia. I had occasion to make a careful estimate of the quantity, which may be reckoned upon at this locality, supposing the ore does not cross the road. Several pits were sunk in different places on the hill, and making a fair allowance for the large quantity of dirt intermixed, I concluded 10,000 tons of ore might safely be relied on. An analysis was made by Mr. Hayes of a mixture of good and inferior pieces—designed to represent, as near as might be, the average of the fragments—with the following result:—

Water.....	12.00
Silica.....	11.60
Chrome iron.....	3.76
Alumina, phosphoric acid, and } .50	
Manganese.....	
Per oxide iron.....	72.04
	99.90

Iron—50.43 p. c.

The analysis gives no ingredient, that would be likely to injure the ore. Properly treated with other mixtures, it could hardly fail to work easily and might make good iron.

This same variety of ore is found more free from foreign matters, and in a more compact body, at Dongan's farm, on the western slope of the island, about two miles back from Port Richmond. Here in a cultivated, level field is a large pit, from which it would seem that several thousand tons of material must have been removed some years since.—The walls nearly all around this pit, so far as they are exposed down, which is six feet or more, are seen to

be made up of balls of ore; these can be rattled down with a pick in great abundance. In the bottom of the pit, at least 14 feet below the surface, ore was found in a small hole dug to prove the ground. Rocks of poor siliceous ore lie in one portion of the large excavation. What the quantity of good ore may be beyond the present limit of the pit, can be determined only by following the deposit beneath the surface. The character of the ore is like that of which the analysis is given above.

Surface indications of this ore are met with in various places on the range of the serpentine; but nowhere has it been so abundant as in those cited. That it will ultimately find a market in connection with the other ores of the vicinity of New York I cannot doubt; and I do not know but enough of these are now known to warrant the establishment of a furnace on some convenient site on the shore of New York harbor for their reduction. The magnetic ores and hematites of the highlands may be brought to meet the ores of Staten Island; and the time will come when the cinders about the numerous forges and cupolas will be thought worth gathering for this purpose; and the easily melted green sands of New Jersey will be brought to add their twenty per centum of iron and ten per centum of potash flux, to aid their reduction.

It is a curious fact, that the title to the minerals (except gold and silver), lying beneath the rich lands of Castleton on Staten Island, has never gone from the heirs of those, who first held the patent of the manor, granted about the year 1690.

IRON ORES OF LAKE CHAMPLAIN DISTRICT.

The largest district of iron ores in the State of New York is in the great tract of primary rocks, bordering Lake Champlain on the west, and stretching to the northern limits of the State, and westward to the river St. Lawrence. With its cold climate, its mountainous and rocky surface, this region has very little inducement, besides its rich mines of iron ore, to offer to the settler. Among the head waters of the Hudson lie the Adirondac Mountains, the highest and most alpine group of mountains in the United States. For though in some other States there may be higher peaks than that of Mount Marcy, (as Mount Washington in New Hampshire), there is no district, it is believed, of the extent of this, whose general elevation is so great; and in few are found summits so high.—According to the barometrical observations of Prof. F. N. Benedict, made with great care, the height of Mount Marcy is 5337 feet above tide. Around this summit, covering in all an extent of about 10,000 square miles, are groups of wild mountains interspersed with lakes and streams. Sheets of water, half lakes, half rivers, wind around the hills, their currents pursuing a devious course, some towards the river St. Lawrence, some towards Lake Champlain, and some to form the Hudson. At an average elevation of between two and three thousand feet above the sea, this region possesses as cold a climate as any in the country; and in the summer season among its wild haunts and grand scenery may be found cooler and more healthy retreats than any where else within the same distance of our large cities; where at the same time the woods more abound with moose and deer, and the ponds with trout.

The little village of Adirondac, (or McIntyre, as it was formerly called,) situated in the midst of these mountains, nearly fifty miles back from Lake Champlain, is the best point from which to make excursions among the mountains, or to examine the enormous beds of iron ore in its vicinity, which are

among the most extensive of any in the United States. From this point to Lake Champlain, the magnetic iron ores are of frequent occurrence. They also extend south into Warren county, and north and west into Clinton and Franklin counties. In St. Lawrence county the ores partake more of a specular character, though in its southeastern part, the magnetic variety also occurs.

It would be useless, were it in my power, to describe all the known localities of iron ore in this extensive territory. I shall limit myself therefore, with few exceptions, to those which have come under my own notice, and have been already proved, and promise to be of considerable importance. A large number of them are made use of only by forges, and as these are estimated to consume no less than 50,000 tons in Essex and Clinton counties, they will demand some notice, though I am not provided with very complete data concerning them.

In *Franklin county* I have no particular account to give of the mines. They are found far in the interior, in a rough and little cultivated region. The ores are rich and pure, of the magnetic varieties.—Some time since they were the cause of no little excitement, from the fact of steel having been made directly from them. But this proved to be a matter of no particular consequence, and indeed it was nothing new, as steel has been made directly from magnetic ores before. No dependence can be put upon the process, as in the deoxidizing and carbonizing, there is no certain way of controlling the operation, so as to insure any particular quality of steel, or indeed that the result may not be high iron or even metallic iron. The small furnace in operation here is called the *Duane Furnace*.

The steel engraving of the Cliff mine of Lake Superior, which we enclose with the paper of this week, has been in consequence of an accident kept back after the time it should have appeared with the article to which it belongs.

The sketch was taken on the spot, and afterwards painted in oils by P. Harry, Esq., now of Binghamton New York, and is a faithful representation of the mine, as it appeared at that time. Great improvements and alterations have since been made upon the surface; but the characteristic features of the trap ridge, the peculiar break in it, and the structure of the rock, which are here very correctly delineated, remain unchanged. The amount required to execute this engraving was liberally furnished me by the Directors of the Pittsburg and Boston Mining Company. H.

Copper Ores of Lake Superior.

Continued from page 529.

MINNESOTA MINE.

This mine presents some of the most interesting features of all the extraordinary mines hitherto opened on the shores of Lake Superior. It is situated two miles south of the Ontonagon River, 20 miles above its mouth—in a straight line only about 12 miles. The trap range crosses the river in this vicinity; and its hills are as high and precipitous as on Keewena Point. As there, however, they afford on their more gentle slopes, south of the principal range of hills, tracts of great fertility, on which thrives a beautiful growth of sugar maple, birch and oak and other hard wood, intermixed with magnificent white pines. The mine now worked is on the southern slope of the northern of three parallel ridges, which here constitute the trap range. Here, though nearly up to the summit of this ridge, the surface inclines gently, so that the land around the mine is cultivated and occupied by the houses of the miners. So unbroken is the surface in general, the

vein would probably have remained long undiscovered, but for some curious ancient diggings, which even in the thick woods could not fail to arrest the attention of one passing over them.—They consist of lines of pits, now partially filled with rubbish and overgrown with trees, which pursue a course parallel with that of the ridge itself—North of East and South of West. This course is at right angles to that of the veins on Keewena Point. The walls of the pits are ledges of amygdaloidal trap, evidently the walls of a vein. They incline in towards the axis of the ridge, the dip being about 55° North.—They may be traced with other indications of the vein for more than two miles in length; the actual extent of the workings themselves may not exceed half a mile. Their depth down to the rubbish does not exceed ten feet; how much deeper this may reach I cannot tell. In one instance I observed an arch of rock left standing, under which the unknown ancients had prosecuted their work along the vein. In the rubbish are found stone-hammers or picks, one end shaped like a wedge, the other rounded.—A groove passes around them, as if for a withe to bind them to handles. They are of various sizes; some so small a boy could pound with them; others would seem to have required two men to use them. They are generally made of the hardest kind of greenstone trap, such as is found directly about the mines. The quantity of them is so great, that as I was informed by Mr. Knapp, the agent of the company, many cartloads of them might be collected around the pits. Most of them are broken on the edge, as though used and then discarded. Two copper gads or wedges have been found, but excepting these, no other tools than these stone picks. These were each about 2½ inches long; one was a spike with a square head, the other a socket chisel. They are now with other relics in the possession of Wm. Hickok, Esq., 239 Water St., New York, who transacts the business of the company in this city. The use of iron seems to have been unknown to these miners. How their rude instruments could have been used to any effect in breaking down a rock about as hard as themselves—so hard that two good miners will be several hours in putting in a hole two feet deep with the best steel drills and mallets, and so tied together frequently with masses of copper than the drill will not penetrate, or if it penetrates, the powder will not break the rock—how such tools could have made way through it is more than we can comprehend. Possibly by the aid of fire the rock may have been rendered more brittle and easier to be removed; * but so slow and tedious must have

* It is known that in very ancient times fire was used for this purpose such being suddenly heated expands and cracks; and then by throwing on water it will in suddenly contracting open in fissures of greater or less depth affording an entrance for picks and wedges. Diodorus of Sicily gives some interesting details of these ancient operations. He observes between Egypt, Ethiopia and Arabia is a plain filled with metals and particularly with gold, which is extracted with much labor and expense; for the rock, black and hard by nature, is intersected with veins of very white and brilliant marble (quartz), which surpasses in lustre the most glittering substances. Here are employed great numbers of workmen. The King of Egypt often sends to the mines those convicted of crimes, together with all their families, as also prisoners of war and those who have incurred his displeasure, or who have suffered from any accusations, true or false—in a word all condemned to prison. By this means he draws large revenues from their punishment.

These numerous unfortunate people are chained by the feet and kept at work incessantly without any chance of escape; for they are guarded by foreign soldiers who speak strange languages. When the

been their progress the copper was necessarily of more value to them than gold is to us.

From the extent of their operations it seems that these ancient men must have had excellent success at this locality; and much credit is due them for their skill in discovering so rich a vein so far back in the woods—if indeed the region was then as wild and untrodden by human feet as it now is.

In one of their pits, twelve feet below the surface, they encountered a mass of copper too large for them to remove. From under the rubbish of centuries it has again been brought to light, and with it the evidences of their unsuccessful toil. The ancient miners had succeeded in taking the mass out of the solid vein stone in which it originally lay, and in raising it about a foot upon two *skids* or timbers, one of oak and one of birch. These were found in tolerably good preservation, the wood, of which I have a piece before me, being partially converted into lignite. Some ashes were found under the gavel near the mass of copper. This mass they had worked over with their stone hammers, till they had removed every particle of veinstone, that adhered to it, and filled its ragged interstices. This appears to have been done for the purpose of lightening it as much as possible. But it was still heavy enough to defy all their exertions: and having now been taken out and cut up, it is found to weigh 6 tons, 5 cwt. and 47 lbs. The bottom of this mass was about 25 feet below the surface; almost directly under it was the rich stamp work of the vein; over it had accumulated about 12 feet of gravel nearly filling the pit—and on this gravel were standing large hemlock trees, one of which, considerably smaller than some of the others, presented 397 rings of annular growth; and others also evidently still older lay rotting on the surface of the gravel. It was thought by men of good judgment in such matters, that the vegetable growth indicated at least 500 years since the pits were filled—and for the period of the ancient mining we must add to this the time taken for the gravel to slowly collect by natural causes to the depth of more than 12 feet; for we can

rock, which contains the gold is very hard, they soften it first by fire, after which they break it by heavy blows of picks or other iron tools. They are directed by a captain, who knows the veins of the mine.—The strongest among them break the rock with heavy blows, this work requiring strength only and no skill. As in following the veins it is necessary to make many turns, and the subterranean passages consequently become very crooked, the workmen who otherwise could not see clearly, carry lamps attached to their foreheads; changing their position as often as the nature of the place requires, they make the blocks of stone they detach fall at their feet. They work thus day and night, driven on by the cruelties and blows of their overseers. Young children enter the crevices made in the work, and take out the little bits of stone they find, which they afterwards carry to the mouth of the mines. Men of 30 years of age take a quantity of them and pound them with mortars in iron pestles, till they are as fine as grains of millet. Women and old men take this reduced stone, and put it in mills ranged along in order; then two or three working each mill, they grind the measures given to them as fine as flour.

A similar use of fire is still continued in some mines of Saxony and Hungary. A rectangular box of cast iron is employed nearly as large as the level, the opening of which, where the flame comes out, is opposed to the wall to be attacked. This opening is five feet long and 16 inches high; but the roof of the box slopes back, so that the opposite edge is only 10 inches high. The bottom is a grate on which is laid the fuel. The flames pour over against the wall of the mine, serving to weaken it and render it easy of attack with picks and wedges. Of course such a mode can only be adopted where the ventilation is perfect.

hardly suppose these long lines of pits were filled by any other agency. The above data were given me by Mr. Hickok, who was upon the spot at the time the mass was found, and who can be relied upon as one careful in forming and expressing an opinion.

There is no evidence that the present race of Indians have made use of copper, or have known any thing whatever of mining. These relics appear to have belonged to a more civilized people, and yet to one, who knew not the use of iron.—For where mining operations have been conducted, as we know, by the English and French, nearly two hundred years since in this very region, iron tools are found in confirmation of the records. There was once a people on this continent, who are known to have had copper utensils and to have attached a value to them. These instruments are still found in their mysterious mounds of the Western States; and associated with them are various articles most skillfully and ingeniously made, and which would seem to have exacted as much patience in their fashioning, as these curious stone hammers and the work accomplished by their use. According to the researches of Messrs. Squier, and Davis these "mound builders" were more numerous on the banks of the Ohio than our own people are at present. They evidently spread over a large territory. I myself have seen their mounds, and opened one on the banks of the Wisconsin River. Previous to the publication of his work by the Smithsonian Institution, Mr. Squier handed me a copper axe or chisel he had found in one of the mounds, that I might test it for silver, or discover if possible any other evidence of its having come from the mines of Lake Superior. It was six or seven inches long and about half as broad; one end was brought down to an edge. It appeared like a piece of native copper roughly hammered into this shape. No silver was attached to it, nor is it generally to the copper of these mines; it is rarely found in the copper, and not at all to my knowledge alloyed with the masses.* The copper was very pure like the generality of this metal from the Lake. The fact of finding such utensils in the mound, connected with the ancient excavation of these mines—like the mounds themselves evidently the work of a very laborious as well as skillful people—is strong circumstantial evidence that the mound builders had penetrated even to the shores of Lake Superior, and had understood and developed the resources of the country as much almost as we at this day. For it is not only at this point that vestiges of them are found, but so far as we have now traced these mines, even to the distant point of Isle Royale, so far had they known and worked them. It is to be regretted no skulls have been met with, as they would at once determine whether these works are to be attributed to the Aztec race or some other more recent people. The only human bones yet found in these pits are those of the arm, which were colored green by the action of the copper. It is to be hoped these may prove a forerunner of more important relics.

I have already considered the subject of the different bearing of the veins of this region from those of Keewena Point—their running *with* the ridges and *with* the belts of rock, instead of *across* them; and have been led to attach a greater importance to

* I have just been informed by Dr. J. L. Le Conte of this city, that Mr. Squier exhibited to him specimens of native copper, with small particles of silver attached to them, which he had found in the mounds. This must be considered as pretty conclusive evidence as to these mining operations being the work of the "mound-builders."

them for this reason. For while their production does not seem to be diminished by this change of direction, the veins are longer kept in the productive belt, which is the amygdaloidal trap. Thus the principal vein of the Minesota, which is found in this rock, running with its strike and underlying with its dip, has been traced as I am informed by good authority, more than two miles. Indeed has been worked on a considerable part of this distance by the ancients; while of the best veins on the Point, no one would be authorized in saying, they could be followed in the amygdaloid a quarter of a mile.

Accompanying this change of direction is also a change in the prevailing vein stone; which is here epidote instead of quartz. But associated with the epidote the same minerals are found, as quartz, laumontite, chlorite, calc-spar and prehnite, which characterize the veins on the Point. These differences of direction and composition do not appear to be connected with any change in the metalliferous character of the lodes. They abound alike with native copper, with which native silver is sparingly disseminated.

Many parallel veins of similar features are known on the three ridges of this tract, which is three miles long in an east and west direction, and a mile and a half wide; being the northern half of the lease numbered 98. Only one of these veins will require particular notice at present. It is the one described as having been so extensively wrought by the ancient miners. Still some of the other veins are not inferior to it in this respect; but they have not yet been followed up as this vein has been. The present workings were commenced last year, so that it cannot be expected, that much more should be done than clearing the land, building houses and commencing mining. Two inclined shafts have been sunk among the old pits, 150 feet apart, following down the slope of the vein, which is about 55°. After getting to the vein under the masses above described, it was found to contain copper interspersed through the veinstones, and a considerable quantity of good stamp work was obtained.—But at the depth of 35 feet, large masses of copper were struck, which rendered it necessary to continue the work under them, leaving them as a hanging wall. A level was then run, connecting the two shafts, through the underlying amygdaloid.—The copper wall on one side continued all this distance, its height from the floor to the roof being about eight feet, and its limit in neither direction being exposed. Much of the way it shows a clean face of copper, and this is then hidden by a scale of stone, which clings closely to it. This does not appear to exceed an inch in thickness: in many places, I struck through it with my hammer, and in others drill holes an inch deep exposed the copper beneath. I am not aware that any point has been found in this whole length of 150 feet, which indicated a break in the copper. Of course it is not doubted, but that there are such, the masses that have been found in the Cliff mine generally overlapping each other, and always separating into fragments never exceeding 60 to 80 tons in weight.

What the thickness of this mass or range of masses may be, had not been fully ascertained when I was at the mine. At the foot of one of the inclined shafts, there was a partial natural opening which had been cut quite through. But here the masses projected in huge prongs, which interfered with any accurate measurement. But the whole distance from outside to inside of these prongs was no less than five feet. From these data of course no calculations can be made of the quantity of copper in

sight, for the thickness of these masses is very variable; and there is no certainty that even one foot can be relied upon. At the Cliff mine the greatest thickness of solid copper has never exceeded three feet. Supposing for a moment this should average one foot, there are then exposed in this level 1200 cubic feet of copper:—or allowing four cubic feet to the ton, 300 tons. I should be extremely unwilling to say that it was ever likely to produce the half of this, without a much more thorough examination. So much as I have seen is certainly very astounding, and almost enough to lead me to doubt the correctness of my own observations: and I should hardly have ventured to publish them, had I not subsequently to my visit at the mine in June last, asked of others, who had seen it, their opinions also, which I always found agreed with my own.

To work around such a mass of copper and cut it up, much time will be required, and heavy expenses be incurred. This new kind of work is now pretty well understood at the mines, and men have become skillful in the novel trade of cutting copper. It is done with large cold chisels, one man holding and another striking as in drilling.—A chip three-quarters of an inch wide is run through across the weakest places, then another in the same channel, till the mass is penetrated. The work is worth from \$8 to \$12 for the superficial square foot exposed in the cut. Before this work is commenced, the mass is shattered as much as it can be, by heavy sand blasts of powder put in behind it. Late accounts from the mine represent that a portion, estimated to weigh 25 tons, has been thrown down in this manner, which they are now engaged in cutting to pieces. No mention is made of the thickness.

A machine is much wanted, and will yet be introduced to do this work of cutting copper more expeditiously than it can be done by hand, and the successful inventor will make his fortune by it.—Saws have been tried, but they work slowly through, and are injured by the fragments of quartz and hard trap rock, which are encountered in the copper. A series of hard chisels, arranged so as to be easily replaced, and follow close upon each other like the teeth of a circular saw, but with great force, seems to be what is required. Were the machine so cumbersome, that it could not be brought to bear in the mine itself, it might still be of great service in subdividing masses of five to nine tons, taken out by machinery from below.

This mine is connected with the Ontonagon river by a tolerably good road of easy down grade only two miles long. From this point the copper is transported to the mouth of the river in boats, at two dollars per ton, contract price, which renders the cost of putting the copper on shipboard little if any higher than from the mines on the Point. In an ordinary stage of the river, the boats carry down thirty tons each. Within the mouth of the river is a good harbor for schooners, capacious and deep, and docks are already built for the accommodation of vessels. Larger vessels and steamboats cannot come over the bar with safety until it has been deepened—a work which will probably be done by Government.

There have already been sent down to New York about ten tons of copper; and it is expected from 50 to 80 tons more will be shipped this fall. A steam engine has been sent up, which is to raise the ore and water from the mine, run the stamps and a saw, intended to supply wood and square timber. About seventy men are now employed, and the force will be increased as accommodations can be fur-

nished. The work has so far been conducted with excellent judgment and economy by the agents of the company at the mine, Messrs. Roberts & Knapp.

In closing the account of this mining tract, on which the vein described is but one of several others of similar external promise and but one of very many others within the range of a few miles of the same outward show—including even in some instances the ancient workings—it will be well to refer to the opinions I have before expressed, as to the productiveness of the copper region, and the probability, that copper will soon become with us an article of export rather than of import. The Cliff mine is sending down this season about 1000 tons like the 830 tons of last year, which averaged 60 per cent. of copper; this is equivalent to 600 tons of metal. It is certainly not unreasonable to expect that the Minesota mine in two years should do as well.—Several other mines I have described are fast becoming productive; and others still are in an earlier but hardly less promising stage of their development.

In the Custom House returns for the last few years, the importation of copper and copper ores has been about the value of \$2,000,000 per annum. This is equivalent to about 6,000 tons of metal—one tenth part of this is now furnished by one mine, which four years ago was hardly known. There are certainly now full seven or eight more, which present as good a prospect as did the Cliff mine the first year it was worked. The stimulus its extraordinary success, and that of the Minesota must create, will rapidly hasten the full development of these seven or eight mines and others also; and it cannot be long before this 6000 tons of copper is sent down the lakes, and we are independent of all foreign supplies. The next effect must be that our mines will prove serious competitors to those, which have hitherto supplied us with copper from ores averaging only from 7½ to 7¼ per cent. of metal, which is the rate all ores are brought to before going into the furnaces at Swansea. I cannot, therefore, but regard this region of immense consequence to us, and worthy the fostering care of our Government. Its harbors demand improvement, the expense of which private enterprise cannot be expected to meet; and a ship canal past the Sault Ste. Marie is essential for ready communication in the short season, when transportation is practicable;—and the construction of this falls wholly in the province of Congress to authorize and accomplish.—This subject will receive farther attention at a future time. H.

Irish Peat.

In the course of the debate in the House of Commons, on the 27th, on the Irish Poor Law Amendment Bill, Mr. O'Gorman Mahon read the following letter from Mr. John Waters, M. D., a distinguished chemist, residing in South Crescent, Bedford square, London:

"I beg to acquaint you that a discovery has been made in Ireland, which will materially enhance the value of landed property in that country. It consists in the aptitude of its millions of peat acres to produce, at trifling expense, little more than that of manual labor, oil naphtha, naphthaline, paraffine, muriate of ammonia, viccomar, pittical, candles, pitch, tar, and other principles, by a new process of distillation. These several materials were submitted to me some months ago by Mr. Owen; and from what I have seen and tested, I have no hesitation in pronouncing it one of the greatest discoveries of the age, and one which will become a source of unbounded wealth. I can easily let you have a list of the several products derivable from the distillation; and you have my permission to give this most important matter whatever publicity you please. Some of the products have been seen by, I believe, the Marquis of Lansdowne, and others here, and I know the Irish court are already cognizant of the discovery. JOHN WATERS, M.D."

Having read this letter, the honorable gentleman proceeded to observe on the importance of this discovery, as tending to the development of the resources of Ireland. He said:

"It appeared by the testimony of Mr. Hodges, professor of chemistry in Belfast, and of an eminent chemist in Paris, who was also consulted, that Irish peat was capable of producing oil of a superior quality—oil equal to that of the spermacetil, which was now used in manufactures to such an extent, and which at present cost from £90 to £95 a ton. The manufacturers throughout England would hail it as a boon that henceforth they could have oil of as great purity as that of spermacetil for a sum of £40 per ton, instead of £95."

Lord Ashley, the honorable member for Bath, corroborated Mr. Mahon's statement. With respect to Mr. Owen, he said he was a "gentleman of property and great business, and he had enjoyed his friendship for three years." He then went on to say that—

"He had requested Mr. Owen to call on him this morning, that he might take down in writing what he had frequently heard from his lips in the course of conversation, and he would give the house the result of this gentleman's statement. No doubt it might appear almost incredible, but let him press upon the house that it was not a matter of theory, it was the result of experiment. These things had been in operation over twelve months; the gentleman had invested considerable capital and received considerable returns; and the great value of this was that he asked nothing of the country—all that he did was to show that there was a profitable investment of money, and to invite capital for the cultivation of the soil and the employment of the people. This gentleman said that with 100 tons of peat the labor of converting it would cost about £8. These 100 tons of peat contained

Carbonate of ammonia, 2,602 lbs.,	value £32 10s.
Soda, 2,118 lbs.,	" 32 10
Vinegar, 600 gallons,	" 7 10
Naptha, 30 gallons,	" 7 10
Candles, 600 lbs.,	" "

"That was to say, they contained of the substance which was equal and superior to spermacetil, for every 100 tons—camphene oil, 700 galls.; common oil, 800 galls.; gas of the value of £8; ashes, £1 13 4—and therefore upon every 100 tons of peat, upon which £20 had been expended in labor, the total receipts were £91 16 8. That was what he held forth as the result of his operations. When the peat was cleared away, the soil beneath was exceedingly fertile, beyond all description, because it was saturated with ammonia.—Therefore, not only would the country be benefited by this process; but the soil itself would be brought into cultivation. If one half of what he stated was true, everybody would allow that something very great was about to be undertaken; and if the house bore in mind that this was the result of experiment, they would see that 100,000 acres of Irish peat were far better than the whole region of California."

There can be no question as to the value of this discovery, provided the calculations be accurate. If £20 worth of labor can produce, out of 100 tons of peat, a return of £91 16 8, without the aid of expensive machinery, the sooner the work is set about the better.—*Irish Railway Gazette.*

Fraudulent Representations of Directors.

We have ever been of opinion, and have so expressed ourselves, that Directors are personally answerable for the statements they issue, to parties deceived by them. For instance, if Directors represent profits in their report which do not exist, or cannot be paid, except out of capital, or out of sums to be debited, by any juggling or concealment, to a future half year, they, the Directors, are liable for any loss sustained by purchasers of the shares and investors in the stock of the Company. The knowledge of the facts being entirely and exclusively in the possession of the Directors, false representations can be nothing but frauds, for the purpose of raising or keeping up the price of the shares to a value to which they are, intrinsically, not entitled.—Such representations are equivalent to selling goods by a false sample, or giving a false warranty of a horse. They are frauds in the literal sense of the word, and those taken in by them can recover. Some lawyers believe that an action against the Directors would not lie, because there is no contract between them and the buyer. Any special contract there certainly is not; but the report being itself printed and circulated, constitutes the inducement in the buyers to become Shareholders. It is a representation, not to any individual in particular, but to the whole public; it is a warranty that what has been paid, has been legally and honestly paid by the Company, and therefore, an assurance, under the circumstances of the times, of what the stock is worth. Whoever therefore, is cheated by the falsity in the reports, has a remedy against the authors of the falsehood. Were it not so, a few men may get into a

Company and cheat and swindle the public by wholesale.

That we are correct in this view of the case, hear what Lords Campbell and Brougham said in a judgment on an appeal, Burnes v. Pennell, in the House of Lords the 16th of last month.

Lord Campbell says—
"If the appellants had been defrauded by any representations of the Directors, then, in that case, no doubt would exist as to the purchase being void. But it was not necessary that the Directors should have personally misconducted themselves in order to constitute defrauding. If they had made false representations by which he had been induced to accept a transfer of the shares, then that transfer might be set aside. He would here restate that which he had remarked in the progress of the arguments in reference to the conduct of Directors, who, with a view to raise the price of shares in the market, ventured to declare dividends out of the capital of a Company instead of out of the profits. Supposing a Company was not worked to a profit, and a dividend were made, and were made out of capital, it was quite clear that a gross fraud was committed, and the Directors making such a dividend were not only liable to a civil action, but were, in his opinion, guilty of a conspiracy, for which they might be indicted. He had no doubt but that any attempts which were made by false representations to raise the price of the shares in a joint stock Company, or in any kind of public stock, might be made the subject of an indictment. In the present case, however, it did not appear that there were any sufficient allegations sustained so as to connect the imputed fraud with the Directors, or even to prove that any fraud had been committed.—The dividends which had been announced in June, 1841, as well as in June, 1842, were clearly dividends which were to have been paid out of the premiums up to those periods received. It was impossible to deny but what it might have been imprudent to declare such dividends, but it did not follow therefore that the order for the dividends had been made in contemplation of the sale of shares for the benefit either of the Directors or of the Company. This was different to a Railway Company, wherein the Directors had merely to take regular accounts of the outgoings and the incomings, and upon those results to make a calculation."

To this Lord Brougham adds, that he
"Altogether concurred in what had fallen from his noble and learned friend. It was not sufficient to show a miscalculation of profits to support a charge of fraud. Most sincerely did he agree that it was a wicked and false custom that had obtained of making and paying dividends out of capital instead of profits, and so leading the world to imagine that the profits of the particular concern were large, when, in one point of fact, there was a loss upon the transactions of the Company.—Such payments were fraudulent and a false representation, and were a good ground for having recourse to a much severer proceeding than a mere civil action."—
These opinions, it will be observed, are delivered in judgment on a case of alleged fraud, in the highest court of judicature in the land. The opinion of these noble Lords is, not only that Directors are liable for the losses sustained, but that a false representation of profits is a felonious act, subjecting the parties to an indictment for conspiracy. Such, no doubt, ought to be the law if it was not. Knavery cannot well be carried to a greater extent, than to induce people by false representations to invest, perhaps, their all in worthless concerns. Wherein does it differ from getting money under false pretences, or downright robbery? In our opinion, the man who ventures his life in highway robbery, is not a whit worse than Directors who falsify accounts to plunder people of their property.—*Hera-path's Journal.*

Mr. Hudson.

Of all the rumors circulated respecting this gentleman, there is not one that attributes to him any sense of personal humiliation, from the exposures that have taken place. On the contrary the prevailing opinion is, that he is determined to brazen the matter out. *Hera-path's Journal* says:

"We hear the honorable gentleman bears his misfortunes bravely. As to any legal claims on him to refund, he laughs at them. He says they have none. One observation attributed to him contains, perhaps, more truth than wit, namely, that 'if there are any railway men better than he is, there are many much worse.' Another is, if he were called on to tell who had profited by him, names would appear of which the world little dreams."

"There is a report, said to rest on good authority, that the York and Berwick committee offered Mr. Hudson to accept £100,000 in lieu of all claims on him, which he would not give, but offered a much less sum. If this be true, we cannot understand on

what authority the committee could make the offer; to say the least of it, it was imprudent."

It is said he has no intention of resigning his seat for Sunderland. The story about his applying for the Chiltern Hundreds, and having been refused, is not credited. It is quite clear that unless some compromise be effected, a Committee of Inquiry must be appointed next session to investigate his conduct—and it is equally clear that such an investigation will result in his expulsion from the house, though he will leave behind him many a greater scamp than himself.—*Irish Railway Gazette.*

The Island of Cuba.

This island is 624 miles in extreme length, with a width varying from 22 to 117 miles, and covers an area of 37,000 square miles, being about the size of the State of Maine. It contains a population, at the present time, of 1,400,000; of which about 610,000 are whites, 190,000 are free colored, and 600,000 slaves. Its imports in 1847 were \$32,369,119, of which \$7,049,975 were from the United States. Its exports during the same period were \$27,998,770, of which \$12,394,876 were to the United States. In 1847 the number of arrivals at its ports was 3,740, and the number of clearances 3,346. Its principal harbors are the finest in the world. The amount of American tonnage employed in the trade with Cuba is 476,773 tons. It has 195 miles of railroad completed and in successful operation, and 61 miles in course of construction. It is well watered by numerous rivers, and its surface, except in the central portion of the island, diversified with mountains. Only two fifths of its surface are cultivated. Of the remaining three fifths, now unused, one is probably worthless, leaving one half of its agricultural resources undeveloped. The climate is so genial that it yields two crops a year of many of its productions. It also abounds in materials for manufacturing purposes, and its mountains contain mines of copper which are worked to considerable advantage.—*Boston Transcript.*

Use of Colored Glass to Assist the View in Fogs.

The following curious observation is made by M. Luvizi, of Turin, in a letter to the editor of *L'Institut*, at Paris. It we verified, it may prove to be of importance to geodetical operations, as well as in observations at sea.

"When there is a fog between two corresponding stations, so that the one station can with difficulty be seen from the other, if the observer passes a colored glass between his eye and the eye-piece of his telescope, the effect of the fog is very sensibly diminished, so that frequently the signals from the other station can be very plainly perceived, when, without the colored glass, the station itself could not be seen.—The different colors do not all produce this effect in the same degree. The red seems the most proper for the experiment. Those who have good sight prefer the dark red, those who are short-sighted like light red better. The explanation of this effect seem to depend upon the fact that the white color of the fog strikes too powerfully upon the organ of sight, especially if the glass have a somewhat large field. On the contrary, by placing a colored glass between the eye of the observer and the eye-glass of the instrument, the intensity of the light is much diminished by the interception of a part of the rays; the observer's eye is less wearied, suffers less, and consequently distinguishes better the outlines of the object observed."

L'Institut, Jan. 4, 1849.

Lithographic Stone.

We understand that Dr. Henry McKenzie, of this place, has entered a piece of land, which contains a bed of lithographic stone of the very best quality. It is known that all lithographic stone used in the United States is brought from Germany, the only place in the world where it has hitherto been found. This discovery of Dr. McKenzie, therefore, will be of immense benefit to the lithographer of this country, and to the art of lithographic engraving, as it of course can be obtained much cheaper from a quarry in Alabama, than it can be from Europe. We have seen the Talladega and the German stone compared, and those who are familiar with the qualities which constitute the excellence of the article, say that the former is greatly superior to latter. Indeed, specimens of the former have been

submitted to the examination of one of the most eminent engravers of Philadelphia, and he pronounces it of the very best quality. The bed is immediately on the banks of the Coosa river, and conveniently situated for cheap transportation.

There has also been found in this country abundance of Tripoli; as good we understand, as any in use. Tripoli is an article used by Jewellers for polishing metals, precious stones, and it is called Tripoli because it was first brought from the country of that name.—*Alabama Reporter.*

Iron.

The New York Express says that the contract which the Hudson River Railroad Company had with Peter Cooper, Esq., for supplying a part of the rails from Poughkeepsie to Albany, has been cancelled, the Company giving Mr. Cooper a bonus of \$54,000. It will be recollected that the Company contracted for this iron at \$67.50 per ton (the price which they have paid for the iron from New York to Poughkeepsie,) but now that iron has fallen to about \$40 per ton, the Company have made a good bargain with Mr. Cooper in being let off with the \$54,000.

A contract for a parcel of British railroad iron has been made at \$37.50 per ton, delivered at New Orleans.

We learn from the Baltimore American, that the importation of iron into the port of Baltimore on Saturday last was about 1500 tons, including 901 tons Railroad bars from Wales, said to cost in Baltimore, including freight and duty, the low price of thirty-five dollars per ton. Under the Tarriff of 1842, all this iron would have been manufactured in Maryland.

The iron business on the Cumberland river, near Hanging Rock and Eddyville, Kentucky, has been of late conducted with great success. The Louisville Journal says that one of the large establishments there, and since 1835' the average dividends have been 15 per annum on the capital invested, while, in the mean time, over \$260,000 has been lost by it in bad debts.

The American Iron Interest.

The importation of British iron for American railroads is becoming very general. We observed the other day a paragraph stating that the Cumberland Valley railroad, from Harrisburg to Chambersburg, is about to be re-laid with imported rails. This road runs through one of the best iron regions of Pennsylvania. Even in the West, foreign iron is imported largely. The Louisville Courier says, that almost every steamer from New Orleans brings more or less railroad iron for the Lexington and the Louisville and Frankford railroads. The directors of one of those roads have purchased 2,440 tons of foreign iron. Tennessee is suffering in her iron interest from a similar cause.—She has, to a considerable extent, been driven out of the New Orleans market by shipments of Scotch pig iron. Maryland has her full share of depression and loss, also, in her iron interest.

We are well aware that the opponents of protection will say that this is all right, and that if foreign iron can be laid down in this country at cheaper rates than our manufacturers can make it for, it is to our interest to import it. The argument on this point and its refutation have been often repeated that it would be useless to discuss the question here. One thing, however, is clear, viz: that the national policy in reference to this subject ought to be one thing or another. If there is to be no protection let it be said and so understood. But it is unworthy of a great nation to palter with the interests and the industry of its people, and while pretending to a reality to shuffle off with a mere mockery.

Under the Tariff of 1842, with a fixed duty, our iron interest arose from prostration and flourished all over the country. For it is the happy lot of this land to possess, in almost every portion of its territories, large and rich deposits of this most valuable of metals. With the Tariff of 1846 came an ad va-

lorem duty, contrived with a baneful ingenuity to raise when the price of iron in Europe is so high that it cannot be imported here and when no protection is needed, and to fall as the price falls abroad and when importations pouring into the country under these low prices render protection indispensable.

When the Tariff of 1846 was adopted, and for some time subsequently, the immense consumption of iron in Great Britain for railroad purposes kept the price so high there that our manufacturers suffered nothing from the change of Tariffs. The case, now however, is widely different. The railroad mania in England has subsided, while the large production of iron, stimulated by it, continues to go on and thus a large surplus is constantly on hand to be disposed of in our markets. It comes in the place of the ballast and at almost nominal freights across the Atlantic.

Now if the duty of thirty per cent. under the present Tariff were a fixed duty on a fair minimum valuation—if it were really and truly what it purports to be, a reliable duty, steady and unvaried—then our manufacturers could calculate with some certainty and conduct their operations accordingly. But the present system, yielding protection when it is not wanted, and denying protection when it is essential, is of all systems the most tantalizing, deceptive and ruinous.—*Baltimore Amer.*

From the Baltimore American.

Meeting of Pennsylvania Iron Masters.

At a meeting of furnace owners from various counties in western Pennsylvania, held at the St. Charles Hotel, Pittsburgh, on Saturday, August 18, Mr. C. Myers, of Clarion, was called to the chair; D. Ritchie and W. Colwell, of Armstrong, R. Clapp, of Venango, and W. E. Speer, of Butler, vice presidents; and Geo. S. King, of Cambria, and W. W. Wallace, of Mercer, appointed secretaries.

The object of the meeting was then stated by the chairman—to take into consideration the depressed state of the iron trade, and ascertain the cause thereof, with a view of pointing out some remedial measure to protect that great branch of Pennsylvania industry from falling into the same ruin with which it was visited in 1840, '41 and '42. Upon motion a committee of five was appointed to make a report to the meeting in the evening.

The chair then appointed the following committee: Nathan Evens, P. Kerr, of Clarion, D. Ritchie, of Armstrong, Jacob Black, of Clarion, and John Linton of Cambria.

The meeting then adjourned to meet at the same place, at 8 o'clock P. M.

The meeting having assembled, agreeably to adjournment, the committee made a report:

That, in pursuance of their appointment, they had recurred to the history of the iron business of this country for the last thirty years. That they find that as early as during the embargo system of 1808, succeeded by the war of 1812, the iron business of Pennsylvania had increased to a degree unexampled at any former period. That this property continued till the close of the troubles and war with Great Britain, which, so long as these lasted, afforded ample protection to this interest, to agriculture, and to labor. That so soon as this protection was removed by the re-opening of trade with England, consequent upon the peace, the price of iron, of agricultural produce, and labor, went down to a degree indicating the absence of almost any demand for agricultural produce and labor. That up to 1816 pig iron sold in the Pittsburgh market at \$60 per ton; wheat, through the country at \$1.50 per bushel; and the price of labor was \$20 per month. That in 1820 and '21 pig iron had fallen to less than \$20 per ton, wheat to 25 cents per bushel, and labor to \$6 per month. That the successive tariffs of 1822, '24, and '28 had a tendency to restore the prosperity of all these interests, each of which continued to improve until the effects of the compromise tariff of 1833 came to be felt in the markets of the country, by re-opening our ports to the iron of England. That the system of this compromise reached its minimum rate in 1842. That such was its effect upon the interests alluded to, that pig iron, which had increased in value to \$55 and \$60 per ton, in 1836, fell to \$17.50 and \$18 in 1842. That wheat from \$1.50 per bushel to 40 cents; and labor, from being in demand at high rates in cash, went a begging. That we find a decided improvement in each of these important interests in 1843, continuing on through 1844 '45, '46, and '47. That during the years from 1842 to 1846 seventy-five new furnaces were erected in the countries we represent. That since 1846 there have been but three new furnaces built. That pig iron, which was in current and ready demand in 1845, and until 1847, at \$32 and \$37 per ton, is now without de-

mand, and sales weekly reported to us of good iron, at \$20 per ton. That from these facts your committee are brought to this inevitable conclusion: that, as iron and labor are protected by an adequate duty on imports, those interests flourish: that as that protection is withdrawn, they languish and die. Your committee therefore tender for consideration the following:

Resolved, That the present depressed state of the iron trade has its origin and is entirely caused by the low rates of duty at which English iron is admitted into this country under the tariff law of 1846, and its injudicious and valorem principles.

Resolved, That five-sixths of the value of pig iron consists of labor, and as this labor can be procured in England at less than one third of what it usually commands in good times in this country, we in the United States can never compete with the English iron-masters except by a reduction of labor to the pauper rates of that country, or protection from its competition.

Resolved That it is not the wish of any of this meeting, and we hope of no American, to see the rates of labor in this happy country reduced to the rates of poverty in Europe.

Resolved, That, to ensure a different and more happy state of things among us, the labor of this country, including all its mineral and agricultural products, must be protected in our markets from the redundant labor of other countries.

Resolved, That, we and each of us pledge ourselves to use the utmost of our exertions to procure such protection, which can only be secured by a duty of specific values.

Resolved, That it is the duty of the iron men and agriculturists of Western Pennsylvania and elsewhere to hold meetings in their different counties, and organize for the purpose of petitioning Congress for a change from the present ad valorem to a system of specific duties, of adequate protection to the labor of the country.

Resolved, That this meeting recommend a Convention of the furnace owners of Pennsylvania, Virginia, Ohio, and Kentucky, to be held in the city of Pittsburgh, on Wednesday, the 21st of November next, to take into consideration all necessary and further action in the premises.

The preamble and resolutions were severally read and discussed, and finally unanimously adopted; after which upon motion of RALPH CLAPP, Esq., it was

Resolved, That the papers in Western Pennsylvania and others friendly to the interests of American labor be requested to publish the proceedings here had.

Whereupon the meeting adjourned *sine die.*

American Patents.

1. For an improvement in Compound Rail for Railroads; Benj. H. Latrobe, Baltimore, Maryland, September 5.

The patentee says—"My rail is composed of three parts, by which I secure an approximation to a uniformity of strength in the combined bar, by breaking the joints at two points instead of one, which is all that can be effected by the former modes; and it can be applied in many places where the other could not."

Claim.—"What I claim as my invention, is the combination of the cap rail and base rails, substantially in the manner and for the purposes set forth."

2. For an Improvement in the Self-Acting Switch; Edward J. Sterns, Ellicott's Mills, Ann Arundel county, Maryland, September 5.

The patentee says—"The nature of my invention consists in so arranging one end of a self-adjusting railroad switch, that the manager or engineer of a locomotive, or any other railroad car, may direct the train from the main track to a branch track, by moving a lever attached to the locomotive or cars, and in so arranging the other end of the switch that it may be operated by the flanches of the wheels when passing from the branch to the main track, or otherwise."

Claim.—"What I claim as my invention, is the application and hanging of the switch-rail, so as to turn horizontally on a pivot, as set forth, in combination with the horizontal lever beneath the flat plate, and the spring acting upon it, and through it, upon the switch rail, and thus keeping the switch rail pressed against the narrow end of the tapering rail, when the cars are not passing through; also in combination with the tilting frame below, and the flanch levers resting upon it at one end, and the crowning levers at the other, and the arranging of these latter levers so as to arrest the long arm of the one or the other of the horizontal levers, and thus hold fast one or the other of the switch rails, according as the one or the other side of the tilting frame

is depressed by a movable lever attached to the locomotive or car, pressing on the one or the other of the crowning levers in going towards the turnout, or by the flanch levers at the other end of the frame in coming back on the one or the other track, as set forth."

3. For an Improvement in Locomotives; Gustavus A. Nicolls, Reading, Berks county, Pennsylvania, September 19.

Claim.—"What I claim as my invention, is, 1st, the employment of a boiler, constructed in the manner and for the purposes set forth, when combined with an engine on a separate carriage as set forth.

"2d. The employment of a cylinder to constitute the body of the engine carriage, connected and combined with the steam cylinder, as set forth, in which the cylinders exhaust, to act as a hot well and partial condenser, and to give the required weight of the engine, that the traction of the driving wheels and the weight may be regulated and adapted to the load to be drawn, and to the condition of the road.

"3d. I claim the air condenser, in combination with the steam cylinders and water cylinder, for the purpose of condensing the exhaust steam, substantially as set forth, the condenser being cooled by the action of the atmosphere.

"And finally, I claim placing the closed ash pan of the boiler furnace on the boiler carriage, in combination with the fan blower placed on the engine carriage, the two being connected by means of an elastic or other yielding pipe, substantially as set forth."

Vermont.

The Rutland and Burlington Railroad Company—Two fine passenger cars and her noble engine (the "Middlebury") have been received at Burlington for the use of this road, which is now in rapid progress towards completion. Sixty miles of the track are already laid (more than one half the entire line). Regular passenger and freight trains are running daily, from Bellows Falls to Ludlow, 28 miles, and the iron is down, from Burlington southward as far as Middlebury, 32 miles. The breaking of a derick at Beman's Hollow, (the crossing of the New Haven River,) some three or four miles this side of Middlebury, has unavoidably delayed the completion of the bridge at that point for a few days.—Within the coming week, however, this splendid and massive structure will be finished, when, we understand, it is the intention of the Directors to commence running passenger and freight cars between Middlebury and Burlington, daily. Our Middlebury friends whose arms are *an hour long*, can then shake hands with us.

The steady, rapid, and noiseless progress of the Rutland road towards completion, has attracted almost universal notice and admiration. We are free to say that the manner in which this great public work has been managed is worthy of the highest commendation and praise, and reflects great credit upon the board of Directors, the Chief Engineer, Mr. Gilbert, and the efficient and capable corps of assistants.—*Burlington Free Press.*

New York.

Auburn and Rochester Railroad.

The receipts of this road, for the last six months, show a good result, considering the fact that the cholera has prevailed. The figures are as annexed.

Feb. 2—Surplus profits,	\$23,624 14
Receipts for February,	24,902 93
" March,	26,685 04
" April,	46,170 97
" May,	65,976 03
" June,	49,884 10
" July,	42,198 87
Mail,	5,600 00
	\$343,112 08
Running expenses and	
repairs,	\$124,850 92
Interest,	21,455 00
Dividend 4 per cent.,	86,070 60
	232,276 52
Surplus,	\$110,834 96

The capital of the road is \$2,151,765, and the net earning of the above six months exceed 5 per cent. A convention is to be held on the 22d to arrange a

consolidation of this road and the Auburn and Syracuse, and to discuss the question of a branch from Summit to Vicar.

The receipts of the Mohawk railroad for the six months ending 30th June, are about \$4,500 in advance of the same time last year. In July the prevalence of cholera operated adversely upon the receipts, as it has upon the receipts of all the railroads.

Ogdensburg Railroad.

An adjourned meeting of the stockholders of the Northern Railroad Co., of New York, was held yesterday at Cochtuate Hall. In the absence of the Hon. James Savage, Samuel Cabot, Esq., was called to the chair; Wm. T. Eustis was appointed Secretary. The following statement was made by the Treasurer of the Company:

To the Stockholders of the Northern Railroad:

GENTLEMEN:—At the meeting held at this place two weeks ago, a committee was appointed to obtain the necessary subscriptions for the Bonds of the Company; several days were consumed in printing and distributing the proceedings of that meeting, and a circular to the Stockholders. The amount of Bonds already provided for is about \$400,000.

Nearly every stockholder who has been called upon, has taken an amount of bonds equal to this amount of stock, some have taken more, and the few who have declined to subscribe when asked, have the matter under advisement. It is believed that no shareholder will finally decline the application, when the subject is fully understood, as it is absolutely necessary in order to carry out our plans, that each person should bear his proportion of the burden.

A large number of stockholders yet remain to be seen, and they will much facilitate the business by calling immediately on the Treasurer, and subscribing for their proportion of bonds. A heavy co-operation on the part of all the stockholders is much to be desired.

Henry Hall, Esq., offered the following vote, which was passed unanimously, viz:

Voted, That the progress already made in the subscription list, warrants a belief that the whole amount needed will be obtained on the terms offered the Stockholders, and that the importance of the immediate filling up of the required amount call for a *voluntary movement* on the part of each Stockholder, to avoid the delay consequent upon a personal application.

The meeting was then adjourned to be called by Treasurer.—*Boston Atlas.*

Maryland.

Baltimore and Ohio Railroad.—The receipts of the Baltimore and Ohio railroad, for the month of July, were:—From freight, \$57,054 52; from passengers, \$42,098 01; total, \$100,051 53; which is an increase over the receipts of July, 1848, of \$1,652 53. On the main stem there was an increase of \$7,114 99; but a decrease on the Washington branch of \$5,462 46.

The Commercial Marine of the U. States.

The following astonishing statistics are from the report of the Secretary of the Treasury, on the commercial navigation of the United States for the last fiscal year.

The extraordinary commercial progress of our country is shown in the following table of the sum total of our tonnage, with the increase per cent, for four decimal periods:

1818, 1,225,284 tons; 1828, 1,741,391 tons, 42 per cent; 1838, 1,995,639 tons, 15 per cent; 1848, 3,154,051 tons, 56 per cent.

In 30 years the tonnage of the United States has increased 160 per cent, upon what it was in 1818.

The first 6 States, in point of ship building, are presented in their order, as follows:

Maine, 89,974 tons; New York, 68,434 tons; Massachusetts, 39,366 tons; Pennsylvania, 29,638 tons; Maryland, 17,480 tons; Ohio, 13,655 tons.

The following facts appear from the report: One-third of the ship building of Pennsylvania, is in the west—8,000 tons of New York ship building is on the lakes.

The State of Ohio, an entirely inland State, is the 6th in point of ship building.

The State of Ohio builds as much tonnage in vessels as all the States and ports from Chesapeake Bay to the Rio Grande.

Ohio builds double as much as Virginia, North Carolina, South Carolina, and Florida.

The following is a view of the American tonnage of the lakes, as entered in the different marine districts;

Lake Champlain, 4,745 tons; Lake Ontario, 33,800 tons; Lake Erie, 115,960 tons. Lake Michigan 10,483 tons—Total, 164,997.

The tonnage of the western rivers, (exclusive of New Orleans,) is:

Pittsburg, 30,970 tons; Wheeling, 2,660 tons; Cincinnati, 24,350 tons; Louisville, 8,822 tons; St. Louis, 36,512 tons; Nashville, 2,445 tons; Vicksburg, 588 tons—Total, 108,127.

The river tonnage entered at New Orleans is almost equal to the whole of the above, making a total of almost 200,000 tons of ship tonnage on the western rivers.—*Albany E. Journal.*

Practical Use of Lake Winnipiseogee.

The Land and Water Company, owning the factories at Lowell and elsewhere on the Merrimack, purchased a few years since, the right to the water of Lake Winnipiseogee. The Lake now constitutes a vast reservoir for the supply of water to the Merrimack, during the months when the river is at a low ebb. To obtain the command of the water a new channel has been excavated, parallel to the old one. This enables them to command eight feet of water in depth of the whole surface of the Lake. The supply thus obtained is invaluable. For some weeks past, the Merrimack has been so slow that without this supply many of the cotton mills could have worked but a portion of their machinery. Some one has said that the aid thus obtained is worth a thousand dollars a day to the manufacturing companies. A single inch per day upon the surface of the Lake will usually be all that is required, and hence the eight feet will afford a supply for ninety-six days. It will be remembered that the Lake is above 22 miles in length and from one to ten in breadth, and besides this has a large number of bays, hence by a depression of a single inch upon the surface an immense quantity of water is drawn off. This advantage is one which but few rivers possess in the dry season, and gives additional value to the water power of the Merrimack.—*Manchester Dem.*

American Steamships.

The ocean steamers which are in progress of erection at New York are thus noted in the Evening Post:

Within a year, five of the largest steamships in the world will be sent to sea. The two in the greatest state of forwardness are the Ohio and Georgia, belonging to the N. Orleans and Chagress mail line, on which Mess. Law, Sloo, and other parties are contractors. These ships are shaped upon the most beautiful model yet adopted in the construction of any steamship. Their capacity is stated to be 2,750 tons each. Larger than even these are the two ships building under the contract for the conveyance of the mail between New York and Liverpool, held by Mr. E. R. Collins, the Atlantic and Pacific, which are now receiving their engines at the works of Stillman and Allen, and Allaire and Co. These ships are rated at over three thousand tons each, and will be capable, in the opinion of their constructor, of carrying a greater number of passengers, and more freight, than any steamship ever built, not excepting the President and Great Britain. Another very large ship, that can soon be fitted for sea service, is the Franklin, of twenty-two hundred tons. Her model is a very fine one, and appears adapted to the attainment of great speed. She was commenced by the proprietors of the Bremen line, but is said to have been transferred to Messrs. Fox and Livingston, who designed placing her upon the route to Havre via Southampton.

Besides these, four other steamers of the largest class are under contract, and will be built as soon as practicable. Two of them will belong to Collins' line, and will be of the same tonnage as the Atlantic and Pacific. One of them, the Arctic, is nearly ready for launching. Here, therefore, is to be a fleet of nine steamers, which, for size and costliness, will exceed any yet brought into service on this or the other side of the ocean. Their failure or success will depend in a great degree upon the care and skill with which their engines are constructed, upon the manner in which the machinery shall be adjusted to the hulls of the ships, and upon the completeness of the preparations in the engineers'

departments, before the vessels attempt their first voyage."

United States Steamship Susquehanna. We learn by the Journal of Commerce that the *Susquehanna*, at Philadelphia, will be ready to launch early next spring. She is 30 feet longer than the famous ship *Pennsylvania*. Her breadth of beam is much less, and her tonnage is but 2500. She will carry but 8 guns of heavy calibre—one of them, which will be placed upon her bow, will throw hollow shot weighing 268 pounds.—Her machinery will cost \$300,000—the four boilers alone \$30,000 each—and the whole vessel when completed, about \$600,000. Her crew will consist of about 300 men.

AMERICAN RAILROAD JOURNAL.

Saturday, September 1, 1849.

Railroad Iron—Foreign and American.

At least one hundred thousand tons of English railroad iron have either been received or ordered for this country within the last twelve months—at a cost of about five millions of dollars. To manufacture this quantity of iron, would require about 17,000 workmen—and making the usual allowance of five persons as dependant upon each one, we have a total population of 85,000 persons, who have been directly supported by the production of this enormous quantity of iron. These 85,000 persons in their turn give support to a great many thousand of farmers, mechanics, and professional men, who are again enabled to contribute to each other's subsistence. Now, it is certainly worthy of the consideration of our railroad companies, whether American or English railroads shall do the transportation of these thousands of industrious artisans, and their families, and of the freight they create. It is obvious, that if we buy English rails, all this business must be done on English railroads;—and we are actually swelling their dividends, when we pay for English iron. On the other hand, if our companies buy *American* rails, the business created by their manufacture is done over American roads, and each link in the great chain of railroads soon gets back its proportion of the money paid out for rails, in the shape of fares and tolls—not one dollar of which would they receive, if the article were purchased abroad. It is plainly, therefore, the direct interest of our companies to buy American rails. "But," says an economical President, "we can purchase English rails for \$40 per ton, and cannot get American for less than \$50. This difference in a 60-lb. rail will make our road cost \$1,000 per mile more—our capital is limited, and while we feel very *patriotic*, we must make the money of our stockholders go to the end if possible."

Now to the stockholders of companies, who are economically disposed, we submit the propriety of considering, how long it will take to earn an additional thousand dollars per mile, if they can only transfer the business directly and indirectly produced by an active population of 85,000 persons from England to this country. And besides the difference does not amount to a thousand dollars per mile; for the English rails frequently come into the hands of the track layer, crooked and winding. This need never be the case with American rails, properly made, and especially where the inspection may be cheaply made at the works. Crooked and winding rails are very serious obstacles to obtaining high speed—and we all know that every mile added to the speed of a train is attended with increased expense. By using well made American rails, greater speed may be attained with much less expense, than with crooked and winding Welsh rails

—and the thousand dollars per mile is soon saved out of the running expenses of the road.

These considerations alone would seem to be sufficient to induce our companies, on prudential motives, to give the preference to American rails, even at the increased cost. And we can only account for the fact that English rails have been purchased so largely during the past year, upon the idea, that they have labored under the impression, that the difference at first cost is really greater than it is.

But there is another consideration more important to the railroad interest than any we have yet suggested.—We refer to the *quality* of the rail, upon which in the long run the certainty of uninterrupted dividends depends more than on anything else, for we should not place much value upon stock in any road, which is compelled to relay its rails every few years in consequence of using those of inferior quality. The essential requisites of a good rail are *stiffness and durability*—in other words, power to resist the superincumbent weight, and the wear of the locomotive engine. To insure this, the iron must be close grained, and yet fibrous, so as to have great tenacity, and afford sufficient adhesion to the tires of the locomotive. Rails showing these characteristics can be made both in England and this country, as well as rails in which they are entirely deficient. In other words, rails are not *good* simply because they are American, or *bad* because they are *English*. But the *best* American rails, such as are made at several of our well known establishments, are at least equal to the best made in England, from their "good best" iron, such as they use for their refined machinery iron, and which cannot now be purchased for less than £7 10s. per ton, although common Welsh bars can be bought for £5; and responsible parties here are ready to deliver American rails guaranteed to be stiffer and more durable than English "good best" rails, at the same price that they can be imported for, but against the common bar they cannot compete. The advantage of the American manufacturer consists in the natural superiority of his raw material; while the English maker finds his advantage in the lower price of the labor he employs. But to make a good article out of inferior ore, he is compelled to bestow much more labor, and hence American iron of the best quality, being made with less labor, can compete successfully, even under the present tariff, against the best English iron, but against the common Welsh bars, such as our companies have been importing so extensively American competition is hopeless.—"But," we are told by some, "these Welsh bars are as good for rails, as the "good best" iron; and the cry against them is only raised by parties, who are interested in American manufactures. It is true Welsh iron will not make merchant iron like the best Staffordshire or American iron, but for rails such iron is not required." We believe that rails ought to be made of the very best iron, and that the engineer, who advocates any other iron is not doing his duty to the stockholders of the company which relies upon his judgment. Sad experience has taught this lesson in England, and we beg the careful attention of all persons interested in railroads to the following communication, which we find in the London Mining Journal:

To the Editor of the London Mining Journal:

Sir.—The very numerous and loud complaints, which we almost daily hear of the inferior quality of the rails, that are now being used upon the different railways in this kingdom, and the imputations cast upon the iron masters on this account, require from them some notice, as I feel they are not blameable to anything like the extent which is cast upon

them. For the honor of the trade to which I belong I have given the subject considerable attention; and, upon referring to the progress of railways from their commencement, and also the progress of the manufacture of railway bars during the same period, I find there are many palliating circumstances, which very much mitigate the amount of blame thrown upon the members of the iron trade. When railways first commenced, the quality of the rails was considered of first importance. The very best material was used in their manufacture; nothing else was allowed to be used for the rails. The contract for the Leeds and Selby line was taken by Messrs. Walker, of Gospel Oak, who made the rails; they were tied to the use of the best make of pig-iron. The puddled, or No. 1. bar was cut up, piled, and heated in the ball-furnace, shingled into a bloom, and rolled into a good best bar. Then it was cut up again, and rolled into the rail, without any mixture of inferior iron—so that when the rail was finished, it really was good best iron. The price paid was for best iron, and the railway company got value received. I have this information upon the testimony of an eminent practical iron master, who was called in by the maker to inspect the rails in the progress of their manufacture, so that he might satisfy the parties, that the iron used was really what it was sold for—the price, I believe, was 10s. or 20s. per ton above best bars.

What is the case now? Why, the very worst iron that can be made or purchased is now used in the manufacture of railway bars. Hot-blast cinder iron made into white pigs, is now sought after to be used for this purpose, and the price of railway bars, instead of being 10s. or 20s. per ton more than good best iron, is reduced to as low, and, in some instances, lower than the commonest bar-iron that can be found, either in Staffordshire or Wales—complete trash; and yet some of the purchasers will have you believe they got best iron, while the fact is rails cannot be made of good best iron at less than from two to three pounds per ton above that they are now selling at. It reminds me of orders being sent for gold watch seals, tying the maker to about 9d. or 1s. each. This is just now the case with rails; and the consequence is, they are no sooner laid down, than in a few weeks or months they begin to laminate, split, and crush, and are obliged to be taken up and replaced, as they are found to give way; and thus the railway is continually endangering the lives of the passengers, besides being a serious expense to the company. Many are now putting the rounded-topped rail, which puts off the evil day a little; but this destroys the tires as fast again, and thus increases the loss.

This state of things has been brought about by an unnatural state of trade. Since the demand for railway iron has become so large, many joint stock companies have been formed; to make iron some millions of capital have been brought together, and large works built, and put in motion by boards of directors; and these men, knowing nothing about making iron, and having no connection to take their iron, have to force sales by lower prices than are asked by the private iron master, working with his own money; and to follow these common deservatives, he is obliged to resort to the use of an inferior metal, or go to ruin; and thus it has come, in self defence, instead of using the very best pig-iron that could be made, to using the very worst and cheapest that could be got, and this accounts for the deteriorated quality of the rails. How can this state of things be remedied? Why, buy best iron, and give best iron price for it, and plenty of men can be found to do you justice; best bar-iron is now, at the present reduced price, worth £7 per ton at the works; no man can put this quality into good rails, to do you and himself justice, at less than £7 10; and yet I hear of their being sold at £5 or under—being as low, or lower, than the veriest trash, that can be found in the bar-iron market. Now, what folly this is, to suppose you can have gold for the price of silver, good copper for the price of common brass, or good best iron for the price of the veriest rubbish that can be made. To abolish this rotten system, give a fair price to the maker; this will enable him to do you justice, and bind him to uphold the quality of the rails, by exchanging every rail that splits laminates, or crushes, for five years after they are laid down upon the permanent way. This will put a stop to selling base metal for sterling stuff, and

will wind up some of those concerns, who are wasting, as fast as possible, the money of those, who have been so foolish as to advance it to build castles in the air.—A. *Staffordshire Iron Master.*

Now this is not the testimony of an American manufacturer, but of an *English iron master*, in regard to English rails. And that it is entirely true, we have fortunately conclusive evidence near at home. On the Camden and Amboy railroad are to be found five hundred tons of rails weighing only 40 lbs. to the yard, which were ordered by Robt. L. Stevens, Esq., on his original visit to England for rails, made from Bagnall's "good best" iron, for which one pound per ton was paid above the best *English refined merchant iron*. They were laid 16 years ago—and notwithstanding their light weight, and the immense business of the road, they are yet in good order; while the heavier rails of inferior iron, in their immediate vicinity, have long since been replaced with American rails. So well have the officers of that company learned the value of good iron by experience, that they have within a few weeks, given an order to the Trenton Iron Company for rails at \$55 per ton, which is really less than rails of corresponding quality, made from "good best" iron can be imported for. And we are authorized by Messrs. Cooper & Hewitt, the agents of the Trenton Iron Company, to say, (and doubtless every other American manufacturer will do the same) that they are prepared to deliver rails, which they will warrant to be at least as stiff and strong as English rails, made from "good best" iron, at the same price as the latter can be imported for; and that they will accompany them with the guarantee mentioned in the above communication, viz: "that they will exchange every rail that splits, laminates, or crushes within five years after they are laid down." We refer more particularly to the Trenton Iron Works, only because we are personally more familiar with the material from which these rails are now exclusively made, viz: the primitive red-oxide of iron, procured from the Andover mines in New Jersey, of which we shall give a full description in our articles on the manufacture of iron in New Jersey. No better iron is made for rails or merchant bars, than is produced from this ore: and we can bear personal testimony to the care, skill and success with which the ore is reduced at the blast furnace, and converted into the finished rail at the rolling mill. The other American establishments, at Mt. Savage, Danville, Phoenixville, Safe Harbor, Hyde Park, and Boonton, with which we regret to be personally not so familiar as with those at Trenton, have all maintained a high reputation, and will doubtless contract to make rails of the best quality, as we are sure they can do.

We desire to impress upon our railroad companies the importance of putting down the best rails they can get, even at a little additional cost. In this way only can be avoided the absorption of all the earnings in road repairs, which some companies in order to keep up dividends, have been compelled year after year to smuggle into the capital stock under the ubiquitous mantle of *construction*. No sooner is a track laid with \$40 Welsh rails, than the work of renewing them commences—and in two years, in some cases within our knowledge, almost every rail has shown defects to a greater or less extent. Now by the expenditure of one thousand dollars per mile additional at the outset, this whole expense might be saved for five years at least, because American makers will guarantee their rails for that time; and if they stand five years without showing defects, they are good for ten years more at least.

If any of our friends prefer to buy English rails, rather than American, at the same price, (as we trust they do not,) to them we say, buy the "good best" bars, in preference to common Welsh rails.—It will cost you a little more at the outset, but you will find your account in the end, in regular dividends, without a corresponding increase of capital stock; in less wear and tear and reduced running expenses; and in the greater speed and security with which you can run your trains. Every day holds you to a stricter accountability for accidents, and rest assured that the community will not long deem you guiltless of taking human life, unless you avail yourselves of every possible security against accident.

It seems to us that it ought to be a subject of general congratulation that the American manufacture, in five years, has been brought to such perfection, that even in the present depressed state of the iron trade abroad, and under the present low tariff, admitted by Mr. Ex-Secretary Walker himself, to be below the revenue standard for iron, rails can be made here, at least as cheaply as the foreign article of *corresponding*, we do not say *equal quality*, can be imported for. And we confess that we have been surprised at the magnitude of the orders which have been sent abroad for rails, when our own mills are standing idle, and ready to enter into contracts on such terms as we have stated above. Nothing but ignorance of the true nature of the case, can account for the fact. And we have thus earnestly and fully given our views, in order that the stockholders of railroad companies may judge of the propriety of instructing their officers, in all cases to use the best iron, if the additional cost does not exceed \$1,000 per mile—and that American rails shall always be preferred at the same price, provided proper guarantees are given to secure rails at least equal to the best English bars. In summing up the comparative advantages of purchasing the best and common rails, it should not be overlooked, that the former, when worn out, will sell for much more per ton, to be made into nails and merchant iron than the latter—and the difference in value will be greater than the difference in first cost—so that if a company have the requisite capital to make the purchase, the ultimate cost in dollars and cents will be no more for good iron than for inferior—while it will last at least twice as long.

We have only a few words to add in regard to the working of the tariff of 1846, upon the importation of good and bad iron. But we shall throw the subject of protection entirely out of the question.—The difference in first cost between the best English rails, such as we ought to import, if we import any, and the common Welsh rail, which we are now purchasing so largely, is about \$11 per ton. Now there are engineers and companies who know the value of good iron sufficiently well to be willing to pay this difference in price. But the tariff is *ad valorem*, and as the price increases, the duty increases, and the intrinsic difference between the cost of good and bad rails, is enhanced from \$11 to \$14 30 per cent. This is too much—and even these experienced engineers buy poor iron, because they are unwilling to confront ignorant stockholders, who would be horrified at the idea of paying \$55 per ton for rails, when \$40 is the price paid by a rival or neighboring road. The tariff of 1846, which was framed with the avowed object of securing to the consumer the best article at the lowest price, actually offers a bribe of \$3 30 per cent. per ton to our railroad companies to put down inferior instead of good iron. It discourages the use of the best article,

and endangers the lives and comfort of all who ride upon railroads. Now a specific duty, too low to afford any protection, and simply with a view to revenue, will be far better for the consumer and the public—as in a matter of such serious moment, we think the discrimination should be made against the inferior article, rather than in its favor. If the duty were so regulated as to bring the price of the common Welsh bar up to the present price of the best English iron, we should have no more of English rails in this country, while the railroad companies would find their dividends increased, by the saving in annual current expenses, and the increase of traffic resulting from the general revival of the iron trade; the iron master would rekindle his fires, now idle throughout the country; the honest laborer, now without the means of subsistence, would again look upon a cheerful home and a happy family;—and the public at large would ride in greater security and comfort behind the iron horse and his fearful flights. H.

Mr. HODGE leaves New York on Tuesday next for another expedition to the Lake Superior copper region.—He expects to be absent about two months.—His articles on the mining resources and smelting furnaces of the United States will go on as in his previous absence, without interruption.—Communications may be addressed to him at Eagle river, Lake Superior.

Iron Bridges.

Our attention has been directed to the manufacture of Iron Bridges for Railroads, which is prosecuted in this city by the New York Iron Bridge Company, of which Mr. M. M. White is Agent, and an advertisement of whose operations may be found in another column. We do not know, that in asking attention to this subject, we can do better, than take the following notice of it from the Buffalo Commercial Advertiser.

The New York Iron Bridge Co. have just completed an Iron Bridge over the Buffalo Creek for the White's Corners and Buffalo Plank Road Co., which establishes the fact that Iron is the best material for long spans of bridging, when strength and durability as well as ornamental structure are desirable.

This bridge is situated on the "Abbott Road," about two miles from the foot of Main street. It is what is denominated a Suspension Truss Bridge, upon an improved plan, partaking of all the important principles of the Suspension Bridge, without its objectional points.

It was constructed under the superintendence of Mr. M. M. White, who is agent, and one of the company engaged in the manufacture of this description of Bridges in the City of New York, where its parts were made and transported to this place. This Bridge is of 160 feet clear span—being the longest yet constructed of Iron in this country. It has two carriage ways, each twelve feet in width, and the Trusses are fifteen feet in depth.

Taken as a whole, it is a magnificent structure, and in detail it presents a most perfect specimen of mechanical architecture. It was subjected to a pressure of 50 tons, (the test stipulated in the contract,) and observed to settle only about $\frac{1}{4}$ of an inch in the centre, but when the weight was removed it immediately resumed its former position, and there was scarcely any vibration discernible while two heavy carriages were driven over it at a time on a brisk trot.

There can be no doubt of the perfect success of this bridge. It has beauty, strength and utility combined, which are highly desirable considerations and especially in cities, where unseemly wooden structures so often offend our ideas of taste. It is a curiosity well worth a ride out to see, independent of the opportunity offered to enjoy a delightful drive over the beautiful plank road. C.

Alabama Coal Trade.

In the interior of the State of Alabama near Tuscaloosa, and about 500 miles by river navigation from Mobile is a large bituminous coal field; the most southern on the range of the great coal formation of our Middle States. Associated with or near the beds of coal are large quantities of iron ore,

much of it hematite of superior quality, and remarkably convenient for mining, and for shipment after reduction to iron. We have some data respecting the prospects of the iron business here, which will find their place in the publication of the articles on the iron mines and iron manufacture of the United States.

A new importance has lately been given to the coal beds by the British West India mail steamers now making Mobile one of their stopping places in their communication with New Orleans; and there receiving supplies of the Alabama coal for their use. From the Alabama Weekly Herald and Tribune we gather some facts relative to this trade, which may be interesting to our readers:

"The first West India mail steamer which entered our bay in February last took on trial 106 tons of Alabama coal: it gave satisfaction; and up to this date, we have delivered to the several steamers at Mobile Point, 150 tons—all of which was brought to this city from the neighbourhood of Tuscaloosa last fall and spring. We have delivered all that there is in the city. The steamer would gladly take more, if it could be procured. A portion of the coal brought down the last season, say one-half, was of inferior quality, having been taken from the surface of the coal beds, very small, and mixed with dirt.—In mining or digging the coal, great care should be taken to procure the coal in lumps as large as they can be handled. The larger the better, and free from dirt. Getting out large coal is more profitable to the worker, as there will be less waste in transportation. We also recommend that the flats used for transportation be covered with plank, which will prevent the coal from being broken by walking over it when coming down the river. The plank so used can be sold here for about cost. The price we paid for coal last season was forty five cents per barrel; or four dollars and 50 cents per ton. We think the market will open at about the same rate next fall. The steamers offer to take one thousand tons per month, or twelve thousand tons per annum. And you may have some idea of the magnitude of the trade, in its infancy, when we inform you that the consumption of coal in Mobile for domestic purposes; (embracing Alabama, Liverpool, and Anthracite descriptions,) is but little over one thousand tons per annum; and yet we have delivered the English steamers in a few months the amount required for our city consumption for one year. In addition to the demand for the English steamers, there are several lines of steamers now in operation in the Gulf, and others to go in operation within two years—and they look to Mobile for their supplies; because it is well known, that this State can furnish coal far cheaper than any other port in the Gulf."

From another article in the Tuscaloosa Monitor, some further data are given of the cost of procuring this coal and its quality. From these data, given below, we infer that much of the coal has been collected merely from the surface, the flat horizontal beds lying often near the top of the ground over large areas. Coal thus taken from the outcrop is always dirty and smutty, however good the quality of the stratum when followed beneath a rock roof.—If such is furnished to the steamers, we should not be surprised to hear of their abandoning its use.—The Tuscaloosa coal is highly bituminous, and consequently very free burning; we have seen specimens of it perfectly sound, and apparently of excellent quality, though perhaps too bituminous for the most economical use where a good coking coal is required. The writer objects to the price of two cents per bushel for raising the coal by surface digging, which is a cheaper mode of obtaining it than by mining. The established rates of mining this kind of coal in Pennsylvania, and delivering at the mouth of the pit, is only a cent and a half a bushel. Here it is true there are plenty of miners, and the business has been long established. But in transporting the coal also from the mines to the river, a

distance of two or three miles, the extraordinary rate of four or five-cents a bushel, or \$1 20 to \$1 50 per ton, is given as the remunerating price. If the state of the roads or other causes render these rates necessary, the coal fields and iron ores of Central Alabama will not soon acquire the great consequence that their isolated position would, under other circumstances, insure them.

H.
"Any party conversant with the system of coal-raising, and transportation from the neighborhood of Tuscaloosa to Mobile, must see that such a price (two cents a bushel) is much too little. The price of raising coal by surface digging, will generally be found to exceed 60 cents per ton, or 2 cents per bushel, hauling it two or three miles to the river, will be from four to five, and the expense to Mobile will be equal to seven cents per bushel, leaving the raiser a profit of one cent per bushel, without any deduction whatever for the risk of loss on the passage, to which such a frail craft as a flat boat is greatly exposed.

Although coal may doubtless be raised by mining to an extent much larger than by the present system, and the article will be much superior yet the expense is equally as great, if not greater, and this is in a great measure owing to the difficulty (I should say impossibility) of procuring men acquainted with mining coal. The best coal is beyond doubt that which is procured by mining, but unless a greater price than \$4 50 can be obtained at Mobile, no parties with any capital can ever embark in the Alabama coal trade with any fair prospect of success—large coal should always at least command \$6 50 per ton. Were a proper understanding existing between the raisers of coal, no doubt a remunerating price might be obtained, in which case a great deal of trash now sent, would be excluded from the market, and the coal would have its fair character, that is, of being equal to the best English coal which is sold at Mobile and at the West Indies at \$8 per ton.

The "calling" of the West India Royal Mail steamers has had no beneficial effect on the price of Alabama coal, but on the contrary, the present prices have discouraged many parties from embarking in the business of raising coal, as it is a well known fact, that prior to the arrival of British steamers at Mobile, Alabama coal always brought 20 cents per bushel. In conclusion, Mr. Editor, I beg respectfully to suggest that a meeting of all parties concerned in the raising of coal, be held at some convenient place, when the prices and mode of sale, either by weight or measure, will be agreed upon, as there exists a great difference in the weight of coal from various places in this vicinity.

The Resources of Indiana and Ohio.

A number of a new paper started at Cannelton, Indiana, called the Economist, has lately been sent us, which contains an interesting address by Hamilton Smith, Esq., of Louisville, Ky., on the resources of Indiana. We have also other articles from this gentleman in the pages of the Louisville Journal, devoted to the subject of western manufactures, which he treats with great ability, and with unusual familiarity with the details of various operations, both in this country and abroad; while in the discussion of general principles, and of the duties of legislative bodies, a liberal policy is advocated, which (it may be for sufficient reasons) has not hitherto found general favor in the measures of the governments of the western States. The duty of Legislatures he conceives is to provide the people not merely with elementary school education, "but to furnish them such information, as will enable them to use their time and positions most productively. The way being pointed out by those placed in authority, associations in freedom of action will accomplish with us, what despotic governments fail to effect." In the State of Massachusetts, individual capital and labor began to associate in 1833, to construct railroads. The Emperor of Russia put his laborers to the same work in 1836. The little State has made a net work of railroads through all her

valleys, while the single line of the autocrat is yet incomplete. Since 1836 our twenty millions of people, by their associations, have made over 7,000 miles of railroad. Europe, with her population of 338 millions, has in the same time constructed less than 10,000 miles; and the largest part of these has been the work of individual companies.

But while the government need not be called to aid in the construction of a railroad, the building of a manufactory, or the opening of a mine, it is not less its duty to gather and publish all the facts bearing on the road, the profits of the manufactory, the importance and position of the mine. The individual hesitates to incur the expenses of surveys and experiments, because the road may not come near him, and the ore may be of better quality on his neighbor's land. The association cannot be got up without a fair prospect of success. But the State has broader lines, and the expenses of her surveyors, geologists and chemists, divided among the many are not felt." The author then endeavors to impart some of this information himself for the benefit of Indiana; though he makes no pretensions to the possession of other than that of a general character. The great western coal field, whose eastern border is along the western counties of this State, receives a large share of attention properly merited; for this bituminous coal formation is underlaid like the one reaching from Pennsylvania into Ohio, by important beds of iron ore, which come up to the surface around its margin, and which at many points on navigable waters, and in close proximity to the beds of coal and fine forests of wood present facilities for the manufacture of iron, and its cheap shipment to the remotest markets rarely surpassed. Cannelton, we believe, is one of these points; and we hope we may be able to furnish before long accurate details of its mineral resources.

In the Louisville Journal, mention is made of the laying out of a new town in Lawrence county, Ohio on the banks of the Ohio, called Ironton, designated as a shipping port for a number of blast furnaces, which are located in the adjoining counties. No less than nine are named, which will at once send their pig metal and castings to this port. These are—

The Hecla, owned by H. Blake.

" Lagrange,	"	Iron and Coal Co.
" Vesuvius,	"	Dempsey & Co.
" Etna,	"	Dempsey, Rogers & Ellison.
" Lawrence,	"	Culberson, Means & Co.
" Center,	"	Hamilton, Rogers & Co.
" Mt. Vernon,	"	Campbell, Ellison & Co.
" Buckhorn,	"	Willard, Seely & Co.†
" Olive,	"	Campbell, Peters & Co.

The counties of Jackson, Lawrence and Scioto are famous for their iron manufacture. There are nearly if not quite 40 blast furnaces in operation, some of which are run with bituminous coal with a small proportion of charcoal. Using the kidney ores of the coal formation, and the siliceous ores found in bands, they make a cheap quality of iron suitable for castings rather than for pig. At Hanging Rock, however, some good bar and sheet iron is also manufactured. The whole amount of the production of pig iron is, according to the opinion expressed to me by Prof. Mather, about 5000 tons per annum. Even with the investment of a little capital, the business has hitherto proved very profitable, as the paper of Mr. Smith seems fully to prove. Farther in the interior there are other furnaces, some of them running with bog ores. But both in this State and in Indiana, the principal points

for the manufacture must always be near the margin of the two coal fields and on the navigable waters, or where railroads or canals afford equally cheap modes of transportation. H.

British North American Mining Company.—We are informed that at the Quarterly Meeting of the Stockholders of the British American Mining Co. on Friday last, it was resolved to suspend operations at the Company's Mines on Lake Superior during the present winter, as much difficulty was anticipated, in the existing state of the money market, and the political aspect of the country, in getting in adequate sums for the vigorous prosecution of the works. We at the same time understand the confidence in the character of the mine has not abated, and that the enterprise will most probably be resumed soon after the annual meeting next spring.—*Montreal Gazette.*

TO UNITE WROUGHT AND CAST IRON.

A cast iron and wrought iron beam may be united by immersing the wrought iron beam in weak nitric acid; and then make it red hot, and plunge it into the weak bath of nitric acid again and free it from all the oxide that is upon it. It is then dipped in a weak solution of sal-ammoniac and immersed in a bath of melted tin until it is well tinned all over. It is then coated, where it has been united with the cast iron, with an alloy composed of copper 5 parts and tin 95 parts. It is then placed in a mould and made fast with tinned nails, when the cast iron in a molten state is poured into the mould, and a fusion takes place between the wrought and cast iron through the action of the interposed alloy. Steel and cast iron may be united in the same way.—*Portland Inquirer.*

IMPORTANT INVENTION.

Woven Iron.

Messrs. Wickershaw & Walker of Philadelphia, have a patent right for the manufacture of woven iron. This improvement does away with the necessity of pivots for the purpose of fastening iron work together where it is used for grating of any description. The manufacturers are enabled to weave iron as large as railroad bars, or the smallest description of wire. They are now applying it to the following purposes: iron railings of endless varieties, embracing beauty, strength and style of finish never surpassed, for public grounds, buildings, cottages, verandahs, lawns, cemeteries, etc., iron bridges, galleries for churches, gratings for prisons, window shutters, and grating for stores, columns, and cornices for cottages, tree boxes, summer houses, guards for decks of steamboats and vessels etc., being cheaper than wood or cast iron.—*Journal of Com.*

Indiana.

Railroads at Indianapolis.—We learn from the Indiana Sentinel that the joint committee, composed of committees from the Madison, Terre Haute, Peru, and Bellefontaine Railroad Companies, met at this place on Wednesday last, and united in recommending to their respective companies, for confirmation, the construction of a union double track, of heavy T rail, connecting the several depots with each other; in effect constituting each line a continuation of every other, as to the transit of through freight and passengers. It is further anticipated, as we learn, hereafter to establish a joint passenger depot, on the joint track, for the accommodation of the passengers on all the lines.

Massachusetts.

Essex Railroad.—An adjourned meeting of the stockholders of the Essex railroad was held at Salem on Monday. The President made a report, stating that the efforts of the Directors to obtain subscriptions to the bonds had succeeded beyond expectation among the stockholders, and that there was little doubt but nearly all would be taken. The accounts for the three weeks which have elapsed since the re-opening of the road are as follows: Receipts, \$1,250 51; expenses, \$215 98. The Directors were empowered to keep the subscription book open till the 1st day of September.—*Boston Atlas.*

South Reading Branch Railroad.—A meeting of the subscribers to the stock of this Corporation, was held on Tuesday, at Ashland Hall, in Danvers, for the purpose of organizing and electing a board of directors. L. Allen, Esq., was chosen moderator, and Geo. Osborne, Esq., clerk of the meeting. The following board of directors were elected:—David Pingree, Thomas P. Pingree, Edward Crane, William Sutton, George Osborne, Thomas Emerson, and Elijah W. Upton. The capital stock of this Company is \$200,000, of which \$150,000 is subscribed. It is to be commenced immediately, and it is expected it will be finished next spring. About seven and a half miles are required to be built, from Danvers to South Reading, there uniting with the Boston and Maine Railroad, and finishing the communication to Boston. At a meeting of the directors, David Pingree, Esq., of Salem, was chosen President.—*Boston Atlas.*

Ohio.

We give below a statement of the net receipts of tolls upon the public works of the state for the first three quarters, ending August 15th, 1849, also for the corresponding period of 1848, showing an increase in this year over last to the amount of \$56,057 22.

	Received during the 1st 3 qrs. in 1848.	Received during the 1st 3 qrs. in 1849.
Ohio canal.....	204,004 11	225,977 85
Miami and Erie canal.....	177,308 91	197,734 47
Muskingum Improve.....	20,140 94	33,511 43
Hocking canal.....	4,438 70	4,460 61
Walhonding canal....	614 68	909 20
	406,537 34	462,594 57
		406,537 34

Increase in 1849.....\$6,057 22

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE has just closed its annual session—which this year was held at Cambridge, Mass. Seldom has so large a number of our most distinguished scientific men met together as were congregated during the week at Cambridge; and never were so many papers presented to the attention of the association.

The Coast Survey particularly was well represented; and from Prof. A. D. Bache, its most distinguished head, a most interesting account was given of its progress and present condition, an abstract of which we regret we cannot lay before our readers.

The Geological Department was represented by Prof. Agassiz and Guyot of Cambridge, Prof. H. D. Rogers and Dr. C. T. Jackson of Boston, Prof. Hall of Albany, Messrs. Hunt of Canada, Moss of Philadelphia and Hodge of New York.

Communications were received from these gentlemen, which have been published in the daily papers, or will appear in the Transactions of the Association.

Many papers were read of mathematical and astronomical interest, one of which we transfer to our pages as we find it reported in the New York Tribune:—

A newly discovered Analogy in the time of Rotation of the Planets: BY DANIEL KIRKWOOD, Esq., of Pottsville—in a letter to, and read by Mr. Sears C. Walker. Mr. Kirkwood's letter, in which he mentions in detail some of his observations and their results, is as follows—copied entire because it may hereafter be valuable as matter of reference:

POTTSVILLE, Pa., July 4th, 1849.

Sears C. Walker, Esq.—Dear Sir: Knowing the great interest you feel in Astronomical inquiries, I take the liberty of submitting the following paper to your consideration, respectfully soliciting your opinion as to the problem which I have been attempting to solve. * * * Wishing to be as brief as possible, I would not trouble you at present with any statement of considerations which suggested my hypothesis.

While we have the law of Kepler, a bond of mutual relationship between the planets, as regards their revolutions around the sun, it is remarkable that no law regulating their rotations on their axes has ever been discovered. For several years I have had little doubt of the existence of such a law of nature, and have been engaged, as circumstances would permit, in attempting its development. I have at length arrived at results, which, if they do not justify me in announcing the solution of this important and interesting problem, must at least be regarded as astonishing coincidences.

Let P be the point of equal attraction between any planet and the one next interior, the two being in conjunction P', that between, the same and the one next exterior.

Let also D = the sum of the distances of the points P, P', from the orbit of the planet; which I shall call the diameter of the sphere of the planet's attraction; D = the diameter of the other planet's sphere of attraction found in the like manner; N = the number of sidereal revolutions around the sun; N' = the number performed by the latter; then it will be found that

$$N^2 : N'^2 :: D^3 : D'^3; \text{ or, } N = N' \left(\frac{D}{D'} \right)^{\frac{3}{2}}$$

For the sake of convenient reference I subjoin the following tables. The masses of Venus, the Earth, Mars, Jupiter and Saturn, are taken from your edition (1845) of Sir John Herschel's Treatise on Astronomy. Those of Mercury and Uranus correspond with my hypothesis, and are nearly identical with the most recent and reliable determinations of Astronomers. In other words, the mass of Mercury is very nearly a medium between the two estimates of Encke,* while that of Uranus is more than seventeen-eighteenths of Struve's mass (1-26860), found by observations on the satellites. The mean distances not being given in miles in Herschel's Treatise, I have used the table of distances in the Astronomy of Prof. Norton. For Mars' period of rotation (24h. 37m. 20.6s.) I have adopted the recent determination of Prof. O. M. Mitchell:

TABLE I.

Planet's name.	Mean Dist. in miles.	Mass.	Sq. Root of Mass.	No. of Rots. in one Sid. Pe'od
Mercury	36,814,000	277,000	526.3	87.63
Venus	68,787,000	2,463,836	1569.6	230.9
Earth	95,103,000	2,817,409	1678.5	366.25
Mars	144,908,000	392,735	426.7	669.6
Jupiter	494,797,000	953,570,222	40879.8	10471.
Saturn	907,162,000	284,738,009	16874.1	24620.
Uranus	182,429,000	35,186,000	5931.5	—

The corresponding logarithm to be added to the above table is as follows:

	Log.
Mercury.....	1.942653
Venus.....	2.363424
Earth.....	2.563777
Mars.....	2.825815
Jupiter.....	4.019988
Saturn.....	4.491288
Uranus.....	—

The points of equal attraction between the planets severally, (when in conjunction) are situated as follows:

TABLE II.

Between	Distance	Distance
Mer. & Venus..	8,029,600	23,943,400
Venus and Earth	12,716,600	13,599,400
Earth and Mars.	36,264,600	13,540,400
Jupiter & Saturn	266,650,000	145,710,000
Saturn & Uranus	678,590,000	238,538,000

It will be seen from the above that the diameter of the Earth's sphere of attraction is 49,861,000 miles. Hence the diameters of the respective spheres of attraction of the other planets, according to my empirical law will be as follows:

DIAMETER OF SPHERE OF ATTRACTION.

	Distance	Log.
Mercury.....	19,238,000	1.283704
Venus.....	36,560,000	1.501218
Mars.....	745,600,000	1.872479
Jupiter.....	466,200,000	2.638594
Saturn.....	824,300,000	2.916127

Remarks.—The volumes of the sphere of attraction of Venus, Mars and Saturn in this table correspond with those obtained from table II; that of Mars

extending sixty-one millions of miles beyond his orbit, or 206,000,000 miles from the Sun. This is about two or three millions less than the mean distance of Flora, the nearest discovered asteroid.—That of Mercury extends about eleven millions of miles within the orbit. Consequently, if there be an undiscovered planet interior to Mercury, its distance from the Sun according to my hypothesis, must be less than twenty-six millions of miles within his orbit, leaving 89,000,000 miles for the asteroids. It is only in the most distant portion of this space, where small bodies would be less likely to be detected, that none have yet been discovered.

The foregoing is submitted to your inspection. * When it is considered that my formula involves the distances, masses, annual revolutions and axial rotations of all the primary planets in the system, I must confess I find it difficult to resist the conclusion that the law is founded on Nature.

Yours, very respectfully,

DANIEL KIRKWOOD.

Mr. Walker remarked that he had verified Mr. Kirkwood's hypothesis, using the most recent elements of the solar system, and that he was induced to agree with Mr. Kirkwood that a formula which represented the length of the days of the primary planets, must be founded on a law of Nature.

Mr. Walker observed also, that in the department of the analogies of the Solar System, no discovery of equal interest or importance had been made during this century; and that, in his opinion, Mr. Kirkwood's name would in after time be placed by the side of that of Kepler, as the discoverer of a law which for the days of the primary planets bore a close resemblance to the third immortal law of Kepler for their years.

After this communication, several of the members of the Physical Section spoke in terms of admiration of the discovery.

On the 21st, Dr. Gould addressed the Association on the same subject. He had made independent computations confirmatory of those of Mr. Kirkwood and Mr. Walker.

The formula of Mr. Kirkwood may be thus stated:

"The square of the number of a primary planet's days in its year, is as the cube of the diameter of its sphere of attraction in nebular hypothesis."

The members generally expressed the opinion that La Place's nebular hypothesis, from its furnishing one of the elements of Kirkwood's law, may now be regarded as an established fact in past history of the Solar System.

The Georgia Burr Mill Stones.—The stone most commonly used for grinding wheat, is known by the name of "French Burr," because they are imported from that country. This species of stone is a porous silicious mineral, so very hard, that a pair of mill stones will last quite a number of years at full work, without being worn out. The French burr stones, owing to their great price, has from time to time stimulated both the Americans and the English, to many efforts to supersede them. During the last war between France and England, when it was impossible to get burr stones, the London Society of Arts offered a premium of a gold medal, or one hundred pounds for the discovery of a quarry producing stones equal to the French Burrs.

A quarry was discovered in Wales with stone similar to the French, and answered tolerably, but they were not equal to the French. A number of masses of rocks were also discovered at Stirling, Scotland, and made into stones, some of which indeed gave better satisfaction than the French burr, as they were of a more even texture, but the French stone still carried the bell. In our country a substitute for it has long been a desideratum. This has now been obtained. In Burke County, in the state of Georgia, a large quarry embracing an area of 17,000 acres has been discovered; and a Company named the La Fayette Burr Mill Stone Company, has been formed to work it and furnish American Mill Stones equal to the French Burrs.—The principal office of this Company is in Savannah. About 1000 sets of stones have already been put up, and are now in operation, and some of them alongside of the French, where in every instance they have equalled—and a little more, the very best French Burrs. Samples of this stone have been in our office for some time. We have contrasted them in every way with French burrs, from which without knowing that the one came from France and the other from Georgia, no person could point out a difference. Those who have used the Georgia stone, prefer it for a more enduring fine sharpness, and in that case, it is more economical to use.—From what we have seen of the Georgia stone,

and heard about it from the most respectable sources, respecting its practical results, we are confident that the quarry must be of immense value.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, au7tf No. 74 Broadway, New York.

Hudson River Foundry, THOMAS & COLLIER, 130 Quay Street, Albany.

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 25th, 1846.

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,

No. 24 Commercial St. Boston.

August, 16, 1849.

6m33

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company.

Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Siranghan, the Resident Engineer of the Western Division.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburg, August 11, 1849.

To Contractors.

SEALED PROPOSALS will be received until 12 o'clock, noon of Monday, the 3d day of September next, for grading, bridging and laying the superstructure of the road on all those sections embraced in the first division of the railroad, extending from Milwaukee to Waukesha 19 miles.

Plans and specifications can be seen at the office of the company, at any time after the 25th inst., between the hours of 9 a.m. and 5 p.m.

BYRON KILBOURN, President.

Milwaukee, August 6, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be cash, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,

C. CROZET,

Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,

Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Ford, James K.,

New York.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburg, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

**Samuel Kimber & Co.,
COMMISSION MERCHANTS**

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

**Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,**

No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

To Railroad & Navigation Cos.

Mr. M. Butt Hewson, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,

Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,

No. 23 RAILROAD EXCHANGE, BOSTON, MASS. Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,

SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,

GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.

IRON.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT

Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to J. F. MACKIE,

Nos. 65 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849.

The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2½ by ½ Flat Bars.

25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Gartscherrie.

100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.

No. 4 So. Front St., Philadelphia

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best fagotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 23, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N. Y.

ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory, **PARK WORKS, SHEFFIELD,** Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.

All fit to re-lay. For sale cheap by **PEETEE & MANN,** 223 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

½ Round and square, to 6 inches.
¼ Flat 4 "

Ovals, half-ovals and half-round.

Hoop, band and scroll iron.

Nail plates, superior charcoal Horse shoe,

Iron, sheet and Boiler iron.

Tire iron for locomotives,

Railroad spikes.

Pig iron of superior quality for chilling.

do. for foundry purposes.

For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street,

Sole agent for the New Jersey Iron Co,
June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. **THOMAS B. SANDS & CO.,** 22 South William street, New York.

February 3, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO., 45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. **ILLIUS & MAKIN,** 41 Broad street.

March 29, 1849.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md., Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catarba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hillea* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.* Baltimore, June 14, 1849. 6 moa

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by **ICHABOD WASHBURN.**

Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE.

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
100 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catoctin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order. **GOODHUE & CO.,** 64 South street.

New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent. Albany Iron and Nail Works, Troy, N. Y. The above Spikes may be had at factory prices, of **Erastus Corning & Co. Albany;** **Merritt & Co.,** New York; **E. Pratt & Br. Lowell, Mass.** Md

L A P — W E L D E D WROUGHT IRON TUBES

FOR

TUBULAR BOILERS, FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship **Hendrick Hudson,** from London, made by **Billingsley, Mial & Co.,** and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.



Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

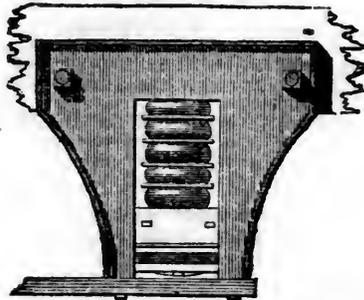
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.
May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 38 Broadway New York, and of Messrs James Lee & Co., 18 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,
BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

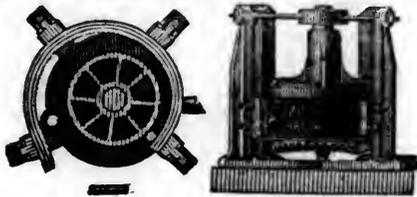
3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR
WORKS.

DAVENPORT & BRIDGES,

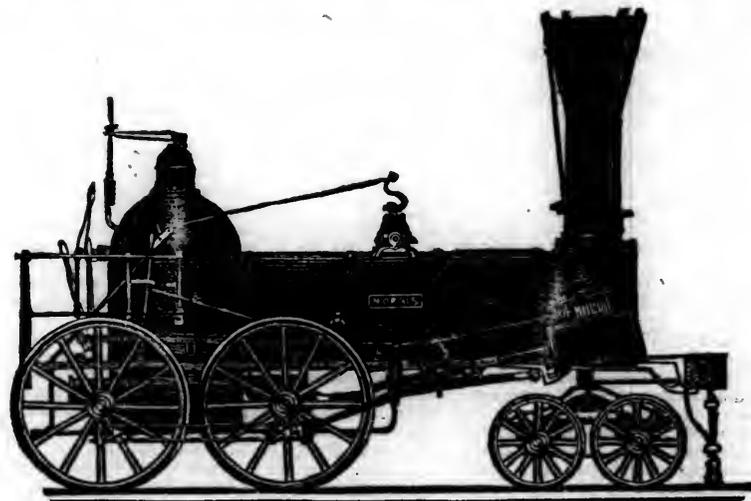
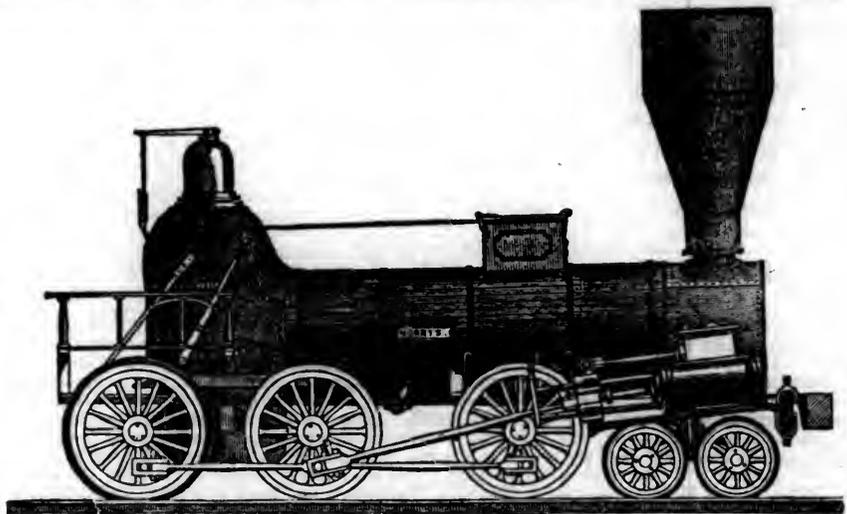
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, September 8, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 544.

NEW YORK

In Clinton county there were formerly two blast furnaces belonging to the Peru Iron Company at Clintonville. The ores not working well, however, in this mode, the furnaces were abandoned, and the company directed all their attention to the process of reduction by the bloomery fire. Their establishment has grown to be the largest in the country, containing under one roof twenty-one fires and one oven for re-heating the blooms, which is heated by the gas and hot air from the other fires. These meeting in the oven, or by the bridge, which corresponds to that of a puddling furnace, a vivid combustion takes place, producing intense heat, with great economy of fuel. These works have been successfully conducted for many years by Mr. J. B. Bailey for Messrs. Saltus & Co. of New York city.—The bar iron stands well in the market, and is ex-

tensively used for the manufacture of nails, for which it is particularly well adapted. For articles exposed to the action of sea water, as chain cables, anchors, etc. it is not so well suited, the iron having a singular tendency to oxidize more rapidly, than iron made from hematites and some other ores.

The mines, that have supplied these fires, are along the range of hills bordering the Ausable river. The most important among them are the *Arnold, Palmer and Winter*, the two former of which have supplied also a number of other forges. Charcoal, which has for some time past been growing scarce, is now worth at these fires, about seven cents a bushel.

A description of these mines, and of the forges dependent upon them, as well as of numerous other forges scattered throughout the counties of Clinton and Essex, of which I have now but an imperfect list, will be deferred for the present, until my data shall be more complete. The continuity of the account of the blast furnaces also by this arrangement will not be broken in upon.

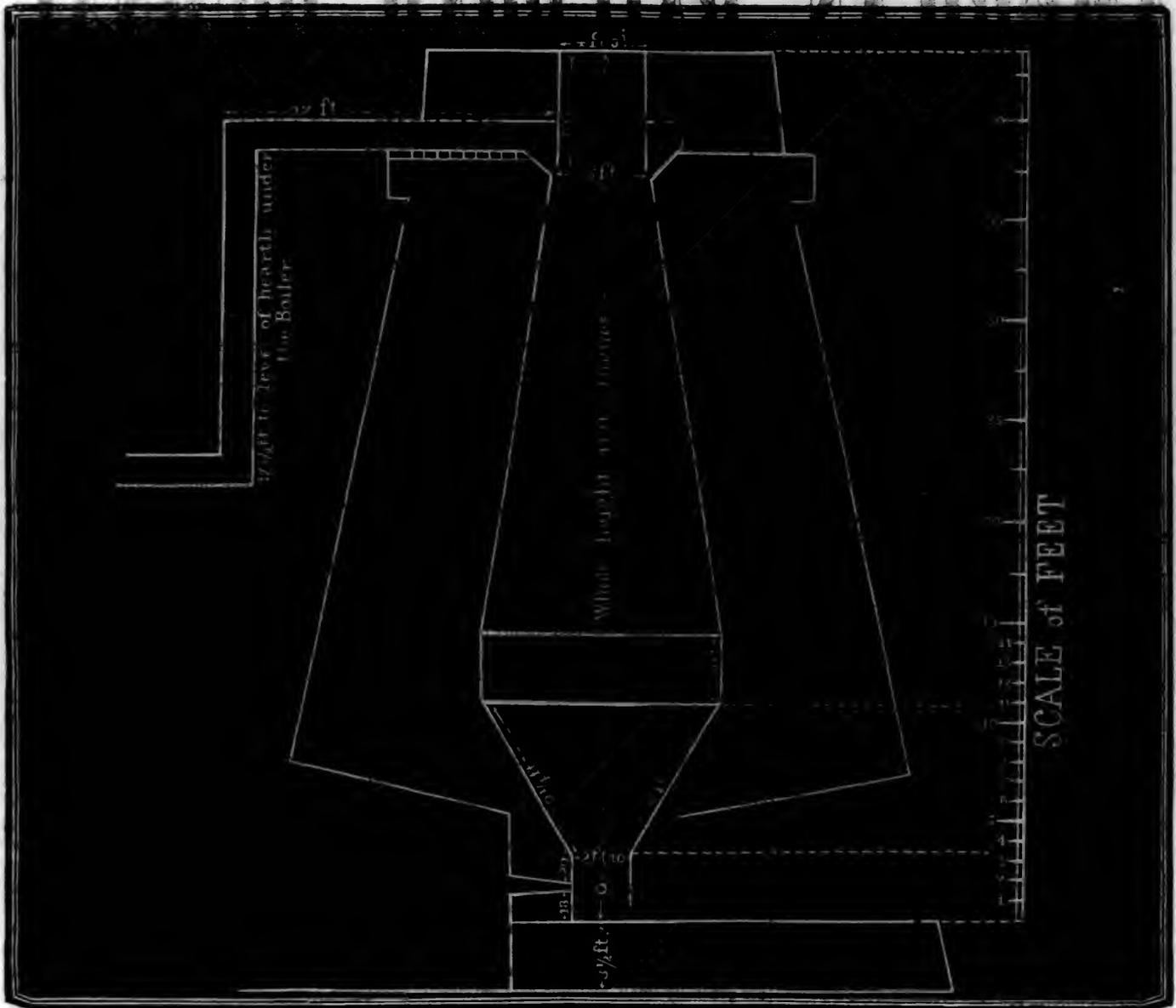
Of the business of these forges I would merely make a few remarks as to its character and importance. It is so extensive, that it creates a market for about 50,000 tons of ore per annum. The works are generally small, scattered over the country near the various mines. The principal portion of the inhabitants are directly dependent upon it; the only employment not closely connected with it being lumbering, for which the fine forests of this region afford abundant material. In the long winters when nothing can be done in farming, the farmers find a busy occupation for themselves and their teams in drawing in the supplies of charcoal, wood and of ore. At this time the roads, covered with deep snow, are in the best order for hauling heavy loads, and new ones are easily opened through the woods and over the roughest ground by merely clearing out the brush. The works in general involving little capital, are put up by men of moderate means, and in remote places; while the iron made in them, being a refined article, can pay a rate of transportation to market, that would be ruinous to blast furnaces making the cheaper pig metal. It is principally, I believe, for this reason that so much more forge iron is made in this region than the pig metal;—but there is also another reason, which is the prevalent impression, that these ores work to better advantage in the bloomery fire, than first in the blast and then in the puddling furnace. The im-

pression formerly prevailed that the Port Henry ores could only be worked into malleable iron, and though several blast furnaces have since run wholly with them, it must be admitted that the pig metal they have produced is more suitable for foundry iron than for refining. These forges produce iron of different qualities—some of it is highly esteemed for its strength and softness; but the generality of it brings a less price in the cities, than the bar iron made from the best hematite forge pig; while this sometimes sells for \$100 per ton, the Lake Champlain iron of the same finish brings only about \$75. A great portion of it is used in the country for a variety of purposes; a considerable quantity is made into nails at the nail factory at Keesville and at another in Clintonville.

Siscoe Furnace.—This is the first blast furnace south from Franklin county. It was built at Westport, on the shore of Lake Champlain in 1846 by Francis H. Jackson, Esq., of Boston. The stack is 44 feet and 9 inches high and about 13 feet across the boshes. It is substantially constructed, and is well provided with all the modern improvements.—An outline representing its form accompanies this description. Being built directly upon the dock, a powerful steam-engine is provided for raising the blast, and another for stamping the ore, grinding the flux, sawing wood and hoisting materials to the tunnel head. The boilers are four in number, all 40 inches in diameter; two are plain boilers 37 feet in length, set just above the hearth, which is 17½ feet below the filling plate; the other two, 27 feet long, have each two flues of 14 inches diameter passing through them. They are set at a little lower level, so that the gases and atmospheric air (let in to ignite them), passing along under the two first boilers, enter these flues on a level, and also pass under the second set of boilers, effectually heating every portion.

The gases used to heat the boilers, as well as the blast in the hot air chamber, are taken out six feet below the filling plate, around the outside of the cast iron cylinder, which forms the tunnel head;—from this it is led off in a brick flue, 3 feet wide and 16 feet high. When the furnace was new, the gases were taken out only two feet below the filling plate. Explosions then occurred under the boilers, which threatened the most serious consequences—by one of them the strong iron frames supporting the boilers, and the brick wall it was built into, were thrown out of place.

Sisco Furnace, Westport.



For the hot air chamber the gases pass upwards through rows of holes in the roof of another flue connected with the same space around the cylinder in the top. Thus admitted and combining with the oxygen of the atmospheric air, they circulate around in waves of flame and heat the blast pipes.

The blowing cylinders are two in number—of cast iron, five feet diameter and six feet long. They blow from 2,500 to 2,900 cubic feet of air per minute.

The ores, which this furnace was designed to use, are found in large quantities within three miles. They are good looking magnetic ores, and bear a close resemblance to those of Orange county, used by the Messrs. Townsend, and also to those of Adirondac, which are found to be so well adapted for the manufacture of steel. Analyses were made of them by Mr. Hayes, without detecting any ingredients, that threatened to cause difficulty in working them. They were peculiar only in containing a few per centum of chromic acid. For more than a year, however, they were found extremely refractory in the blast furnace, working precisely like the

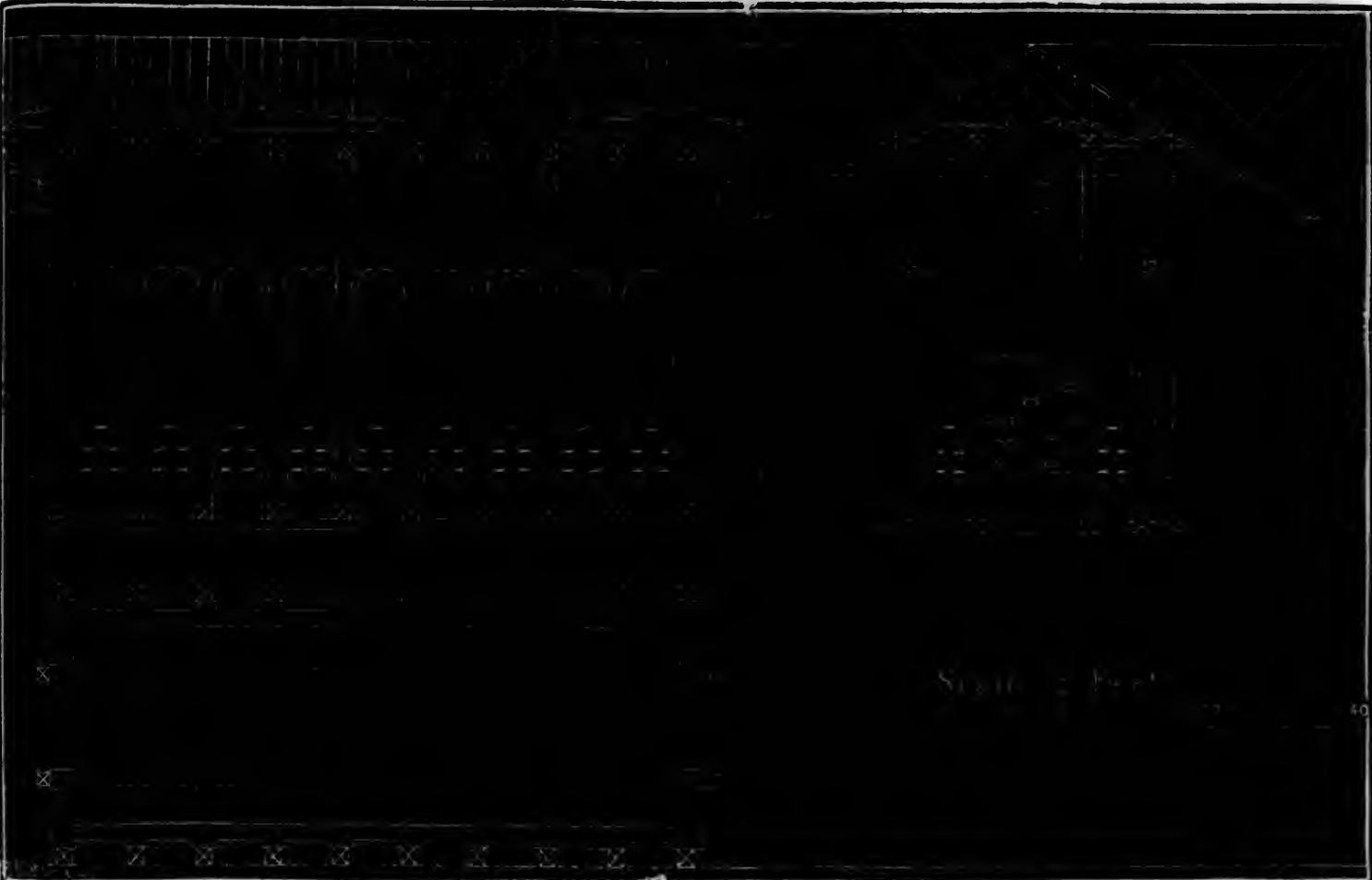
Adirondac ores, a description of which will be given farther on. Under the most skilful management, that could be procured in the country, no free running cinder could be got; and several times was the furnace chilled. The iron separated with difficulty, and in its hardness and silvery lustre, resembled the iron of the Adirondac works, as also that made at the Duane Furnace, in Franklin county. Cold chisels of tolerable quality were made from it ground down directly from the pig. On account of the refractory nature of the ore, it was found expedient to use it in the proportion of one-third, mixed with other magnetic ores, and with the hematites of Colchester, Vt. From the abundance and cheapness of the ore, the bed will continue to be an important source of supply to the furnace. It is known as the Siscoe bed. With these mixtures the furnace has since worked successfully, turning out over 8 tons of iron a day. The cinder is of a proper consistency, and flows freely. The heaps of it lying about the furnace are in great part composed of a beautiful glass of many shades of colors.

The price of the ores varies with the locality which

furnishes them. The *Cheever bed ore* of Port Henry costs on the lake shore 80 cents a ton, and 25 cts. more will cover all expenses of taking it to Westport. To this must be added the mine rent, which is not established at any particular sum.— Since the Port Henry works ceased operations, there have been no sales of this ore to any amount. It has formerly been sold from 1 75 to \$3 on the lake shore. The *Moriah ores* have cost on the dock at Westport from 1 75 to \$3 50, the usual amount paid not exceeding \$2. Of these ores (including the *Cheever*) it takes less than 1 1/2 tons to make a ton of pig iron. The *Siscoe ore* can be delivered at the furnace for considerably less than \$1 50 per ton, probably for \$1 10; the former sum, however, is admitted in the estimate.

The woodlands, which supply the furnace, are owned by the proprietors of the works. They are in the interior a few miles back from the lake. No wood has yet been brought by water, as it is to the Port Henry furnaces. The supplies are all of hard wood, and their cost is about \$2 per cord, delivered. Connected with the furnace are eight of the best

Engraving, Representing the Form of Kiln used in Making Charcoal.



class of kilns, which keep the furnace supplied with charcoal. Railroads are laid to convey wood from the sheds to them, and 1000 feet of railroad connect the kilns with the furnace. Mr. Jackson has had much experience with the kilns both here and at Port Henry; and I know of no other person who has given such close attention to their management. With the labor of 330 days at seventy-five cents a day, and of one collier at two dollars per day, he has made per month 48,000 bushels of coal and delivered it in baskets to the filler at the tunnel head. In this 210 days' work were employed in filling and 120 days' work in emptying and delivering at the furnace top—this being carried on night and day. The kilns hold 56 cords of wood each; and a common yield is 56 bushels of charcoal to the cord. By the common mode of burning in pits in the woods, 100 bushels from three cords is more than an average yield. The kiln-coal is not so highly esteemed by some persons, as the pit coal, probably from the prejudice bloomers have against it for its burning too freely, as slow burning coal is better adapted to their purposes. If this were moistened

* In consequence of the poor impression which was obtained of the cut of the kilns for charcoal in a previous number, we now insert the figure again, which represents as well the kilns of Mr. Jackson as those of Massachusetts, the former being perhaps better secured by braces and cross timbers. As the plan is drawn to a scale, and is sufficiently exact for building from, it seemed important that it should be at least plainly printed. The door near the top of the arch is for filling in the upper layers of wood, which is done from a moveable pulpit or platform or a fixed inclined plane.

by steam or otherwise or kept till it acquires moisture, and then tried without prejudice, it would probably be found to work as well as charcoal burned in pits. For use in blast furnaces there can be no question as to its superiority both in quality and economy in handling. It ought to be made always from seasoned wood—at least ten bushels more per cord being produced than from green wood; and it ought also to be used directly after it is taken from the kilns. To prepare the wood for the kilns Mr. Jackson has provided 40,000 square feet of sheds capable of housing 6,000 cords of wood. The kilns are built in the most substantial manner, and kept so tight as never to require the use of water or steam for extinguishing the fire. A mortar of clay is judged to be more suitable than of lime for laying the brick, calcareous cements being more rapidly acted on by the pyrolygneous acid expelled from the wood in the process of charring.

Mr. Jackson has made careful experiments with the 'charbon-rouge' or red charcoal, so strongly recommended in some articles in the Annales des Mines, for its superiority in calorific power and in economy to the common black, thoroughly charred coal. He succeeded in stopping the process at the right point to procure this red coal in quantity; but according to his experience the extra labor, required to saw the long pieces, more than counterbalanced its superior quality. To saw wood with a circular saw running by machinery, he found the expense to be as great, including in this taking the wood to the saw and then to the furnace, as to char the wood and then take the coal to the furnace.

The consumption of fuel to the ton of iron, during the larger part of the year 1847, was 130 bushels of coal, 26 bushels of brands and one-third of a cord of wood. For the month of July 1848—128 bushels of coal, 13 bushels of brands and one-quarter of a cord of wood. A cord of brands is reckoned 80 bushels.

The product of the furnace is mostly iron better adapted for foundry, than forge purposes. It cannot be classed among the higher priced irons; and when the market is low, it cannot sell to profit in New York after paying commissions and the freight of \$3 per ton. Still it has taken a fair stand, and has a considerable sale in New York for the puddling furnace.

As this establishment is one of the most thoroughly built and best provided with every thing required about a first class furnace, it will be interesting to give a general account of its cost, which may be found useful for reference in projecting other works of the kind:

Furnace stack, including the steam engines and boilerers, machine shop, engine house, casting house, top house, cisterns, blowing apparatus, 2 sets of hot blast pipes, coal houses, etc.....	\$28,163 13
Dock, 500 feet front.....	869 95
Office and stable.....	750 00
3 kilns, sheds for wood, and railroads...	10,730 50
Blacksmith's and carpenter's shops, (two large stone buildings).....	1,285 00
14 dwelling houses for laborers, one larger one for founder, all built in sub-	

stantial manner and well finished....	4,511 42
Clerk's house, of brick.....	1,515 00
Agent's house and outbuildings.....	3,900 00
School house.....	478 78
185 acres of land*.....	2,700 00
Total.....	\$54,903 78

The estimated expense of making a ton of pig iron is as follows:

Ores, including half a ton Siscoe \$0.75; three quarters of a ton of Hematite \$1 50; other magnetic ores half a ton 1.87.....	\$4 12
Charcoal, including brands and wood, say 160 bush. at 5¢.....	8 40
Flux 20 cts.; Labor \$2 50.....	2 70
Repairs, Superintendence and Interest.....	3 00
	\$18 22

In visiting this establishment one cannot fail to be struck by the natural beauty of the place, and the taste displayed by Mr. Jackson in the plans and arrangements of the buildings and grounds. The houses for the workmen are separate from each other, of small size, and of graceful, simple style.—Each is provided with a small enclosure of ground, and with many conveniences designed to make comfortable and agreeable the homes of those, who are to aid in carrying on the business of the place. A little additional expense in this way is more than repaid in the satisfaction it affords the better class of workmen, and the consequent hold to retain them. At the same time it serves to cultivate among all classes a more refined taste, which, while it leads them to adorn the objects around them, increases their interest in these objects and their efforts for their prosperity. Our manufacturers engaged in building up establishments of various kinds in all parts of the country—in the retired nooks and by places, as well as in populous towns—may control, if they please, the national style of architecture.—They are responsible for some attention to this subject. But when we see it wholly neglected, as is too often the case—when some most picturesque site by the falls of a mountain stream, or on the banks of a smooth lake, is made hideous by uncouth and uncomfortable structures, around which accumulate unwholesome piles of dirt, that are never removed, we cannot but regard the manager, not merely deficient in good taste, but also in true economy. H.

Massachusetts.

The Manchester and Lawrence Railroad.—We understand that the work on this road is progressing. The grading is all done except for a short distance to Windham. The rails have been laid for some four or five miles from each terminus of the route, and it is expected the whole will be completed in six or eight weeks.

Methuen Branch Railroad.—The branch of the Boston and Maine railroad, between Lawrence and Methuen, was opened for public travel yesterday.

New Hampshire.

Portsmouth and Concord Railroad.—At the adjourned meeting of the stockholders, held at the Court House, in this town, on Wednesday last, a Committee of three was appointed, consisting of Messrs. A. B. Vennard, John Drake, and Brackett Hutchings, to nominate a Committee of five, whose duty it shall be to examine the subscriptions, and make out a list of stockholders in the Road, with the number of shares belonging to each, and report the same to an adjournment of the meeting. The

* This land does not include the ore bed. The lot on which it is cost \$2,000, but land and wood have been sold from it to the amount of \$1,850, leaving the present cost of the bed and fifty acres connected with it only \$150.

following persons were reported, and appointed a Committee for the above purpose:—Messrs. Ichabod Collins, Augustus Jenkins, and Peter Jenness, of Portsmouth; William Plumer, of Epping, and Theodore French of Concord.

It was stated at the meeting that the Road is progressing. Arrangements are making which will doubtless result in the erection of a commodious Depot for the mutual benefit of the Eastern and Concord Railroads, west of the distillery lot,—and to extend the Concord Road to the water by the side of the Eastern Railroad.

The meeting was adjourned to Friday, the twelfth of October, to be held at the Court House, in this town, at eleven o'clock, A. M.—*Portsmouth Journal.*

Rhode Island.

We find it stated that Rhode Island has within her limited territory 163 cotton mills, consuming annually. 560,000 bales of cotton, and manufacturing 70,000,000 yards of cloth.

Vermont.

Ashuelot Railroad.—The following speculations upon railroad connections up to the Connecticut valley, are from the Hartford Courant:

The route surveyed from Brattleboro' to Bellows Falls, Vt., is 28 miles, and estimated to cost \$800,000. An attempt is now being made to secure means to construct the line, and a very liberal share of the stock will be taken by the New York and New Haven company, if the Brattleboro' influence can secure the remainder during the present month. May the effort succeed!—The route surveyed from the termination of the Connecticut road at South Vernon, up to the Ashuelot Valley to Keene, is 22 miles, there connecting with the Cheshire railroad now, and in early prospect with a line from Keene to Concord, through the central towns in New Hampshire, is estimated to cost only \$300,000, but may cost \$500,000 more. The Ashuelot company is now organized, has secured the right of way over the entire route a large proportion of the land being without charge, and has raised over \$100,000 of the capital stock on the line. If \$200,000 more can be secured by the several interests between New York and South Vernon, the company will build the road in the best manner, and pay for it without further aid from abroad. As this route connects with all the Northern lines by way of Keene, and is less than thirty minutes further travel than the direct route will be from Bellows Falls to Brattleboro', where it will furnish the large addition of travel of Cheshire County, and the central travel from all New Hampshire, and the large and increasing freighting business from the manufacturing towns in the Ashuelot Valley, and costing but one third the amount, why should it not have the favorable notice and aid of all parties most interested? It will certainly cause much larger revenue, while it will cost very much less. Beside, the Ashuelot route will bring this way an immense amount of trade and business which can never come by any other railroad.

New York.

Buffalo and State Line Railroad.—During the past week the engineers, who are engaged in making some preliminary surveys on the contemplated line of this road, were in this place, and we understand report the line from this place to Buffalo, as not only practicable, but offering unusual facilities for the prosecution of such a work.

To persons who are acquainted with the topography of the country, this is no more than what was expected. But as some of our more distant readers may not have had the advantage of knowing personally, the situation of the country, we would remark that along the southerly shore of Lake Erie there is a plain of some four miles in width, lying between the lake and a chain of highlands, which divide the waters of the valley of the lakes from those of the valley of the Mississippi and its tributaries. This plain between the base of the hills and the lake, has an average inclination towards the lake of about six feet to the mile, and is crossed by small streams passing from the high sides to the lake, but few of them of sufficient magnitudes for the purpose of water power, for mills, except during the more rainy seasons of the year; the Cattaraugus Creek is the only streams which break through the ridge, or is

of much magnitude, between Buffalo and the line of the state of Pennsylvania. It will be crossed near the village of LaGrange, and affords no very great obstacles in passing it with a railroad.

Along this plain, and much of the distance on a gravel ridge, about one hundred and fifty feet above the lake—which evidently at some former period was the bank of the lake—runs the present highway, and near it is the line of the contemplated railroad. At no point will it be required to be of an elevation of over about one hundred and fifty feet above Lake Erie, will run on a line without any short curves, and on a grade of but few feet elevation to the mile. It will be seen from this description that there are very few countries where a railroad can be more cheaply and easily made. During the season of interception of navigation of our great lakes, the present highway has afforded almost the only mode of communication between the Northwestern and Atlantic States, and the railroad when completed must always be the great channel of communication between these states, and in a few years one of the principal thoroughfares between the Atlantic and Pacific coasts of the United States.

It cannot be otherwise than that the stock in this road will be one of the most profitable investments which the capitalist can make, or that a public work so much required, and by so great an extent of country, can fail of being very shortly completed.—*Fredonian Express.*

Hartford and Fishkill.—We understand that a survey of a route for a railroad between Hartford and Fishkill on the Hudson, opposite to Newburg, is now in progress. The object of this road is to open a communication between Boston and the New York and Erie road.

New Jersey.

An official report of the Camden and Amboy railroad company states that during a period of 17 years past, the number of persons killed on the roads of that company was 20. Upon all the railroads in Massachusetts there were killed, in 1847, forty-four persons; and in 1848 fifty-six persons.

Pennsylvania.

North Branch Canal.—The Harrisburg Keystone states that the proper officers of the Commonwealth of Pennsylvania are now preparing a report to ascertain whether there will be any money in the State Treasury this year, applicable to the completion of the North Branch Canal. The Keystone remarks:—

"We know not what the result may be, but apprehend that in consequence of the diversion of about \$200,000 to the sinking fund, there will be nothing left for the canal this year. Should the sinking fund be suspended, and the revenues improve as they ought to be, we believe \$700,000 may be appropriated next year.

The importance of this work to Pennsylvania will be readily seen when it is remembered that it will, when completed, connect the public works of that State with those of New York, and of course with the Northern Lakes, opening a market for the sale of Anthracite Coal, iron, etc. The estimates for completing this important work reach only \$1,200,000.

Virginia.

James River and Kanawha Company.—The board of directors of this company, says the Richmond Enquirer of the 24th, yesterday concluded the examination of the bids for the heavy works to be constructed by them. The successful contractors are, we hear, mostly from Pennsylvania. We subjoin a memorandum of the works, and the names of the contractors.

TIDE-WATER CONNECTION.

Section 1, and the walling on the dock, was let to Mordecaia Sizer, of King William county, Virginia.

The important ship lock to connect the Richmond dock with James river section No. 3, was let to George M. Lanman of Penn.

Proposals of Bernard McGann, of Pennsylvania, for the five locks and section No. 2 was accepted.

SOUTH SIDE CONNECTION.

Proposals of M. Robertson & Co., for the superstructure of the bridges at Canton and Hardwicksville, was accepted. Also, the proposals of John

McQuaid, for dam, lock, and connecting canal at Pemberton.

RIVANNA CONNECTION.

The following proposals were accepted, viz:— Charles Scott for guard lock and dam; J. M. Spiller for sections Nos. 1 and 2; George L. Seay for sections Nos. 3 and 4; Robert Richardson for culverts on No. 4; Charles B. Quisenbury, of Campbell county, Va., for bridges.

The above works have been let on very fair terms, in two years. They will be completed, it is thought, as we hear.

Richmond and Danville Railroad.—The whole of this work, with the exception of the last 29 or 30 miles, is under contract, and the Danville Register thinks there is a strong probability of the remaining portion being let in a few weeks. Col. Geo. Towne has concluded a contract for the grading and masonry of the last section, if he can succeed in getting persons to join him in taking the amount of stock necessary, twenty-five thousand dollars. The Colonel himself takes ten thousand, leaving only fifteen thousand to be taken. If he succeeds, and the register has no doubt of it, he will at once place 150 hands on the road, commencing at Danville, as soon as it can be located by the Engineers.—*Enquirer.*

North Carolina.

Wilmington and Manchester Railroad.—On Wednesday last (says the Sumterville *Banner* of the 22d ult.) the people of Sumter came up nobly to the support of the Wilmington and Manchester road. A large and highly respectable mass meeting was held at the Court House. On motion, Col. J. J. Moore was called to the Chair, and R. M. Dyson and W. F. B. Haynesworth, Esqrs., appointed Secretaries. Hon. F. J. Moses, in a few pertinent remarks introduced to the meeting the President of the Road, Gen. Harllee, of Marion, who, though constrained to limit his address for want of time, laid before the assembled multitude a clear energetic statement of the resources, availabilities and benefits of the Road, and produced such a mass of statistical evidence, that if there was no sceptic as to the whole enterprise, he would, most assuredly, have been converted. But from the well known intelligence of this District we do not sincerely believe that there is a single individual to be found, who is opposed to the Road. The following resolutions were then submitted and adopted.—*Wilmington Chronicle.*

Resolved, That the citizens of Sumter still feel a lively interest in the establishment of the Wilmington and Manchester Railroad, and look to its completion as the great work which is to facilitate communication from one extreme of the Union to the other.

Resolved, That the thanks of the community are due and hereby tendered to the Board of Directors for the energy, ability and industry which have characterized their actions.

Resolved, That this meeting tenders its acknowledgements to Gen. Harllee, for the eloquent address with which he has favored us to day and his satisfactory statement of the condition and prospects of the Company.

Resolved, That this meeting with all becoming courtesy and deference to the Board, recommend that the progress of the work be continued with all the means and power they can command.

Resolved, That the proceeding be published in the Sumter *Banner*, Marion *Star*, the Wilmington papers, and such Journals throughout the States as are interested in the enterprise.

The meeting then adjourned to make further subscriptions and attend to the letting of the contracts.—The sum of \$60,000 was subscribed and all the timber contracts were taken for stock. The whole comprising forty miles, and from the indomitable spirit and industry of the contractors we have every assurance to believe that the forty miles of road will be in running order by the first of October 1850. The books for further subscriptions to this capital stock of the Company are now open at Capt. Blanding's office in the rear of the Court House. The several grading contracts in the vicinity of this town are partly completed.

Wilmington and Raleigh Railroad.—Some eight or nine weeks since, Dr. A. J. DeRosset, Jr., of this town, left for England for the purpose of purchasing T iron to relay the track of the Wilmington and

Raleigh railroad. The pleasing intelligence has been received that he had succeeded in contracting on favorable terms for 8000 tons, enough to iron about 100 miles of the road, to be paid for, for the present, in bonds of the company, secured by a mortgage on the road and its appurtenances. This operation opens bright prospects for the interests of this enterprising and never tiring company.—*Wilmington (N. C.) Chronicle.*

Georgia.

Receipts for Travel on W. and A. Railroad, from June 15 to July 23 both inclusive for the years 1848 and 1849.

1849	\$4,483 82
1848	4,203 69

\$280 13

The cheap fare commenced this year on the 15th June, and the above statement shows how it is working compared with last year. It may be well enough also to observe, that last year the pleasure tickets, as the cheap rates were called, were paid for both ways in advance, but that all the travel which has gone up now must pay its way back; so that the prospects for increased receipts is very flattering, and must be gratifying to the officers of the road, who first suggested and adopted the three cents rate, as well as the travelling public who enjoy the benefit.—*Atlanta Intelligencer.*

The Burke County Railroad.—We are happy to learn, that there is now every probability, that the necessary funds for the construction of the above road, are likely to be raised without delay. The city corporation of Savannah, has subscribed \$200,000, and the citizens will probably raise \$150,000 by private subscriptions. The Board of Directors of the Georgia Company, have recommended their stockholders to subscribe \$100,000. This makes \$450,000. The road and equipments, will probably cost \$525,000. This leaves only \$75,000 to be raised by the people of Burke. A railroad convention for this purpose is to be held at Waynesboro, on the first Tuesday of September, and we have no doubt that the deficit will be promptly made up by the liberal and wealthy citizens of that country.—*Jour and Mess*

Tennessee.

It is proposed to hold an *Internal Improvement convention* in the town of Greeneville on the 10th Sept. next. The object of this convention is, to take into consideration such measures as may be necessary to secure the charter of the East Tennessee and Virginia Railroad—to secure a subscription of stock by the State, to improve the rivers of East Tennessee and co-operate with other internal improvement companies throughout the State. The object of the Convention is certainly a most noble one. Nothing will contribute more to the union of the different parts of the State than a judicious system of internal improvements. Such a system of inter-communication, will have a strong tendency to do away the sectional feeling and prejudices which unfortunately exist.—*Nashville Banner.*

Nashville and Chattanooga Railroad Subscription.

"Among the subscriptions to this work is one of half a million by the city of Nashville, and we now learn that the President and one of the directors of the company, acting as commissioners, a few days since, negotiated in New York \$300,000 of the Nashville six per cent bonds taken for the subscription.—The rate is understood to be 8½ per cent, the bonds being coupon of \$1,000 each, interest payable April and October, at the Phenix bank, New York. The successful bidders are reported to be Messrs. Corcoran of Washington, E. Riggs, Camman and Whitehouse, Ward and Co., of New York, and Charney and Whelen, of this city. The bonds were yesterday placed on the books of the Philadelphia stock board."—*Philadelphia Ledger.*

East Tennessee Railroad.—The friends of this enterprise will be pleased to learn that the work is going on rapidly. The late favorable weather has enabled the contractors on this end of the line, to make astonishing progress with their work. Three months ago, not a spade had been stuck into that portion of the road lying in Georgia. About four miles of the road is now graded, and ready for the superstructure; and the timber is on the ground ready for laying down. The spirit and enterprise of those connected

with it, together with the means they have at their command, is obligated to overcome all obstacles.—*Mountain Eagle.*

Alabama.]

Mobile and Ohio Railroad.—The prospects of the speedy construction of this road, connecting the mouth of the Ohio with the Gulf of Mexico appear to be still increasing. The Mobile Tribune remarks to its Mississippi friends that Mobile is steadily moving forward in the work, and makes no other calculation than to build her part of the road in the shortest possible space of time. Ground will soon be broken, after which the work will be pushed with such vigor that full confidence in that city's earnestness will be established along the whole line.

As regards the first section of the road, the Tribune says it traverses an almost unbroken pine forest.—The surface is most level, and is thought very favorable for a railroad. Many persons suppose, judging from the character of the country, that all this distance will be unproductive to the company. This is a great mistake. The elements of much wealth exist there, and as soon as that section of the road is built they will be developed. A large business will soon grow up in navy stores and lumber; and for an extensive trade in bricks no region is better adapted, there being numerous and large beds of the best quality of clay, with an abundance of water and fuel at hand. When the railroad is in operation, the wonder will be with many that the country was so little appreciated.—*Cairo [Ill.] Delta.*

The Mobile Register states that 26 miles of this road have been put under contract. It is to be graded and timbered, and put in a condition to receive the iron rails, at a cost of about \$160,000. The gentlemen who have taken the contract, will bring a force of five hundred men on the ground by about the 20th of September, and prosecute the work with energy to its completion.

Ohio.

AN ACT.

To authorize the Commissioners of Scioto and other counties to subscribe to the capital stock of the Scioto and Hocking Valley Railroad Company.

Sec. 1. *Be it enacted by the General Assembly of the State of Ohio,* That the Commissioners of Scioto Pike, Ross, Pickaway and Licking counties, be, and they are hereby authorized to purchase stock in, or make subscription to the capital stock of the Scioto and Hocking Valley Railroad Company to any amount not exceeding one hundred thousand dollars; and the stock so purchased or subscribed shall be under the control of the country commissioners of the above named counties, in all respects as stock owned by individuals.

Sec. 2. That for the payment of said purchase or subscription, the commissioners of the aforesaid named counties, are hereby authorized to issue the bonds of said counties in sums not less than one hundred dollars each payable at such times and places, with such rate of interest, not exceeding seven per cent. per annum as they may think proper.

Sec. 3. No bond shall be issued, or any purchase or subscription made under the provisions of this act, whereby any debt shall be created or money appropriated, by said commissioners, to pay any such subscription or purchase, unless a majority of the legal voters of said county, shall vote for the same; and the county commissioners of said county shall give at least thirty days' notice to the qualified electors thereof, by publication in a newspaper of general circulation in said county, requiring said electors to vote at the annual spring or fall elections, for or against the subscription which they shall propose to make; and the opinion of said electors shall be expressed on their ballots, "for subscription," or "against subscription," and counted and returned by the judges and clerks of elections as in other cases; Provided, however, that the said commissioners may call a special election for that purpose at any time between the spring and fall elections, by giving the notice hereby required.

JOHN G. BRESLIN,
Speaker House Reps.
BREWSTER RANDALL,
Speaker of the Senate.

March 15, 1849.

Central Ohio Railroad Meeting.—The annual meeting of the stockholders in this Company was held in this place to-day. A very satisfactory report was submitted by the President, after which some resolutions were adopted, one of which reads as follows:

Resolved, That the Directors of this Company be and they are hereby instructed to proceed with the survey and location of the road from Zanesville to Columbus as soon as practicable, and for this purpose that they employ a competent engineer and proper assistants on the best terms they can.

The election of thirteen Directors for the ensuing year was then held, and resulted in the choice of the following named gentlemen:

Muskingum County.—John H. Sullivan, James Raugel, S. R. Hosmer, George James, Levi Claypool, Wm. Galigher, Daniel Brush, E. Ball, C. B. Goddard.

Licking County.—A. Sherwood, A. J. Smith.

Franklin County.—R. McCoy, W. Dennison, jr.

But one feeling actuated all who were present, and that was of determination to push forward the work. The resolution above affords gratifying proof of it. Let that determination be adhered to—and the new directors are committed to it by the unanimous voice of the stockholders—and the public will be satisfied.

A full report of the proceedings of the meeting shall appear in our next.—*Zanesville Courier.*

Little Miami Railroad.—The Morning train from Cincinnati, on this road, commenced its trips on the 29th inst.

The Suspension Bridge across the Ohio.—The footway of the wire suspension bridge, extending one thousand and ten feet from Wheeling, Va., to the Ohio side has been completed, and was successfully crossed on the 12th inst., by a large number of persons.

Illinois.

One week before the railroad to this place was finished, says the Springfield (Ill.) Journal, corn could be had here in any quantity at 15 cents a bushel. Not a bushel can now be had for less than 25 cents. This is the effect of the completion of the railroad on the price of one item of the products of our farmers.

In this fertile and happy region money can be made in raising corn at 25 cents per bushel. And here is another fact connected with this matter of great importance to our farmers of moderate means. There are many who have not means to purchase stock to eat up their corn, and thus dispose of their grain. These farmers can at once turn their corn into money at good prices. We venture to say that railroads will double, yea treble the value of farms in portions of our State. Indeed, farmers would make money in giving away half their landed property to secure their construction.

Russia.

The Great Russian Railroad.—Maj. T. S. Brown, the able efficient Engineer of the N. York and Erie Railroad, has been tendered, by the Emperor of Russia, through his Minister, M. Bodisco, the office of Superintendent of the great Railroad between Petersburg and Moscow, 400 miles long, and now nearly completed, in place of Col. Whistler, deceased. Maj. B. has conditionally accepted. This greatest work of the kind in the world has been carried on to completion by Americans. The country is very level, the grade not exceeding 20 feet to the mile. Americans have also the contract for the equipment of the road. Already have they manufactured in Russia 162 locomotives, averaging 25 tons each; 72 elegant passenger cars, and 2509 freight cars, and 2 "imperial saloon carriages," sufficiently capacious to carry the whole Imperial Court.—Forty millions was the estimated expense of the work. The Imperial saloon carriages are 80 feet long, 9 broad, costing \$15,000 each. Russian mechanics are to be instructed as Engineers, carriage builders, machinists, etc.

New Locomotive for Common Roads.

Anxious to advance, to the utmost of our ability, the successful application of steam locomotive on our turnpike roads, we readily give insertion to the substance of a communication from a correspondent at Tavistock, partially describing a common road locomotive

on the high pressure condensing principle, from which, if there is no error or miscalculation in the results, we must almost believe the system successfully matured. This engine, we are informed, is of nine-horse power; while in proportion it is the lightest ever made, weighing altogether about 30 cwt. The boiler is on an entirely new construction, weighing only 8-cwt. There are two cylinders 4½ inches diameter, and the great advantage in its light weight is obtained by the use of an entirely new condensing apparatus, without which our informant believes no locomotive can succeed on common roads, in consequence of its own weight. By this apparatus, which consists of a great number of small tubes, arranged in various directions, the steam will be completely condensed to a vacuum, by which, it is calculated that there is a gain of twenty-eight lbs on an inch, at a speed of only fifteen miles per hour, above the power of the locomotive now in use, and the principle can be applied to every description of engine. The advantages claimed by the inventor, who is about securing a patent, are—a saving of fifty per cent in the fuel of railway locomotives; no tender required, and, consequently, the propelling its weight and fifty tons of water avoided; returning the condensed steam to the boiler without taking power from the engine; the enormous resistance of the atmosphere acting on the steam passing off from the funnel when at high velocities avoided; expense of water stations saved, the boiler once filled lasting some hundreds of miles; greater safety; the disagreeable puffing noise done away with; boilers will not corrode so soon, and, consequently, not required so often cleansing. For marine purposes the advantages are great.

With three hogheads of pure water a steamer could cross the Atlantic, avoiding the use of salt water, so injurious to the boilers; all the stowage for fuel saved for more passengers or freight; smaller engines, in all cases will do the same work. In stationary engines for mines, &c. 29 per cent will be saved in fuel, and more work accomplished—the expense of pumps for raising condensed water saved. In mines the same size engine will admit of the shaft being sunk deeper under the adit, in consequences of so much condensing water being required to be lifted from the adit with the present engines. Mines where engines are required can be worked at much less cost. We are informed the inventor is a poor man, and has been under great difficulties in the construction of his present carriage, which is stated to perform exceedingly well. If he has succeeded to the extent described, we have no doubt he will find friends to back him, and public interest and patronage will eventually reward his labors.—*Mining Journal.*

Railway Law.

On the Law relating to the Interests of Directors in Contracts with the Company.

Most railway acts provide that no Director shall have any direct or indirect interest in the contracts with the company, and that if any of the Directors at any time subsequently to his election shall be so interested the office shall become vacant, and that thenceforth he shall cease from voting or acting as a Director. The expediency of such a precaution is manifest. It is contrary to all the rules of prudence to place a man in a position in which his duty and interest so far conflict as to induce him to sacrifice the former to the latter. But those who are practically acquainted with the management of railways know how often the provisions of Acts of Parliament in this respect are evaded, and when they are openly violated, how futile the provisions of such Acts are to punish or prevent those who infringe them. Considering how important it is that the purity of the Directors of a company should be preserved, the law requires to be much more stringent than it is in this respect. There ought to be some further consequence than of forfeiting the seat at the Direction, and the infringement of such a wholesome regulation should be punished by penalties, by criminal proceedings when the party acts from corrupt or dishonest principles. A few cases have been before the courts, which establish to what kind of contracts the disqualification applies. Thus—

Some of the Directors of the Sheffield and Manchester railroad (Act 7, William 5, c. 21), by whom the resolutions for the calls were made, were members of a Banking Company who were the bankers and treasurers of the railroad company, and as such received and gave receipts for calls and paid cheques drawn by the Directors, &c. A clause of the Act of Parliament (sect. 150) enacted that no person concerned or interested in any contract with the company, should be capable of being chosen a

Director, and that if any Director should, directly or indirectly, be concerned in any contract with the company, he should thereupon be immediately, and was thereby discharged from the Direction. It was held that this clause applied only to contracts made with the company in prosecution of its enterprise, and did not disqualify the Directors above-mentioned. (Sheffield, Ashton-under-Line, and Manchester railway company v. Woodcock, 7 Meeson and Welsby, 574, 2 railway cases 522.)

But in the following case it was held that Directors who had lent money to a company, could not recover it without going through the formalities required where a contract is made by them with the company. Messrs. Teversham, Lund and Hart were three of the Directors of a company called "Cameron's Coalbrook Steam Coal and Swansea and Loughor railway company," which was formed and registered in pursuance of the 7 and 8 Vict, c. 110. By a general resolution of the company, passed in July, 1847, the Directors were authorised to borrow on mortgage, bond or other assurance, such sums, at such periods and rates, as they should deem expedient. After this resolution was passed Messrs. Teversham, Lund, and Hart lent the company certain sums on the security of a promissory note, and a lien on certain calls which were to be made. The bill which was filed by Messrs. Teversham, Lund and Hart against the company, stated the above circumstances, and prayed for an account of the sums due to the plaintiffs, and of the moneys received in respect of the calls, and for payment to the plaintiffs of the sums due to them, and for an injunction to restrain the company from receiving the moneys payable in respect to the calls.

By the 7 and 8 Vict., c. 110, s. 29, it is enacted, that if any Director be, either directly or indirectly, concerned or interested in any contract proposed to be made by or on behalf of the company, whether for land, material, work to be done, or for any purpose whatsoever, during the time he shall be a Director, he shall, on the subject of any such contract, be precluded from acting as a Director; and that if any contract or dealing shall be entered into in which any Director shall be interested, then the terms of such contract or dealing shall be submitted to the next general or special meeting of the shareholders to be summoned for that purpose: and that no such contract shall have force until approved and confirmed by the majority of votes of the shareholders present at such meeting.

The bill did not allege that the contract as to the loan had been submitted to any general or special meeting of the stockholders, as required by the 29th section.

To this bill the company put in a general demurrer.

Mr. Russe! and Mr. W. W. Cooper, for the demurrer, contended that, under the 29th section of the Act, the contract mentioned in the bill was invalid.

Mr. Swanston and Mr. Prendergast, for the bill contended that the words of the Act, "or any purpose whatsoever," had reference to matters *ejusdem generis* with the matters particularly mentioned—as land, materials and work to be done; and that the contract as the loan did not come within the 29th section.

Knight Bruce, V C., said he thought that the contract mentioned in the bill came within the 29th section, and allowed the demurrer.—*Teversham v. Cameron's railway company*, 11 *Law J.*, Ch. 177.—*Record.*

Value of Property as Affected by Railways.

The following facts, as they appeared in evidence in, or arose out of a recent inquiry before Wm. Adam Hulton, Esq., as umpire in an arbitration to determine the value of 7,381 yards of land, required for the purposes of the Bolton, Blackburn, Clitheroe and West Yorkshire Railway, would, notwithstanding the present great number of unoccupied houses in the immediate vicinity, support an inference that so far at least as railway companies are concerned, there is no depreciation in the value of land. For a distance of about nineteen chains within the township, and a little north of Clitheroe, the line of the above rapidly progressing railway intersects a small farm of 13 statute acres, the property of the Misses Oddie, by whom the farm was purchased in 1840, by public auction, for £1,610. It was in evidence that the property was mere farming land, unavail-

ble for building and manufacturing purposes, that the Misses Oddie claimed for the 7,381 yards of land required by the railway company the sum of £2,675 5s. 3d., but which sum they ultimately reduced to £1,700—that is, £90 more than the whole estate originally cost. It did not appear that any capital had been expended in improving the property. Though the award of the learned umpire falls far short of the reduced claim, (in fact nearly approximate to the sum offered by the company), yet, when the price of the whole 13 acres is considered, the claimants seem to have reason to be satisfied with the award, of which the following are the details:—£480 as the value of the 7,381 yards of land, and £463 5s. as compensation for damage and injury done, or contemplated to the remaining property of the claimants.—*Record*.

Railway Travellers' Assurance.

The new system of life assurance, in the event of railway accident, is now in operation on the London and North-Western and Lancashire and Yorkshire railways. It commenced with the present month. The assurance tickets for the single journey, irrespective of distance, are obtained at the same time that the passenger pays his fare and takes his ticket. The first-class passenger, paying 3d., insures £1,000; the 2d, £500; and the third-class passengers one penny, £200; the amount in the event of loss of life to be paid to their representatives. We quote the preceding from the *Times*, to which we have to add, that the assured are entitled to compensation in cases of personal injury. We also understand that the single journey tickets will be procurable in the course of next week, on the Lancaster and Carlisle, the Caledonia, North British, Edinburgh and Glasgow, Chester and Holyhead, Eastern Counties, Cocker mouth and Workington, and the Stockton and Hartlepool railways, and that arrangements are in progress to afford the same accommodation to the travelling public on other lines, as speedily as possible. This is as it should be, and evinces a vigorous determination on the part of the Railway Passenger's Assurance Association, to carry out the system so advantageously adopted, that will, no doubt, obtain universal patronage.—*Record*.

Institution of Mechanical Engineers.

July 25.—Mr. C. Beyer, one of the vice presidents, in the chair.—Amongst the papers read were the following:—'On an Improved Locomotive Boiler,' by Mr. Ramsbottom, of Manchester. It commenced with some introductory observations on the fact that the absolute power of the locomotive, or any other description of steam engine, is directly proportioned to the quantity of steam which the boiler can produce in a given time. The writer then pointed out the direction in which improvements in the construction of boilers had recently been tending, viz: to obtain a greater amount of heating surface, which in some instances had been increased threefold relatively to the size of the blast pipe.—The desideratum therefore was to get a large amount of heating surface without increasing the diameter or length of the boiler, or making it oval. To obviate these difficulties and obtain the required heating surface, Mr. Ramsbottom proposes to construct a copper fire box with an arched roof, the top of which would be nearly as high as the cylindrical part of the boiler. With such a box the whole of the cylindrical part of the boiler could be filled with tubes, as the longitudinal stays could be removed. By such an arrangement 225 tubes, of 2 in. external diameter could be used, the shell being 3 ft. 8 inches in diameter, and 10 ft. long. The total heating surface of the fire box is 80 ft. and of the tubes 1,177 ft. This arrangement involves the necessity of keeping the boiler full of water, and it therefore became necessary to provide a separate steam chamber. This consists of a cylinder 18 ft. long and 20 in. diameter, fixed over and parallel to the cylindrical part of the boiler. This tube has a cubic capacity of 28½ feet, and has two communications with the boiler. It is proposed that the water shall occupy about one-fourth of the tube, leaving a clear space of 21 cubic feet for steam.—A brief discussion followed.—Messrs. Slater and Cowper considered that there would be a tendency to prime in such a boiler. Mr. McConnel agreed in that opinion; but he also thought that it might be obviated by having a more continuous communication between the

generator and the cylinder. He remarked that the question whether long or short tubes were most economical had not yet been settled, and the subject was of great importance. He used small tubes, and many of them, from an impression that they were most economical.

'On the Economy & Expansive Action of Steam, and a New Valve for Steam Engines,' by Mr. W. Fairbairn.—The principal part of this paper is devoted to a consideration of the expansive action of steam, especially with reference to the economy which this system has introduced. As an illustration of this economy, it was stated that ten years ago the average or mean expenditure of coal per indicated horse power was computed at from 8 to 10 lb. per hour, but now it is under 6 lb. The paper was a well reasoned exposition of the principle of the expansive action of steam, a history of its progress, and an examination of the various methods of working expansively. The principle of the apparatus described by Mr. Fairbairn is that of the cam, which, by a peculiar arrangement, cuts off the steam at any required part of the stroke. The workings of the valves is said to be effected with certainty and simplicity. Very little discussion ensued. Mr. N. Smith, of Dudley, however, remarked that he had never seen a better system. Its simplicity was remarkable; but he had some doubts as to the durability of the apparatus. In the absence of any evidence as to the economy of the invention, the principle was not touched upon. It was suggested that Mr. F. should be invited to give the Institution the practical results of his observations, and that diagrams of the workings of various descriptions of steam engines in Staffordshire and elsewhere should be collected, and Mr. Smith, of Dudley promised to present to the Institution a considerable number.—*Railway Chronicle*.

The Copying Electric Telegraph.

The specification of the invention by means of which a letter written in London may be copied *verbatim et literatim* in Liverpool, has been deposited in the Enrolment office, and discloses the means by which this electric correspondence is to be accomplished. Wonderful as it seems to have the power to produce a fac-simile of writing instantaneously at any distance, the mode of operation is extremely simple, and its principle may be easily explained. The writing materials consist of tin foil, varnish, and a quill pen. The letter thus written is applied to a cylinder; a metal style or point presses on the writing as the cylinder revolves; and the point being attached to a screw, it moves gradually along from one end of the cylinder to another. The thread of the screw is sufficiently fine for the point to traverse, six or seven times over, each line of writing before it passes by the revolution of the cylinder to the next. The point is connected with one pole of a voltaic battery and the cylinder is connected with the other pole, so that the electric current may pass from the former to the latter; but as varnish is a non-conductor of the electricity, the circuit is interrupted whenever the point presses on the varnish writing. The distant telegraph instrument is an exact counterpart of the one that transmits;—but, in place of the tin foil, paper moistened with a solution readily decomposed by electricity is applied to the cylinder. Thus the electric current transmitted through the ordinary telegraphic wires is made to pass from the metal points to the cylinders of the two instruments, through the interposed moistened paper on one, and through the tin foil on the other. When the metal point of the transmitting instrument is pressing on the bare tin foil, the electric circuit is completed through the paper on the distant cylinder, and by the decomposition of the solution a mark is made; when the point is pressing on the varnish, the circuit is interrupted and the marking ceases. In this manner, the point of the transmitting instrument, by passing several times over each line in different parts, from the top to the bottom, produces an exact copy of the forms of letters; the writing appearing pale colored on a dark blue ground consisting of numerous lines made spirally round the cylinder.

It is essential to the correct working of the instruments that they should rotate exactly together; and this the inventor, Mr. Bakewell, has accomplished by the regulating power of electro magnets brought into action at regular intervals by means of

pendulums. It would be foreign to our purpose to enter into the details of this regulating argument than to state, that by means of what is called a guide line, the operator at the copying-station can tell with accuracy whether his instrument is moving faster or slower than the other; and he can thus regulate the pendulum accordingly. This guide line, we are informed, is so delicate an indication of the reciprocal movements, that a variation in the beat of the pendulum of less than the one thousandth part of a second may be detected.

The rapidity with which communications may be transmitted by the copying telegraph is one of its peculiar features. Cylinders six inches diameter may, it is stated, be regulated to revolve thirty times in a minute and produce distinct copies of writing. The length of a line round such a cylinder would be about eighteen inches, within which space one hundred letters of the alphabet may be written in round hand. Assuming, therefore, that thirty revolutions would be sufficient to copy four lines, the rate of copying would be four hundred letters per minute with a single wire; and with two points that number would be doubled.

The inventor states in his specification, that the copying telegraph affords peculiar facilities for establishing a system of telegraphic transmission and deliveries in all towns every half hour throughout the day. If this plan could be arranged at a moderate cost, the tin foil and varnish would have their compartments in all writing desks; and we should become so habituated to rapid communications, that a letter by post would appear as tardy as we now consider a parcel sent by stage waggon.—*London Spectator*.

American Trade with the Spanish Colonies.

A writer in the Portland Advertiser urges upon the attention of our government the importance of the American trade with the Spanish West Indies, and the necessity of some more advantageous arrangement than that under which our trade is now carried on with these colonies. Our trade with Porto Rico and Cuba at this time exceeds in value that with the possessions of any and all other in the West Indies, and we doubt not that if some of the very onerous burthens and restrictions with which it is hampered could be removed, it would be greatly increased. The last treaty with Spain was negotiated something more than a quarter of a century ago, since which time many changes have taken place in the course of trade as well as in the products exchanged, which changes, in the opinion of the writer, calls for new regulations and stipulations adapted to the present state of trade. He says—

"The duties imposed by the Spanish Government upon nearly all the articles with which these islands are supplied from the United States are very heavy, and in some cases almost amounting to a prohibition; for example, flour under a Spanish flag pays \$2 50 per barrel, under the American \$10. The articles which England supplies pay a much less rate of duty than those from America.

The tonnage duties in Cuba and Porto Rico are very heavy burdens in commerce. In Cuba they are \$1 50 per ton, excepting vessels loading entirely with molasses. In Porto Rico they are \$1 00 per ton on American vessels and but 68½ cents on all other nations.

We are surprised that the American government has so long quietly submitted to the unjust discrimination against them in Porto Rico. The English and French governments have both shown a greater interest in their commercial treaties with the Spanish government than the United States, and every American who has visited the Spanish Islands will bear witness to the greater respect and attention paid to the citizens of either of the above named governments than to America.

In addition to the heavy tonnage dues required in these islands, there are petty charges and expenses upon our vessels which in the aggregate amount to a large sum, when we consider that between 1500 and 2000 arrivals take place in the island of Cuba yearly.

Some of these charges are particularly obnoxious such as that of requiring vessels to pay for the services of the Custom House Officer or Inspector as we term them, while on board the vessel. In the case of shipwrecked vessels, the local regulations of

these islands prohibit the master from selling the savings of vessel or cargo, even though they be of a perishable nature, although the maritime laws of most nations, we believe, makes the master the agent for whom it may concern in such cases."

The subject is one of the highest importance to our commercial men, and we doubt not that the Administration, which has already shown its desire to foster and promote all the great interests of the country, will take the matter into consideration, and promptly do whatever may be consistently and properly done to place this important trade in a really and advantageously position. With our geographical advantages, so greatly in our favor, and producing as we do the breadstuffs and other supplies required by the people of the islands of the tropical Archipelago, there is nothing wanted but a fair and equitable commercial arrangement to enable us to secure a large part of their profitable trade.

—*Baltimore American.*

AMERICAN RAILROAD JOURNAL.

Saturday, September 8, 1849.

The Editor of this paper has been detained from his post for the past two weeks, in consequence of a domestic affliction. Our friends and correspondents will please accept this as an apology for any want of attention to their favors, and for the lack of editorial matter in our present issue.

Old Colony Railroad.

By a glance at the map of the railroads in the southern part of Massachusetts, it would seem that there was a great waste of expenditure resulting from the want of a proper system in the beginning; and that if the work were now to be laid out again, a great saving might be effected in a proper plan. Such, for instance, as that suggested by Cyrus Alger, Esq., of Boston, viz: to make one main track from Boston to Taunton, with diverging branches thence to Fall river, New Bedford, the Cape, and Plymouth, instead of its now having almost as many separate roads, two of which cross each other after a wide divergence, and one of which goes far round another. As they are now laid out, they accommodate a large area, but certainly not in the most economical mode.

The Old Colony road was built before the projection of the Fall River road, through a section of country from Boston to Cape Cod, which was regarded by many as not very likely to give a liberal support to a railroad. The towns it passed through were small, and a considerable proportion of the freight they supplied found its way in coasters to and from the metropolis. The inland towns had few manufacturing establishments, and these were generally not of a class to add largely to the transportation business of the road. Its support seemed to be in great part dependant upon the Cape travel to and from Boston, which had mostly passed thro' Plymouth in stage coaches or across the bay in sailing packets.

The road had hardly been built and gone into operation, before the Fall River road was connected with it as a branch, striking off from it at South Braintree, 13 miles from Boston. From this a branch was laid out at Wareham, thus reaching farther down towards the Cape than Plymouth, and consequently taking all the Cape travel from the principal portion of the Old Colony road. This was a serious blow to its prosperity, which should have been anticipated by continuing the original road from Plymouth to Sandwich or farther, an enterprise which is now, we see, recommended, and for which a charter is about to be applied for at the coming session of the Massachusetts Legislature. Soon after this check followed the commercial em-

barrassment of the last two years, which so seriously affected the value of all railroads imposing upon them the security of paying the highest rates of interest for the money required for their heavy expenses to which all roads are subjected until they are completed and equipped. This road, like most of the others, was in the market as a borrower; and some inferences not perhaps wholly warranted, have been drawn as to the large amounts, for which it became responsible at the highest rates of interest, from the fact of the President not volunteering a full *expose* of the financial affairs of the company in reply to certain definite questions propounded by the committee appointed by the Legislature, which questions he fully and finally answered. But however this may be, we have been much gratified in passing over the road several times this summer to learn its increasing prosperity and the certainty of its having established itself upon a firm footing under the efficient management of its present President, E. H. Derby, Esq., of Boston. One of the first measures of this gentleman was to liquidate the debt by the issue of new stock, which even in the hard times of 1848 was mostly taken up by the old shareholders. Every unnecessary source of expense was then checked, while at the same time the road was greatly improved by laying of new rails where they were required, and of a double track from South Braintree to Boston for the accommodation of the increased travel brought in by the Fall River road. New contracts were also made of the greatest consequence to the road, some of which, as the transportation of gravel from Quincy to Boston, and of ice from Plympton, were entirely new sources of revenue. Both of these are remarkable instances of the resources of the people of this section of the country, who, if their soil be too barren, and their climate too inclement for the profitable production of the fruits of regions called more favored, and nature has denied them rich mines, can still drive a prosperous business in the removal of their barren soil and rough rocks and of the covering which their cold climate lays upon their numerous ponds. The receipts for the transportation of gravel alone now amounts to about eight hundred dollars per week under one contract, and is on the opening of a new point of supply soon likely to be one thousand dollars per week. It is carried to the South Cove to make more land on this side of Boston; and the extent of the contract is such, that it must last some six years, by which time it is reasonable to suppose other contracts of the same nature will have been entered upon. In this the railroad company finds the motive power and the track to the source of supply, the contractor furnishing his own cars and paying 13 cts. per cubic yard for the transportation. He receives from the corporation of the city 28 cents for every cubic yard deposited on the cove. The work of digging and loading is effected by a steam excavator, and is accomplished with great success, except strata of a very solid kind of hard pan are encountered as is sometimes the case.

The transportation of ice is carried on from a pond very near the road in Plympton, called Silver Lake, the water of which is very pure, and furnishes ice of great clearness. This business, though almost new, adds considerable revenue to that furnished by the various iron works, cotton and cordage mills, and other manufacturing establishments along the line of the road.

But it is in the transportation of passengers that the principal income is derived; and in the numbers of these the road compares favorably with some others

whose business one would suppose would far exceed it. We regret that we have not full data to give the statistics of this department, which is rapidly increasing in importance every year, as facilities are increased for the permanent support and transient entertainment of a larger population in the country towns. The number of season tickets sold, we are authorized to say, however, is about 300; and that the revenue of the road this summer is full \$2,000 per week more than during the same months of the last year. The change seems to be of a nature that may be depended upon as permanent; this expectation being well warranted by the great improvement witnessed in the villages along the line of the road. So that, though in consequence of the checks above referred to, the stock of the road has depreciated 25 per cent., there is good reason to expect that the road will this year be able to pay from its earnings six per cent. on the par value of its stock, besides having acquired an increased permanent value.

In this connection we give below an extract from the Old Colony Memorial, of August 25th, published in Plymouth, relative to the new evidences of prosperity it is indicating, consequent, no doubt, upon the business facilities afforded it by the railroad.

GROWTH OF PLYMOUTH.

An impression has generally prevailed that Plymouth the venerable mother of New England, was in her dotage—that she was not stationary but receding, and must rest her claims for distinction upon her early fame and ancient traditions. Many have supposed that even the railway system which has carried improvement everywhere else could do nothing for Plymouth; and some have even imagined that it had accelerated her decline. It is true that for many years her sons have annually migrated to other cities and her fair daughters have found partners and homes in distant regions, but the mother is still prolific even in her old age, and there is reason to hope that she may yet see her younger offspring spring up around her.

At the present moment there are no less than seventeen new houses building in Plymouth, and a demand for more.

For some time past the Samoset House and other places of entertainment have been full to overflowing, and several families have been prevented from visiting the place by lack of room. The boarders at the Samoset have for some weeks varied from eighty to ninety.

The cordage establishments under the charge of Messrs. Robbins and Spooner have lately enlarged their works and extended their business so that they can now manufacture 2200 tons of cordage yearly in place of 1000 four years since. A new establishment for cordage has been set up by Capt. Cowan, and an iron foundry by Messrs. Drew and Cobb.

But in addition to this the shoe business which has done so much for Abington and the Bridgewater, has been extensively introduced, not less than 100,000 pairs of shoes having been made here during the last year.

It is true the fishing business has declined, but that has rarely built up any town, and is now giving place to trade and manufacture which promise to be remunerative. The railroad has undoubtedly given a great stimulus to manufacturers by the facilities it affords; for the ropewalks of Plymouth are now within two hours of Boston and orders can be given and a gang of rigging delivered in Boston within a few hours, and the business has grown in consequence. But a new trade is springing up which is entirely new to Plymouth. It has become a seaport for many towns on the line of the railroad. Corn and flour are now imported into Plymouth for Hanson, Halitax, Abington and the Bridgewater, and they have even been sent as far as South Weymouth. In May and June past not less than 10,200 bushels of corn were sent out of Plymouth by railroad, and this trade must grow with the rapid increase of these inland populous villages. The freight by railroad is said to be increasing 25 per cent a year.

There still remains a large water power in Plymouth close to the sea and capable of great improve-

ment. No town in the State is better adapted to the iron business, for here coal and pig iron may be landed within a few rods of the waterfall and the manufacture conveyed by railroad and vessel to a ready market.

With what is now achieved and with the advantages that still remain it is safe to predict a brighter future for Plymouth, and it would not be surprising if a few remittances from the expeditions she has sent to California should further enliven the old lady. D.

Railroad to the Pacific.

The subject of the construction of a railroad from the Mississippi to the Pacific, always interesting, is now attracting more than usual attention from the near approach of the time for holding the great conventions at St. Louis and Memphis, by the respective advocates of the middle and southern route. As the time for commencing this great work cannot be far distant, and as the route, and the mode by which the means to build the road shall be provided, are yet to be determined, it becomes a matter of interest to ascertain the views of particular sections of the country in relation to this subject, as so much evidence towards settling the preliminary questions of route, etc. before commencing the work. We are happy to lay before our readers a communication upon this subject from one of the most influential men in Indiana, which we look upon as indicating the views likely to prevail in this State in relation to this great work:

ATLANTIC AND PACIFIC RAILROAD.

The public mind seems to have settled upon the great importance of one or more leading railways from the Atlantic to the Pacific, and several routes have been proposed. Mr. Whitney has been zealously advocating the northern route, commencing at the northwest end of the great chain of lakes, and striking the Pacific at the mouth of the Columbia. Another route commencing on the Atlantic at a southern point and running through Alabama, Tennessee and Arkansas has been presented, and a convention is proposed to be held next October at Memphis, to take measures to secure Congressional aid in its construction. There is still another route that has been more recently brought before the public mind. This route lies between the other two, and may be properly designated the *central route*. It is not my object to speak disparagingly of the northern or southern routes. A single glance at the map of the United States, must satisfy all that the construction of all these works will yet be demanded, by the rapidly increasing commercial importance of the central and extreme west, and it is manifest that there can never arise any cause of jealousy or rivalry between them, as each will be tasked to its utmost capacity.

The central route would naturally have four principal points of termination on the Atlantic—Boston, New York, Philadelphia and Baltimore. Lines would be constructed from each of these points to a common line, running west through the States of Ohio, Indiana and Illinois, to St. Louis, and from thence to the Pacific Ocean. This central line seems likely to enlist much public favor. The character of the country, its peculiar adaptation to a continuous line of railway, the great productiveness of the country over which it traverses, its numerous and valuable branches and connections, and especially the *shortness* of the route, and *cheapness* of construction, as compared with all other practicable routes, has already secured to it the co-operation of energetic companies upon the whole line as far west as the State of Illinois; and so soon as the right of way through Illinois shall be had, the line will be extended to St. Louis. It may be proper for the

benefit of your numerous readers that I should be more specific, though my limits will not let me go as much into particulars as I would like. It is known that the Baltimore and Ohio railroad is pushing that work on to Wheeling. This line can ultimately intersect the main line at the Indiana State Line, passing through Zanesville, Columbus, Urbana, Pequa, and Greenville. The Philadelphia and Pittsburgh line will intersect the Indiana line at the same point, passing through Beaver, Canton, Wooster, Mansfield, Marion, Bellefontaine and Sidney. The New York and Boston lines passing through Cleveland, will intersect the main line about 15 miles west of Mansfield and the line from Sandusky City will connect with the main line at Bellefontaine. The four lines may unite at the Indiana State Line upon the direct line through Indianapolis and Terre Haute to St. Louis. All these lines, with some excepting links, are in an active and rapid state of construction, leaving no reasonable doubt of their ultimate completion, and that at no remote day; so that I deem it to be settled that the central route from the Atlantic to St. Louis will be constructed, whether either the northern or southern road shall ever be made or not; and the friends of the central route east of St. Louis, should press their work to completion, and should give to Mr. Benton their co-operation and support in his great enterprise of continuing the road from St. Louis to the Pacific.

Portland and Montreal Railroad.

We learn that contracts have been made by the Directors of this great line of railway, both in Canada and the United States, with Messrs. Black and Wood, to construct the unfinished part of this road a distance of about 200 miles, for \$27,000 per mile, or for \$26,200, in case the companies elect to pay the Engineering and build the Station and Engine houses. the whole line is to be completed within three years. The contractors Messrs. Black and Wood, are well known throughout the whole country as men of large property, and as most energetic and successful contractors. These gentlemen have built the portion of the road already finished, making about 80 miles, to the entire satisfaction of both the American and Canadian companies; and as each company has abundant means provided for the whole work, we may set down the completion of the road within the time agreed upon as a fixed fact. We learn verbally, that on the Canadian end of the line, the contractors take in payment, one quarter of the amount in stock of the company, and the balance in the city of Montreal bonds, and the guarantee of the Colonial Government. On the American side they take one quarter in stock, one quarter in the bonds of the company, and the balance in cash, as the work progresses. To provide the cash payment, this company has the bonds of the city of Portland for about \$1,000,000, which can be converted into cash at par, at will.

We take great pleasure in announcing the above result. We think that the gentlemen entrusted with the management of this work in making the above contract, have acted with that wisdom and prudence which has characterised their whole conduct since the first commencement of the undertaking. When this road was first proposed the entire community, with the exception of those immediately interested in the road, were utterly incredulous, not only as to the ability of those engaged in it to construct it, but also as to the practicability of the whole idea. Not a cent could be obtained out of Maine for this portion of it, and as no road of magnitude, in New England had been built, without the aid of Boston,

the mother of New England's railroads, this fact alone was regarded as settling the whole question, and the efforts of the people of Portland were looked upon as resulting in a loss of all their money expended upon a project which must surely fail. Yet despite of all this, the road was commenced and pushed forward with extraordinary vigor during a season of unexampled pecuniary pressure, which prostrated so many of the Massachusetts enterprises. The prompt payment of its subscription list has furnished ample means to meet all engagements as they have matured. The credit of the company is without a stain, but very few shares have been sold, and these at very nearly a remunerative price, and most of the stock still remains in the hands of the original stockholders. It has created no stock at a discount, nor has it wasted its means by hiring large sums of money at an enormous shave. And while no pains or expenses have been spared to make a first class road, and in this respect it is not inferior to any one in the country, the strictest economy has been maintained, and stockholders have the satisfaction of finding that the business of the part already constructed assures an ample return upon their money invested. By making the above contract, the price of the stock will advance as the work progresses, as both the contractors and stockholders have a mutual interest in maintaining its value. The mere fact that gentlemen of admitted pecuniary ability, and distinguished for their energy and sagacity, as are the contractors, and who are thoroughly acquainted with the value of its stocks, should be willing to take so large a proportion of it in payment, is the very best evidence of its ultimate value, and must exert a very salutary influence upon its market value. Among the many schemes to bring to the Atlantic the produce and business of the west by railway, the above road has been the last proposed, and bids fair to be one of the first to be completed. None have gone forward with such an uniform step as this, and there are none, the affairs of which have been managed with greater skill and prudence; and we deem it due to Mr. Morton, the Chief Engineer of the American, and for a time the Chief Engineer of the whole line, to say, that the success of the work thus far, is to a very considerable extent due to his skill as an engineer, to his practical good sense, his untiring industry, and more than all, to the inflexible honesty and straightforwardness of his character; which qualities, in the end, were certain to secure the ultimate adoption of his views, however much in the outset they may have been opposed to those of the Directors or the public. The success of the work under all its obstacles, is the best tribute to his qualities as an Engineer, and its completion cannot fail to give him a high rank among the leading members of his profession.

Old Colony Railroad.

The receipts of the Old Colony railroad corporation for the past five weeks, show an increase of over eleven thousand dollars, compared with the same period last year.

Liabilities of Railroad Contractors.

Edw. C. Thompson was recently tried at Dover, N. H., upon an indictment for assault and battery, in ejecting a man and his wife from the cars of Boston and Maine Railroad at Madbury, who refused to give up their tickets. The Court instructed the jury that for the purposes of this trial, the company had a right to make regulations for their own convenience; also, if they thought the conductor used more than reasonable violence in ejecting the man from the cars, they might bring in a verdict of guilty.

The jury after, a few hours consideration, returned a verdict of not guilty. It was proved that the conductor suffered a little upon the occasion from the tongue and finger-nails of the woman who was taken out.

Railroad from Macon to Augusta.

Contrary to our belief there is now every prospect that the projected railroad from Macon to the Georgia railroad will be speedily built. There seems to be no difficulty in raising the necessary means for the work. The county of Putnam has already subscribed \$100,000, which will be somewhat increased.—In relation to the subscription from other sources, the Macon Journal says—"we have before us a letter, from a wealthy and influential member of the Curtright company, suggesting that the road diverge to the East from Eatonton, that it be carried thence across the river at Long Shoals, and connect with the Georgia road, at or near Greensboro. This route he says will require the construction of only about five miles more of the road, than the route at present contemplated, and that it will shorten the distance to Augusta, fully that much. If this suggestion be adopted it will carry the road by one of the best water powers in Georgia, where a large manufacturing interest will immediately spring up. As an inducement to adopt this route, the letter states that the Curtright company will take stock to the amount of \$100,000.

There is also before the commissioners a proposition from Messrs. J. D. Gray & Co., of this city to take the contract for constructing the entire road at cash prices—to take one half the cost of grading, and one fourth the cost of superstructure and bridging in stock. This is not intended, of course, to interfere with other persons who may desire to take stock payable on work. Mr. Gray's proposition is equal to a subscription of \$125,000.

Our friends in Augusta feel confident that they will be enabled to raise at least \$100,000. The citizens of Jones county, are pledged to raise \$50,000, and we understand will redeem their promise.—These sums together with the private subscriptions in Macon, we think, will be amply sufficient to complete the work."

Western and Atlantic Railroad.

A correspondent of the Augusta Chronicle gives the following account of the progress of the Western and Atlantic railroad, Georgia.

The length of the tunnel is 1477 feet, its height 18 feet, its width in the clear, 12 feet. It is cut in a great measure through solid rock. The miners have had many difficulties to contend with, in consequence of the peculiar formation. On the western side, near the surface, they encountered thick layers of blue limestone, the edges of which projected towards the surface. It was consequently almost impossible either to blast or break them. So serious were these obstacles, that at one time it was thought almost practically impossible to construct a tunnel at all. Owing to the persevering energy of the contractors, Messrs. John D. Gray & Co., the work was persisted in. The formation soon changed into one of solid blue limestone, and the operations have been slowly, but steadily carried forward until the mountain has been penetrated to the distance of 418 feet.

On the eastern side the ground has been more favorable. The rock encountered for a time was a species of sandstone, not difficult to be worked.—This side of the mountain has consequently been penetrated to the distance of 742 feet, leaving only 317 feet to be accomplished. The average progress of the miners is now about 100 feet per hour. There is a double force employed, and the "sound of the hammer never ceases," from 12 o'clock on Monday morning, until 12 o'clock on Saturday night. Each gang of hands works 12 hours without stopping, except to eat. Into each end of the tunnel are carried four railroad tracks,—two above to carry in the

bricks and other materials for arching, and two below to carry out the earth and rock excavated.

This Tunnel was commenced on the 15th of July, 1848, and will be ready for the Cars in the month of December next. It has not only been constructed in less time than any work of similar character and extent, but we venture the prediction that it cannot be surpassed in its massive and substantial workmanship. The lateral walls are of rock, six feet thick, at the base and five feet at the top. The brick arch turned upon these walls is four feet at the base, and three feet over head. This arch is turned under one of wood of immense strength and massiveness, and the intervening space is carefully filled up with broken stone, so as to throw an equal pressure upon all parts of the work. The whole is laid in the best cement, and looks as though it would remain until the "ever lasting hills" are shaken, to their lowest foundations. The approaches to the Tunnel are carefully protected on both sides, by massive masonry, and every thing about the work is done in a style that reflects infinite honor upon the contractors. This is perhaps not the time to speak the whole truth, in regard to this enterprise; but we will venture so far as to remark, that but for Mr. Gray, it never would have been accomplished, or at least, not in years to come. It is a work which required strong practical common sense, and business capacity,—qualities not often to be met with.

The road is now ready for the cars, to the very mouth of the Tunnel. The Culverts and Bridges are nearly all finished, the superstructure is down to within two or three miles of the Chatanoga, and the iron has been laid some four or five miles beyond the Tunnel. An engine and cars will be taken over the Mountain in a few days, and the entire road, with the exception of the Tunnel, will be completed by the 1st of November.

Grand National Railroad Convention.

It has been proposed to hold a national convention in St. Louis, on the third Monday of October, of those friendly to an extension of a railway and telegraph from the Mississippi to the Pacific. An address has been published by "the people of St. Louis to the people of the United States," from which we make the following extract:

"Let us (says the committee) contrast briefly the consequences of erecting this road, with those which would follow a failure to make it. Were it completed, the first car that should rumble over the Stony Mountains in its fiery course across the Continent, from the Atlantic to the Pacific, would send a new sensation through the world. "Britannia, Empress of the Sea," losing much of her pretension upon her great marine employed in the India trade, would feel that the foundations of that supremacy were about to crumble, while from the icy Cape, to the fair islands of the South Pacific, and along the eastern shores and islands of Asia and Australasia, and throughout all the terra firma of the Pacific Seas, would be awakened a new spirit, ideas of a new destiny, and feelings of a new attraction. The eyes of those nations would be drawn to the new lights, which will illuminate the peaks of the Sierra Nevada, nor would their gaze be turned until their regenerated merchant vessels, moored in American harbors, should have exchanged their costly burdens for the substantial products of the United States.

Attracted to the great eastern station of the Continental Road, as steel to the magnet, a freight would roll down upon the States of the Union, such as the India Companies never saw, embracing the furs of the north, the drugs and spices of the south, the teas, silks and crapes of China, the Cashmeres of Thibet, the diamonds of India and Borneo, the various products of the Japan Islands, Manchooria, Australasia, and Polynesia, the results of the whale fishery, the gold, silver, quicksilver, jewels and precious stones of California, and the innumerable and unimaginable elements of commerce which would be brought into life from the depths of the sea, and from new and unexplored regions by the enterprise and ingenuity of our countrymen.—These elements would be distributed throughout the Union, giving a new impulse to population, to trade, to industry, to art, and to all the employments of our people. Our surplus meat and bread, cotton goods, hemp and cordage, lard, leather and hardware, and other products, would find a new, and an increasing market in return; while the Bible, the Printing Press, the Ballot Box, and the Steam Engine, would receive a welcome passage into vast and unregenerated fields, where their magic powers and blessed influences are greatly needed.

But on the other hand, if we fail to make this road, and California and Oregon remain without any practicable or convenient connection with the old States of

the Union, who can doubt that a new Republic will grow up on the shores of the Pacific, which would perhaps become independent of the Union, and obtain a supremacy of their own upon an Ocean favorable to Steam Navigation, and the very home of the trade with Asia. The whale fishery, the present American trade with China, the Pacific Islands and the Northwest Coast, would be shared, if not monopolized by the new republic. The central authority would find their power over a people so remote to be feeble and insufficient. With great mineral wealth in their possession, with a trade before them which has been the Cynosure of Commercial Nations during the whole Christian Era, and the experience and energy of the race whence they derive their origin, who can doubt their future power and progress in complete independence of all other nations.

The true policy of our government and country, therefore, in reference to this subject, is apparent.—The great importance and absolute necessity of this communication across the Continent, by Railway and Telegraph, must be appreciated. We confidently trust that it will be carried out, by national means and authority, as one of the most powerful auxiliaries to the integrity and perpetuity of the Union, and to the mission of our country in promoting and extending the influence of the noble cause of civil and religious liberty, civilization and humanity."

The address concludes with a cordial invitation to the people of all sections to send delegates. The committee desire "to have them from the mountains and from the plains, from the cities and from the country, from the hills of New England, and from the savannahs of Georgia; that they will come to us from the north and the south, from the east, and even from the west: pouring in upon us by all the numerous avenues of conveyance which converge at this point, so that the hospitality of St. Louis shall rejoice in the fullest exercise and enjoyment of its means; and that a quickening voice may go forth from the assembled mass that shall give to the great measure of American Progress assurance of its triumph."—*Baltimore American.*

Zinc Mine.

We have before alluded to the discovery of a mine of zinc at Mine Hill, N. J. A Company called the Sussex Zinc Company has been organized for working the mine, and specimens of the ore have been offered for inspection at the office of the association in New York. The Journal of Commerce says—

The ore is uncommonly rich, containing about 80 per cent. of red oxide of zinc and franklinite, in nearly equal proportions. The zinc is very pure, and strikingly superior to the imported article, being free from sulphur, arsenic, and other impurities. Reduced to an oxide—it is a fine white paint. The iron remarkable for its fineness and tenacity. The ore is supposed to be inexhaustible, and as men of wealth are subscribing to the stock, the operations of the company appear likely to be carried on with great efficiency and success.

Manufactories in Summit County.

The thriving villages of Summit county owe much of their prosperity to the various manufactories in profitable operation, and the editor of the Beacon is adding much interest to his valuable paper by noticing the principal ones. We take pleasure in transferring accounts of Reserve industrial pursuits and improvements to our columns. From the last Beacon we copy:

The Manufacture of Stone Ware.—The manufacture of Stone Ware was commenced in Springfield, Summit county, about twenty-five years since, by Daniel Fisk. About four years afterwards, Solomon Purdy built the second factory. The experiment was considered a doubtful one at the time, on account of the limited character of the market furnished in the vicinity. Akron had not then an existence, and the surrounding population was small.—The experiment was successful, and soon afterwards the Messrs. Mead built a third factory, in the same vicinity. This was in 1831, or '32. Since that time the business has been steadily progressing; until, at the present time, between twenty and thirty factories are in successful operation. Six of these are in Magadore; producing, probably, twenty thousand gallons of ware per week; worth about 5 cents per gallon. Within the limits of the township of Springfield, most of the ware factories are located. A few are just across the line in Portage county. The clay from which the ware is made is found in great abundance in that township, and a good article has been found in some of the neighboring townships.

The glazing clay is procured, we believe, in the

interior of New York. An article, however, has recently been found in a neighboring county that is thought to be equal to that procured in New York.

The process of manufacturing ware by hand is comparatively a simple one: yet we will not attempt to describe it for fear of inaccuracy. This is, however, the process by which all the ware in this country and in Europe is manufactured, save at two establishments in Middlebury, and one in New York City. The clay is ground before being used and wet. By the pressure of the hand alone, without a mould, it is turned into shape. The glazing liquid, (clay dissolves into water,) is forced over the surface of the ware. It is then seasoned or dried in the air first, and then on a sort of oven, through which the fire passes, from end to end, several times before reaching the chimney. After this process the ware is ready for the kiln. The burning requires intense heat, and yet demands much care, in order to make a good and durable article.

The establishment we first visited, in Middlebury, is owned by Messrs. E. H. & C. J. Merrill. It is on the bank of the canal. It is used solely as a bottle factory. Dimensions 30 by 50 feet; 3 stories high. They have a water power, equal to that of six horses as commonly computed. They manufactured all kinds of ware several years in Springfield, by hand. While thus carrying on the business, they conceived the project of manufacturing ware by machinery.—After long and close investigation, labor and experiment, they perfected a machine for turning ware, to be carried either by steam or water power. It was patented in July, 1847. In witnessing the two processes of making ware, while in Middlebury, we could not resist the conclusion that this invention must produce a complete revolution in the manufacturing processes.

It operates beautifully, making an extremely neat and smooth article of ware. The cost of manufacture, by machinery, is one half that by the old process: while the ware commands an advance of 20 per cent. readily, on old prices.

The right to make ware for the State of New York, by the new process, was sold to a gentleman in New York City, by the Messrs. Merrills. Owing to defects in his machinery or the unskillfulness of his workmen, he has turned out some defective ware. There has not been the slightest difficulty here. All the ware that can be made by Messrs. Merrill, and their associates has been contracted for at an advance of 20 per cent on old prices.

Two hundred thousand bottles are made annually at the factory of Messrs. E. H. & C. J. Merrill. The article they make, is capable of bearing a much greater pressure than the round bottles, and is in great demand in Buffalo and other places where it has been tried, on that account. Six of them are made per minute.

The inventive genius of our friends, Merrills, cannot fail of its reward. They deserve the good fortune and honor that awaits them: if ever enterprise and industry merited reward.

The right to make stone-ware by machinery, has been visited in Col. R. McMillen, of Middlebury, by the inventors. Col. M. has opened a large factory for the manufacture of the ware generally, and has some of the machines in successful operation.—He is making pots, pans, etc., and is satisfied that every variety of stone work can be made by the same process, without difficulty. He is making now only about 5000 gallons per week; but when his extensive water power is fully applied to the work, he will turn out a heavy stock of ware. He has contracted for all he can make for one year, at a substantial advance on old prices. His extensive buildings are situated so as to admit of canal boats reaching them after a slight improvement has been made.

Plank Roads.

The following is an extract from a letter of Thos. C. Alvord, Esq., of Salina, to a gentleman of this city, on the subject of Plank Roads. The enlarged and enlightened experience of Mr. Alvord, on this subject, renders his opinions of peculiar value:—*Del. Free Press.*

"I think illy of the project of laying a plank road in the centre of the road-way, under any circumstances. First, because you would, in that event, have to lay the plank level crosswise, whereas it is of the utmost importance to have a slant of at least 2

inches from the inside to the end of the plank track. Actual experience has demonstrated that the present utility, and the elevation of the road, is at least, (if not more than) double. Secondly, in wet weather especially, the one wheel running off on the dirt track, finds less resistance to cutting than the other; consequently, the weight of the load being thrown entirely on that wheel, must necessarily increase the weight of the draft, and soon cause the dirt track to rut up and need repair.

We have now changed our form of stringers and manner of laying them. We now use 3 x 6 on ordinary good ground; 3 x 8 on light soil, and on very wet and mucky soil, we lay two set; breaking joints as it is termed, in this way. We also lay them 5 feet apart, from inside to inside. One inch broad or even 2 inch plank are not heavy enough for sleepers; it is impossible to lay them so as to form a lengthwise perfect plane, which is very desirable, neither do they add much to the strength of the road; the objection urged to have heavy sleepers, of acting as a dam to the water, amounts to nothing, upon the new plan of laying the road with a slant, as our experience teaches us, that a road laid in that way sheds or throws the water off the track, and none gets under the plank to its great detriment. We have a road of twelve miles in extent, which has gone through two winters; built over bad ground, and it has not stirred a particle, nor have we been as yet subject to an expense of 25 dollars for repairs.

We have brought our sleepers from 7½ feet apart from inside to inside, for the reason that we found our roads under the old plan were apt to be depressed in the centre, the entire weight being thrown inside the sleepers, thereby causing the water to be retained in the centre till it could find its way through, to the injury of the road, now by being placed directly under the wheels, they obviate this difficulty as experience, (that best of teachers,) has taught us.

I know of no other hints or new matter which I could give you, other than you will find in my letter to your brother under the date of April, 1848; but I again take this opportunity of impressing upon you the necessity of thorough and efficient drainage; build your roads high, with sufficient roll to quickly carry off the surface water, dig your ditches deep and you will have a good, permanent, lasting road.

In answer to your last inquiry; about my opinion in reference to the utility and advantage of these roads; whether I continue to think as favorable in regard to them, I say yes—my opinion is that the value of lumber has got to increase three fold before they will cease to be rebuilt, when necessary, wherever they have been once built. This is not my opinion alone, it is the universal sentiment.—Two thousand miles are finished or in progress now in this State, and new companies are forming daily, and new lines are being laid out. The faster they wear out, the more profit, and consequently the more necessity to the country that they be maintained."

Camel Steam Tug.

The reader will find in our Reading Room an account of the *Camel Steam Tug*, which was sent us by a friend in Charleston. The *Tug* is intended—first, for carrying vessels over bars and shallows; secondly, for towing vessels; thirdly, for hauling stranded vessels off shore, which would otherwise sink, and transporting them with as perfect safety as they could any other vessel.

The appearance of the *Camel Steam Tug* on the water, from a lateral view, is like that of a common steamboat. It moves faster when towing, is managed with the same facility, is trimmed at the same draft of water, say nine feet, whether a vessel is in the act of being transported or not. The cost of the *Tug* will be from sixty to seventy-five thousand dollars; and the cost of transporting a vessel about the same that is ordinarily charged by two steamboats. The model is well worth the attention of the curious from its simplicity, beauty of proportions, combination, and adaptation of elements at hand towards so great an end, at once opening all the Southern harbors to vessels of large draft, and with as much ease and facility as common steam-towing is done. The chief Naval Constructor at Pensacola observes that the great desideratum for Southern waters has at length been obtained in the *Camel Tug*, which combines in the most simple form all the properties required for the subject.

The inventor is J. A. Winslow, 1st Lieut. U. S. Ship *Saratoga*, (address Boston). Model and drawings can be seen at the Pensacola Navy Yard, and any information obtained from the Chief Naval Constructor, Ed. H. Delano.—*Savannah Republican.*

New Mode of Manufacturing Shot.

There are few Northern, Southern, or Western hardware merchants unacquainted with the celebrated manufacturing firm of T. Otis Leroy & Co., 261 & 263 Water-street. As it is the only establishment in our country, we believe, where lead pipe is manufactured by a new and superior process, which entirely obviates the old one, of seaming or bridging (the same, more of that article is sold by this company than by any other in our Union. During a recent visit we were highly gratified in witnessing the operation of a new mode of manufacturing shot without the aid of the usual tower employed for that purpose, and must confess that we were surprised that this important improvement, embracing such vast advantages, was never before thought of. It is the invention of the junior partner of the firm, Mr. Smith, to whom the exclusive right has been invested by letters patent, both in this country and in Europe. Its distinguished features consist in the simplicity with which the lead, after being dropped from a perforated vessel in a fluid state, is congealed before reaching the reservoir of water into which it is deposited. This is performed in the ordinary process by causing the drippings of lead to fall a great distance from the top of a tower to its base, and up to the period of this beautiful invention, no other substitute for the tower could be devised to accomplish this indispensable object in the manufacture of shot, although various attempts have heretofore been made. The mode adopted by Mr. Smith is simply to cause the fluid lead to descend from the upper part of the establishment through an upright circular pipe arranged over a reservoir of water, and in which a strong blast of air, produced near its lower extremity by a revolving fan, is constantly passing in such a manner as to meet the lead drippings in their descent; and while it tends to break their fall by slightly buoying them up, imparts to them a degree of cold sufficient to change their state, from a liquid to a solid, before they reach the reservoir of water into which they fall, and from which they are taken to the drying table by an endless band of buckets or elevators. When it is understood that this simple process performs the office of the expensive towers and their complicated adjuncts now in use, we think the reader will agree with us in the opinion that the immense shot towers now seen peering to the skies in the various large cities of our country, will ere long be numbered among the things that were, to give place to this evidence of the advancing tide of the inventive genius of our country. In addition to the advantages gained in labor, &c., in the process of manufacture by the improvement, the shot produced by it are more solid and otherwise superior to those heretofore placed in market.

We likewise witnessed some fine samples of lead pipe of all sizes both in length and bore, manufactured by a machine arranged at the back part of the building, receiving its power from a hydraulic or Bramah press. The apparatus forced the pipe over a mandril with great facility, and we were informed that it was capable of producing a pipe of an indefinite length; and from the fact of having the mandril over which the pipe is forced secured at its lower end without the aid of a bridge, it was not so likely to get out of order as the usual construction of machinery.—*N. Y. Pathfinder.*

ALBANY AND BUFFALO RAILROADS.

Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ a.m., 3½ p.m.

Passengers by the *Express Train* reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For *Schenectady, Saratoga Springs & Whitehall*, Leave Albany at 7 a.m. and 2 p.m. For *Schenectady* only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For *Eric Canal* packets at 7 a.m. and 7 p.m. By *Plank Road* from *Schenectady* to *Saratoga* at all hours by stages, etc.

The *Eastern Trains* leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y Albany and Schenectady Railroad Co. Albany, August, 1849.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton.

June 8, 1849.

**P. S. DEVLAN & CO'S
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

**Journal of the Franklin Institute
of the State of Pennsylvania,
for the Promotion of the
Mechanic Arts.**

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849.

M. M. White, Agent,
No. 74 Broadway, New York.

NOTICE TO**Superintendents of Railroads.**

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albemarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
C. CROZET,
Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company.

Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Straghan, the Resident Engineer of the Western Division.

By order of the Board of Directors,
WM. ROBINSON, Jr., President.
Pittsburg, August 11, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND AND IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the survey or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore mercifully refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimator Plans and Specifications furnished for Dams, Bridges Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.
FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN.
41 Broad street.
3m.13

March 29, 1849.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head from the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Menitt & Co., New York; E. Pratt & Brother, Es. 2nd St. Md

LAP—WELDED WROUGHT IRON TUBES

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thiorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to
J. F. MACKIE,
Nos. 65 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, June 1, 1849.
The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.
600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 1/2 by 1/2 Flat Bars.
25 Tons of 2 1/2 by 9-16 Flat Bars.
100 Tons No. 1 Garsherric.
100 Tons Welsh Forge Pigs.
For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best fagotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1849.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 23, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required; large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President,** Troy, N. Y.

ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1849.

Railroad Iron.

100 Tons 2½ x ½, **130** Tons Railroad.

All fit to re-lay. For sale cheap by **PETTEE & MANN,** 228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by **JOHN A. ROEBLING, Civil Engineer,** Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

¾ Round and square, to 6 inches.

¾ Flat 4 "

Ovals, half-ovals and half-round.

Hoop, band and scroll iron.

Nail plates, superior charcoal Horse shoe,

Iron, sheet and Boiler iron.

Tire iron for locomotives.

Railroad spikes.

Pig iron of superior quality for chilling.

do. for foundry purposes.

For sale by **JOHN F. MACKIE,** 85 & 87 Broad Street,

Sole agent for the New Jersey Iron Co.,

June 9, 1849.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md.

Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler* and *Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests.* Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by **ICHABOD WASHBURN,** Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " " Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catoctin " "
250 " Chikiswalungo " "
50 " " Columbia" "chilling" iron, a very superior article for car wheels.
75 " " Columbia" refined boiler blooms.
30 " 1 x ½ Slit iron.
50 " Best Penna. boiler iron.
50 " " Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

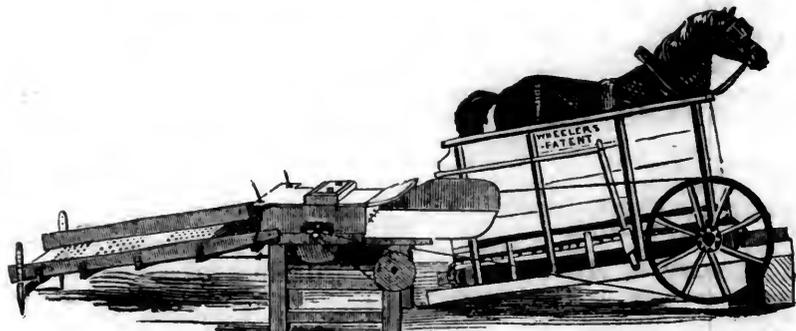
Locomotive and other boiler iron furnished to order.

GOODHUE & CO., 64 South street

New York.

Roman Cement,

OF the best quality, now landing from ship *Hendrick Hudson*, from London, made by *Billingsley, Mial & Co.*, and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109 Water Street, New York.

Railroad Horse Power and Saw Mill.

The above cut represents the most simply constructed Endless Railway Power in use. As shown it is attached to a threshing machine, with which it is most extensively used; but for sawing wood at railroad stations it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12 to 20 cords of four foot wood per day. They have been used several years on several roads in New England, and for manufacturing establishments more than three thousand of these powers are in use, and without exception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satisfaction as above described, or may be returned at my expense, and the purchase money refunded.

HORACE L. EMERY,

Nos. 469 & 371 Broadway, Albany, N. Y.

September 6, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed. When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

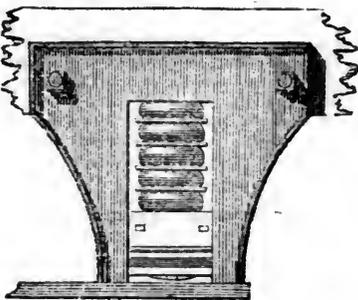
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chisbrough, West Newton.
May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 19 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAURENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,

142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

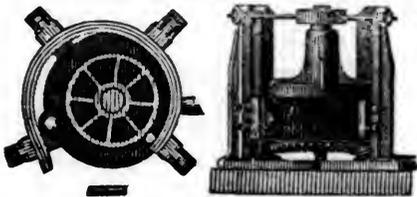
1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

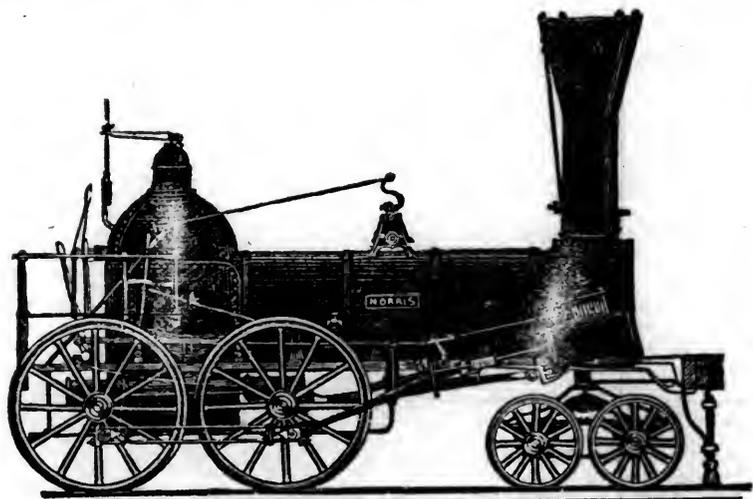
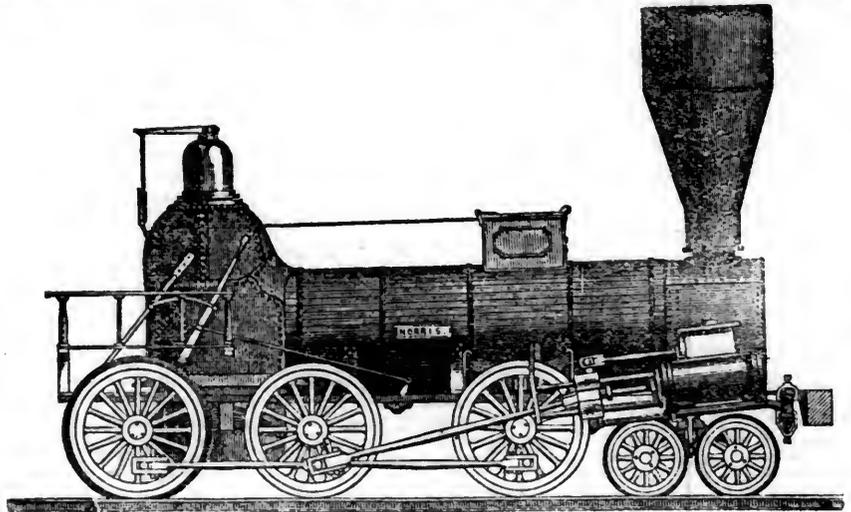
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or outside.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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ASSISTANT EDITORS,

J. T. HODGE, For Mining and Metallurgy.
 GEN. CHAS. T. JAMES, For Manufactures and the
 Mechanic Arts.
 M. BUTT HEWSON, C. E., For Civil Engineering.

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Iron Ores and the Iron Manufacture of the
 United States.

Continued from page 562.

NEW YORK

Port Henry Mines and Furnaces.—In the vicinity of Port Henry, and near the Lake, are many mines of magnetic ores of no little extent and importance. They are found in the quartrose and granitic rocks, which at Port Henry are separated from the lake shore by a narrow strip of the lowest stratified sandstone and limestone.

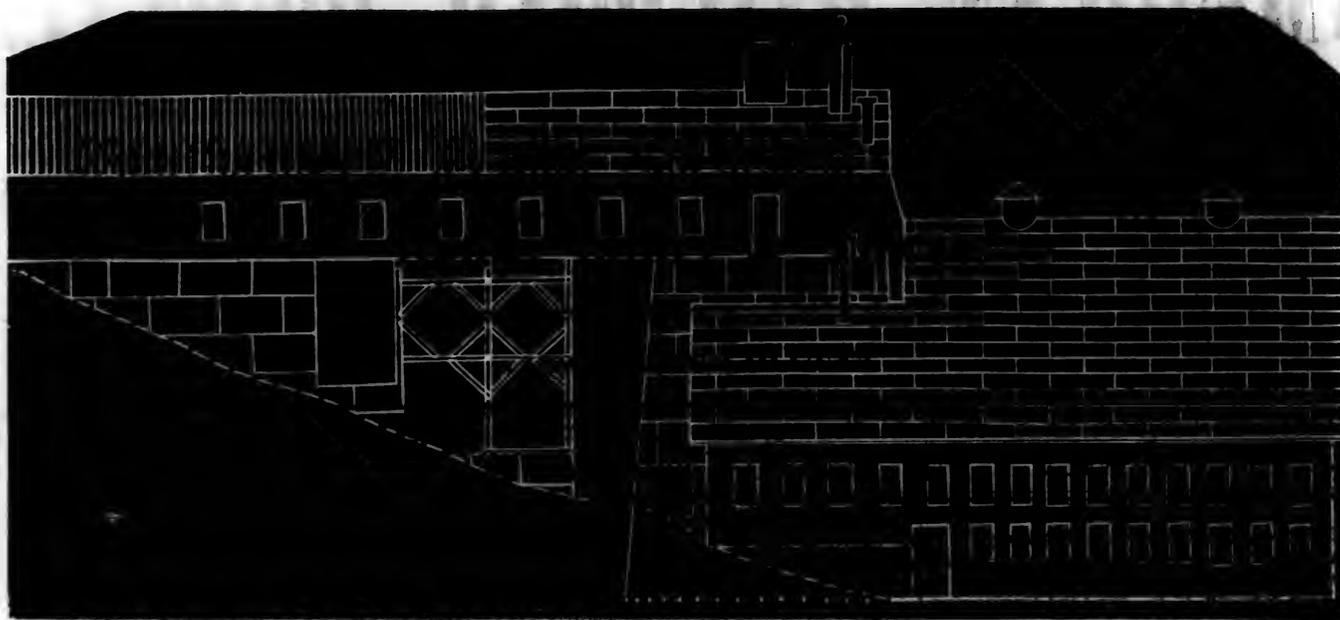
One of the most important of them is the *Cheever Mine*. It is opened half a mile back from the lake, and a mile and a half north of the furnaces; the course of the veins, however, take them down near to the waters edge. Two veins are found in elevated lands only about ten feet apart. They lie parallel to each other, pursuing a very straight course in a direction nearly N. N. W, S. S. E, and dipping together about 35° towards the west. The upper of these veins is about six feet thick, the lower from eight to ten feet. Both consist of a very pure mag-

netic ore of rather coarse grain, but little mixed with the quartrose gangue and wall rock. They have been traced on their strike more than half a mile, and over a considerable portion of this distance worked both by open cuts and tunnels to depths varying with the elevation of the surface—sometimes down the slope of the vein 170 feet. They are remarkably regular in their dimensions, furnishing everywhere about the same quantity of ore and of the same quality. The water makes but slowly in the mine, so that it causes no additional expense in working it. For many years large quantities of ore have been removed, and its cost during the years 1847 '48, when the operations were extensively conducted, was accurately ascertained. For mining the expense was 75 cents per ton, and for hauling to the furnaces 37½ cents more. Since that time contracts have been taken at 60 cents for mining, and for delivering at the lake shore 20 cents additional, making its actual cost at the lake, independent of its value in the mine, 80 cents. At the lowest point where the veins approach the lake, an adit level has been driven through the solid rock for the purpose of affording a more convenient exit for the ore and reducing the transportation to the lake to a distance not exceeding half a mile. After being taken to the shore, the ore is shipped from the new landing in boats for the various places where it is in demand. This adit laid out on the liberal scale of seven feet in width and six feet in height had been carried in 290 feet, when I last saw it in 1848, and had then reached the edge of the vein close to the old workings. Its whole cost had been \$4500; and when regularly at work, the expense of each running foot was found to be \$12. The rock is quartrose of loose texture and not very hard. The level of this tunnel will pass under the workings on the hill, and give access to many hundred thousand tons of ore with perfect security against trouble from water, and with a certainty of the continuance of the ore; for these are permanent veins, such as are never exhausted. Being about five times heavier than water, every cubic foot of the ore weighs about 300 lbs. A vein eight feet thick will consequently give for every foot in depth, in a length of half a mile, 3,168 tons of 2000 lbs. each. If the two veins average together no more than twelve feet, their yield for this distance and every hundred feet in depth would be 476,200 tons; but this half mile is by no means the full extent of their productive-

ness. Already have many thousand tons been taken away to be used at a great number of places. In the winter teams come every day to carry it to the forges scattered about in the country. The furnaces at Port Henry have consumed it in large quantities; and it has been sent to Saugerties in Ulster county—to Troy—to Mount Hope furnace near Whitehall—to Pompton, near Jersey—and some even to Boston. Its use at these places (excepting the Mount Hope furnace) has been to mix it with the pig metal in the puddling furnace, it being found to work with advantage at the rate of about 400 lbs. of ore to the ton of pig iron. Of this ore and the Sanford (principally, however, of the latter) it is estimated that 1500 tons per annum are consumed at Saugerties, 500 tons at Burdens works and by the Troy nail factory company, and 500 tons at the Troy rolling mill. The cost of transportation from Port Henry is as follows:—to Albany and Troy per ton of ore \$1.50; do. of iron \$1.81—to Saugerties per ton of ore \$2.00; do. of iron \$2.50—to New York per ton of ore \$2.25; do. of iron \$2.75. The ore has formerly been sold on the dock at Port Henry for \$3.00 per ton; but more recently at \$2.50. In Troy the Sanford ore sells for \$3.50. In the forges or bloomery fires the Cheever ore works easily, making iron fast, but not of the best quality; the pig metal, made from it in the blast furnace, though used for making bar iron, is not highly esteemed and never commands a high price, but the No. 1. iron makes excellent castings. The tables of the workings of the furnaces, which will be given below, show its yield in the large way where worked alone in furnace No. 1. blast No. 10. to have been about 67 per cent of cast iron.

Equal in extent to the Cheever bed just described is the *Sanford bed* situated about seven miles from Port Henry. This is owned five eighths by Messrs. Rousseau; Lee and Sherman; three sixteenths by the Messrs. Noble of Elizabethtown; and the remaining three sixteenths are among the assets of the Port Henry Iron company.—The ore of this bed is remarkable for its coarse crystalline grain and crumbly texture—qualities which are highly esteemed, as ores possessing them are generally reduced with great facility in the blast and puddling furnaces.—But for the bloomery fire some other magnetic ores are preferred to the Sanford. From its elevated situation in a hill this bed is free from water; and being beside very large, the ore is mined at very little expense. Three or four hundred tons have been thrown

South Side of the New Furnace at Port Henry.



down by a single blast, and the cost per ton for mining has not exceeded twenty five cents. I am informed that 7000 tons of this ore are probably sold per annum; its price at the mine has been \$1.50 per ton; and at the dock at Port Henry it has sold for \$2.80 to go to the Mount Hope furnace. Mr. F. H. Jackson of West Port has a contract for 20,000 tons mined and delivered at the bed for seventy five cents per ton.*

* Very exact analyses of the ores used at Port Henry have been made by A. A. Hayes, Esq., of Lowell; and his observations connected with the report of the analyses are of no little interest. The Cheever ore seems to represent in general character and ingredients most of the other ores. "Among the black granular masses composing the sample are minute crystals of titaniferous iron, apatite containing fluat of lime, and a dark green amphibole mineral. The selected grains of the ore give fluoric acid and lime, and in every case phosphoric acid was observed. The ore is highly magnetic, but does not give the same proportion of the two oxides of iron as exist in magnetic oxide of iron.—The color and fracture also remove it from the class of magnetic oxide of iron. The analysis of a selected portion gave in 100 parts—

Per-oxide of iron,	70.00	
Prot. " "	12.31	
Phosphoric and titanium acids,	6.19	Pure iron in the mixed oxides 64.51 per cent.
Phosphate and fluat of lime,	1.81	
Siliceous gangue,	0.36	
Traces manganese and loss,	0.33	
	100.00"	

Mr. Hayes then remarks upon the occurrence of the phosphoric acid combined both with oxide of iron and lime in the ore, and also mixed with it in the form of apatite. Its effect is to cause the ore to melt freely, but in excess to impair the quality of the pig iron. The apatite may be removed by stamping and washing, and the bad effects of the remaining phosphoric acid may be obviated by the use in as large quantities as will melt to a fluid mass of earth, having alkaline bases; the acid then melting with these bases in the flux and is not reduced to the state of phosphorus by the iron.

The coarse grained Sanford ore Mr. Hayes found extremely pure, as also another sample of similar appearance, which he describes as from the Dallib mine, occurring in large crystals. "The sur-

Besides these mines there are many others in the same vicinity. Rousseau, Lee and Sherman own one called the *New Bed*, only half a mile from the last described, which furnishes one of the best and purest qualities of the Champlain ores. Its texture is coarser than that of any other ore, the crystals being large and distinct, and slightly cohering together. The bed has been opened only two or three years, and though the ore has been sold at the rate of 300 to 400 tons per month, it is not regarded as likely to be among the most productive. The expense of mining is estimated at one dollar per ton. The ore sells for \$2.50 at the bed and for \$3.50 on the wharf at Port Henry.

About the same distance from the lake are *Storr and Rousseau's Bed*, which, not yet worked, promises to furnish much ore; *Fisher Bed*, worked and good; *Barton, Miller and Hall Beds*, the ores of which sell for about \$2, at the mines. *Everest and Green's Bed*, eight miles from the lake, has supplied some ore to the Port Henry furnaces; but it does not appear to be very productive.

Nearer to Port Henry are the *Dalliba ore*, a mile and a half distant, the *Crag Harbor bed* on the lake shore, a third of a mile from the works, both of which belong to the Port Henry Iron company: and

faces of the crystals are covered with a thin coating of titaniferous iron, which penetrates the flaws and allows the masses to divide very easily. Selected portions of the ore contain only 2.6 in 100 of siliceous gangue. Some large crystals afford in 100—

Per-oxide of iron,	62.94	
Prot. " "	31.66	Iron 67.63 per ct.
Titanic acid, trace of lime and oxide of manganese,	2.58	
Siliceous gangue,	2.60	
	99.78"	

The Sanford ore gave a similar result, its gangue being 4.1 per cent. and its percentage of iron 66.74. These samples are considered "of unusual purity, surpassing most known ores in the proportion of iron. None of the samples have given any traces of phosphoric acid or any substance, which would prove prejudicial in working the ore." "For mixing with the Cheever ore they are admirably adapted, the effect of mixing being that of diminishing the proportion of phosphuret of iron in the iron produced."

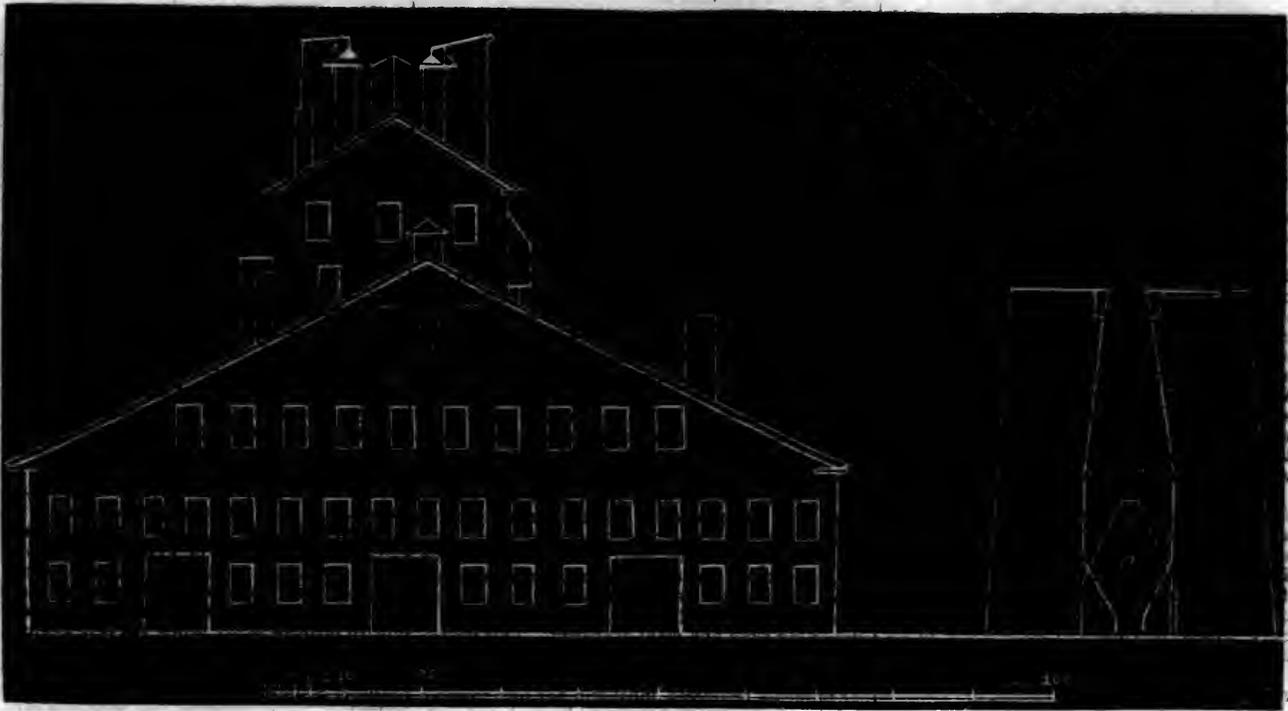
Footo and Goffs bed, half a mile north of the Cheever bed, and probably a continuation of it.

Though these ores do not occur in such immense deposits as ores found in other parts of the country, or even of Essex county itself, the amount of ore is extremely large, and it is distributed to a much better advantage for the country itself, than if in one body owned by one corporation. At the moderate price of \$1.50 per ton, the expense to the ton of iron is less than \$3.00—a price that a ton of good ore can hardly be purchased for in many other iron districts of the United States.

The works at Port Henry consist of two large blast furnaces and a cupola furnace holding about four tons of iron, and designed for turning out heavy castings, as large iron pipe, etc. It stands in the casting house of one of the furnaces. These are established on the same small stream of water, which just before emptying into the lake falls from a height of more than seventy feet. The upper furnace makes use of this stream three times over—first by a twelve foot wheel for stamps, circular saw, and grout-mill; then by a twenty four foot wheel for the blowing apparatus; and lastly a fall of five feet for the machine shop. The lower furnace, six or eight rods below the upper, built on the dock, has a fall of nine feet for the stamps, circular saw, and machine to grind grout, and one of nineteen feet for the blowing apparatus. In ordinary times the water is sufficient for the use of the works; and by a small expenditure in raising the little dam in the hill above the supply might be rendered almost sure at all times.

The site of the present new furnace (the upper one) has been occupied by a furnace for many years. In 1830, or thereabouts, the old stack was taken down and another built, and again this was replaced by a new one in 1847. This furnace, which had run only eighty two days, when the works were stopped in the spring of 1848, is one of the best built and complete establishments of the kind in the country. In the accompanying plates are given the elevation on the south side, the same at the end of the casting house, and a section of the stack and furnaces.—The cupola chimney is seen in the end elevation, standing near the northeast corner of the casting

End View of the Casting House.



house. It was to carry on the manufacture of castings on a large scale, making particularly water pipes for the cities, that this portion of the works received so unusual an extension, the casting house being made to cover about 8,500 square feet. To afford all the light possible, it is well filled with windows, as seen in the plans; and both it and the top house are protected from fire by substantial iron roofs.

The stack itself is built in the most thorough manner of hewn stone in fine large blocks; its dimensions and form are seen in the plans. The boshes receive three slopes, a favorite mode of building in this section of the country, though not approved by Karsten, nor adopted elsewhere in the United States. The hearth after running eighty two days is now of a circular form above the taweres, six feet in diameter. The blowing apparatus consists of two cast iron cylinders, five feet diameter and six feet stroke. They are placed with the regulator in a small building to the northwest of the stack; and the blast pipe, carried from this over the roof of the casting house, enters the top house against the heating oven. This regulator which stands upright

through the roof of the building, is 20 feet high, diameter 5 feet 3 inches inside: it is made of sheet iron, one tenth of an inch thick. The blast pipe is 18 inches diameter. Beside this regulator is another, a water regulator, consisting of a tub 7 feet diameter and 11 feet high, inverted in another 10 feet diameter and 6 feet high. The blast is three to five revolutions per minute with a pressure of $1\frac{1}{4}$ to 2 lbs. to the square inch.

The heating pipes consist of four bed pieces, 15 inches diameter, laid two and two, side by side, and end to end; they reach across the oven, which is 18 feet long, and the level of their centre is 2 feet 3 inches above the charging plate. The two bed pieces on the south side, support eleven pairs of uprights, those on the north side eight pairs. These pairs are cast in one piece without the elbows at top for joining two separate uprights, as they are usually made. They are of oval form, eleven feet high, measuring inside $7\frac{1}{4}$ by 4 inches. The circle at top is 18 inches across and 22 inches from the outer edge at top to the crotch between the uprights; the iron is an inch thick. These pipes are cast at the furnace, patterns being kept of this and other forms.

The advantage of the arched pipes being made in one piece is to save joints and leakage; the objection is that when one gives out, it is not so easy to replace it as when the pieces are small and more numerous; but this is of little consequence if they can be made to stand like the pipes in the Crown Point furnace, (which were made at Port Henry) through the running of over 7,000 tons of iron.

The hot air is taken from the furnace by two flues which enter into the cylinder in the tunnel head: one of them is seen in the section. This cylinder, or rather frustrum of a cone, conforms in its shape to the top of the furnace. The flues are 14 inches wide and 10 inches deep; their floor is three feet below the charging plate; their length into the centre of the oven between the bed pieces is $7\frac{1}{4}$ feet. The oven which stands 5 feet 3 inches from the edge of the tunnel head, is 18 feet long, 7 feet wide and 16 feet high to the base of the chimneys.

The workings of this furnace will be given in the tables extracted from the furnace books, to follow in a succeeding number of the Journal. In them it is designed as No. 1, the lower furnace being called No. 2. H.

Cuba and its Resources.

This beautiful island, one of the earliest discoveries of the great admiral, has been known to Europe since 1492, and has borne successfully the name of Juana, Fernandina, Santiago, and Ave Maria, and has found refuge from this confusion of titles in the aboriginal appellation. The most westerly of the Antilles, it equals in area that of all the other West Indies together, and is one of the large islands which approaches nearest the North American Continent one hundred and thirty miles, from which, an eminent Cuban naturalist maintains, by some great convulsion of nature at no very remote day, it has been separated. The length of the island, which extends nearly east and west, from the 74° to 85° west of Greenwich, is about six hundred miles, and its average breadth is about one hundred—between the 20th and 25th parallel of north latitude. It is blessed with the prodigal fertility of tropical climates

while the elevation of its mountains permits the productions of colder climates to thrive. This range of lofty mountains, extending from Cape San Antonio to the Putna de Maysi, divides the island into two equal portions, and on its declivities and in its valleys are regions as fertile and as healthful as any in the world. Rising to the height of 8500 feet, it contains the sources of various streams which abound with peculiar and delicious fish, and which bring down no inconsiderable portion of gold dust, once esteemed of importance; but which now is neglected because the labor necessary to collect it, it expended in the cultivation of the soil, would yield thrice the return. The mountains also abound in other mineral wealth, among which are copper, iron, and the magnetic stone. Silver is also found. The most valuable of these mines, however, are those of copper, which, since the completion of a portion of an elaborate system of railroad, one hundred

and ninety five miles of which are now in operation have proved most profitable investments. Principally in the hands of foreign capitalists, they employ many thousand miners, the wants of whom provide, for the small planters, that greatest of all protection and encouragements, a home market.

Marble and coal are also known to exist in inexhaustible quantities, and the value of the latter is daily becoming more apparent from the rapid consumption of wood by the immense *azucararias* or sugar estates of the island. This coal, exceedingly bituminous, is evidently an out crop of the great asphaltum beds which, in more than one of the Antilles, evince themselves in the lakes of mineral tar. It is now employed in the gas works of the city of Havana, and has been found of great purity and good quality.

The island abounds in magnificent harbors, one of which, that of Havana—named, tradition says,

from an Indian goddess of the name, a statue of whom is placed over more more than one of the gates of the city—is probably the best in the world. With a narrow entrance, expanding into a magnificent bay, it is capable of enclosing the navy of the world, and from the earliest day has been so carefully fortified as to be considered impregnable. Neither history nor scrutiny sustain this idea, for, in the middle of the eighteenth century, an expedition under the orders of the British Admiral Vernon, composed of a small force of royal marines and a few regiments of colonial troops, landed a few miles below the city, all the defences of which, including the Moro, it carried without unusual difficulty. The new art of war, with its immense batteries, steam and rockets, would certainly reduce the place to necessity in a very short time. Matanzas, Trinidad Sant Iago, Cienfuegos, and Puerto Esccondido are also excellent harbors, with great natural facilities for improvements and fortifications.

The climate is, when we consider the latitude, salubrious, the year being divided into a dry and wet season. The warmest portion of the year is July and August, when the mean temperature of each day is about 84° Fahrenheit. The coldest is in December, when the mercury ranges at about 50°, except when the wind known as *el norte* blows, during which the instrument shows a rapid declension.

So fertile a soil is not known to exist in any other portion of the globe. It has been known to produce three crops a year, and in ordinary seasons two may be relied on. The profusion of its flora, the variety of its forests are unsurpassed; while the multitude of its climbing shrubs give a luxuriant richness to its scenery, which contributes to make it one of the most fascinating countries in the world. No where is life so easily supported, and man so delicately nurtured. In addition to the plantain, the yuca of two varieties, the potato, yam, indian corn, rice, melons, chesnut, cocoanut, pineapple, amana or custard apple, medlar, banana, orange, lemon, shaddock, and lime abound. The growth of the forests comprise the mahogany tree, cedar, lignum vitæ, various kinds of ebony, the noble palm tree, and numerous woods for building.

On this island, capable of supporting in opulence a population equal to that of Spain, are strewn less than a million and a half of men, of which six or seven hundred thousand are white, two hundred thousand free negroes, mulattoes, and zambos, while the rest are slaves. It is supposed that but two-fifths of the island is cultivated, the rest being wilderness, uninhabited, and despoiled, by ruthless Spanish avarice, of the glorious forest trees which struck the early navigators with so much amazement.

The chief riches of the island result from its exports which consist of sugar, coffee, tobacco, wax, cocoa, molasses, honey, rum, maize, etc. The first of these is infinitely the most important, and is probably the only one which is regularly increasing, in spite of the changeable seasons, hurricanes, and the immense direct and indirect taxation to which the planters are subjected. The great increase may be estimated from the fact that in 1842, 617,648 boxes were exported; and in 1847, 1,274,811. The exports for the last fiscal year ending with November were 1,210,917. Of other articles, during the same time, were exported 708,941 arrobas (25 lbs.) of coffee, 205,559 hogsheads of molasses, 11,909 pipes of rum, 4,647,737 pounds of tobacco, 141,239 boxes (thousands) of segars, and 561,826 quintals of copper ore.

The cultivation of coffee has nearly been destroyed. Nothing shows the great decline of the trade more than the fact, that in 1837, 2,133,567 arrobas were exported, while in 1848, there were only 708,491. The consequence is, that a great portion of the *cafetal* are now abandoned, and the land appropriated to grazing, sugar estates, or rice planters. The tobacco crop rapidly increases, and will as long as the passion for Havana and Principe segars shall last. The plant is peculiarly different from our own, maturing in less time, and the soil is able always to bring two crops per annum. In 1842 the crop was 5,942,833 lbs. in 1847 it rose to more than 9,000,000. That of 1848 was somewhat diminished by a season unusually unpropitious, and by hurricanes.

The following table shows that there has been a gradual increase of exports for many years, and of consequent prosperity:

	Yearly av. of imports and exports.	Increase during 5 years.	Percentage of increase.
1829 to 1832	\$30,920,111		
1833 to 1837	36,314,956	\$5,395,745	14.9 per ct.
1838 to 1842	49,073,615	12,759,659	25.9 "
1843 to 1847	50,149,797	1,076,182	2.1 "

The number of arrivals during 1847, at its ports, was 3,740, and the number of clearances 3,346. The amount of American tonnage employed in trade with it is 476,773 tons.

Such are the resources of Cuba, and from them it is customary to conclude that the island has enjoyed a paternal government and enlightened care from the crown of Spain. Such, is not, however, the case; for, of all countries in the world, it is probably the most and worst governed. All power in the hands of two officers, the captain general, civil and military governor, and the intendente, responsible directly to the Spanish crown, who has charge of the fiscal affairs and of commerce—crowds of greedy Spaniards in every employment—an army of twenty thousand men quartered on a population of 1,500,000—vexatious taxes, infringements on natural right monopolies of every thing, unblushing liberty, flagrant corruption, constant espionage, and an ecclesiastical system behind that of England in the times of the Tudors, are its principal features. Rigid censorship of the press, a want of all provisions for education, and a degraded and worthless nobility, arrest the attention of every stranger, and make him wonder how any race intelligent as are the Cuban creoles, can remain quiet and see their beautiful island doing nothing for itself, and wasting its treasures upon a people which prize it only as a means of supporting sloth and want of energy. This wretched state of affairs points to a reaction, but when it comes, Cuba with her population of 1,500,000, and her immense resources, must win her own freedom, or, if she do not, will deserve to be enslaved.—*Republic.*

A few Remarkable Facts about Electricity and Electric Telegraphs

BY GEORGE LITTLE.

It is nearly 1800 years since Pliny, the historian, made his observations on the property possessed by amber; it is also no less remarkable than an astonishing fact, that this branch of science should have been so neglected—nothing more than the attractive power of amber being noticed during a space of nearly 1600 years, until William Gilbert, and a London physician published a treatise on this subject in Latin; previous to this, as I before said, little or no notice was taken of the attractive property of amber, which was destined to be a forerunner of a science so varied, and at the same time so very wonderful in its results, so much so as to strike even the electrician himself with astonishment—he only knows it from its results, nothing more, not even whence it comes. We pass on from Gilbert, of Colchester, to Nicholas Cabæus, at Ferrara, who was employed, in 1630, following out Mr. Gilbert's experiments. In 1670, a Mr. Boyle made some discoveries which had escaped the observations of his predecessors and contemporary. With Boyle, we hear of Otto Gneriek, the burgomaster of Madgeburg, inventor of the air pump, making some advances, when for the first time, an electrical machine was made, which consisted of a globe of sulphur, mounted on an axis in a wooden frame, his hand being the rubber; with this machine he discovered the attractive and repulsive property of electricity, which is the very soul of an electric telegraph. In 1675 we hear of Sir Isaac Newton giving an account of similar experiments. From 1675 to 1788 little or no further progress was made, when at this time, 1721, a Mr. Stephen Grey, a pensioner at the Charter House, commenced his experiments with his friend, Mr. Wheeler, who, by their experiments, proved that the electric current may be conducted to a great distance. In 1733, Du Fay, an attendant in the gardens of the king of France, repeated the above experiments of Grey and Wheeler, by passing the electric current through a line 1266 feet in length, which line, I presume from the following, was not a metallic one. Mr. Grey, in 1734, invented metallic conductors, by passing the fluid through iron rods. In 1742, a Benedictine monk at Erford, conveyed the fluid through wires 200 yards in length. In 1745, more attention was

paid to this science. Experiments to be tried were publicly advertised and exhibited for money in Germany and Holland. In 1747, Dr. Franklin made his observations on the experiments of M. Monnier, the Younger, for discovering the velocity of electricity, by passing a current through iron wire 4000 feet in length; and on the 18th of July, 1847, Dr. Watson completed the electric circuit through the River Thames at Westminster. In another experiment, tried on the 5th of August, same year, he proved the conductive power of the earth by suspending a wire one mile in length; and on the 14th of August he repeated the same experiment through two miles of wire at Shooter's Hill, in Kent, making the earth itself part of the circuit, which was a very great step towards a practical application of the electric telegraph. Previous to this, many minor experiments were made by him. The first telegraph instrument of which we have any account, is furnished by Young, in his travels through France (in the year 1784, 4th edition, vol. 1, p. 49); it is stated here that a M. Lomond had invented a mode, by which from his own room he held converse with a person in a neighboring chamber by means of electricity. His system of telegraphic correspondence is not related. In *Voigh's Magazine*, 1794, vol. 9, p. 1, is an electric telegraph, made by Reizen; his plan was the use of intermittent sparks of electricity, for which purpose he used 72 conducting wires. In vol. 2, p. 4, of the same journal, we are informed that Dr. Salva, in Madrid, constructed a similar telegraph, the Prince of Peace being a witness to the experiments, and the Infant Don Antonio being engaged with the doctor in improving the instruments; it is stated that the experiments were conducted through many miles; but here again, as with the former, no description is given in detail.

We now pass on from 1794 to 1809, when one Samuel Sommering, taking advantage of the discovery of Volta, invented his voltaic electric telegraph; in his apparatus he took advantage of the decomposition of water while under the influence of a voltaic pile. Such telegraph was constructed and used in the following manner:—Through the bottom of a glass reservoir 85 golden points were made to project, marked A. B. C. &c., 25 of which were marked with 25 letters of the German Alphabet and the 10 numerals; the 35 points were each connected with an extended copper wire soldered to them, and extending through a tube to the distant station, and then soldered to 35 brass plates upon a wooden bar; through the front of each plate a small hole was left for the reception at pleasure of two brass pins, which were in connection with the battery of voltaic pile—one with the zinc, the other with the copper; each of the 35 plates were lettered, and the corresponding points in connection also. The glass vessel was filled with dilute acid; therefore, whenever contact was made, or in other words, the two brass pins of the battery were placed in two holes of the brass plates, so as to complete the circuit; an evolution of gas immediately took place at the golden points in connection, so that whatever letter such point was known by, such was the letter intended to be transmitted—for this telegraph 35 wires were required.

In the *Encyclopedia Briannica*, 7th edition, page 662, we see an account of an electric telegraph invented in 1816, by a Mr. Ronalds, of Hammer-smith; his instrument consisted of a circular brass plate fixed upon the seconds arbor of a clock, which beat dead seconds; this plate was divided in twenty equal parts, each division being worked by a figure a letter, and a preparatory sign; the figures were divided into two series of units, and the letters were arranged alphabetically, except the letters J, Q, U, W, X, and Z. In front of this was fixed another brass plate, which could be occasionally turned by the hand, and which had an aperture just large enough to expose one of the figures, letters and preparatory signs at pleasure. In front of this plate was suspended a pith ball electrometer, which was insulated, and in communication with an electrical machine on one side, and on the other with the conducting wires, which were buried in the earth, enclosed in glass tubes; at the further end of the wires was an apparatus exactly the counterpart of that just described, and adjusted so as to beat together as nearly as possible; his method of operating was to charge the wires with electricity, so as to cause the pith balls to repel each other. It must be borne in mind

utility from our limited knowledge of the subject, and the assurances of those who have had much nautical experience, we doubt not of the inventor's complete success, and that his invention, within a few years, will be considered such a necessary appendage, that no vessel will proceed to sea without it.—*Detroit Commercial Bulletin.*

Ship Canal at the Falls of Sault Ste. Maria.

We are glad to perceive the earnest movement making by our citizens in that region, for the accomplishment of this desirable object.

By the last number of the "Lake Superior News," we find meetings have been held in different sections of this part of our State, for the furtherance of this object.

At Eagle River, on the 16 August, of which, Levi Hanna, Esq., was Chairman and Dr. L. W. Clarke, Secretary. Also, of a meeting held on the 20th inst., at Ontonagon, of which Dr. S. Case, Esq., was Chairman, and M. Beaser, secretary, together with a meeting held on the 27th inst., at this place of which, Hon. John W. Allen, U. S. Mineral Agent, was President, and Dr. Manning and Chas. Bacon, Secretaries.

At the mass meeting at Eagle River, after its being opened by the Chairman, it was addressed by Wm. A. Otis, Esq., of Ohio, Gen. E. J. Roberts, and others, and Gen. R., after reviewing the position of this section of country, and detailing its history from the time when this State, in 1837, made an appropriation to build a ship canal around the Falls of Ste. Marie's River, up to the present time, and offered a preamble and resolutions appropriate to the subject, which, from their great length, we are unable to insert, and would refer the reader to the published proceedings.

A General Convention is to be held upon the subject at Eagle River, some time in October. The resolutions set forth the wants and interests of our State, in that section, and the duty incumbent upon the General Government, to aid in the construction of this great National Thoroughfare; the cost of the construction and the great benefits and advantages to result thereby; the reduction of the price of the mineral lands, to the minimum price; the construction of piers and lights at certain prominent points,—also, the principle of changing the present mode of assessing and collecting the taxes, which will require the attention of next Legislature. As in the words of one of the resolutions, "That the course pursued by this State in chartering mining companies, releasing them on paying into the State Treasury one per cent, not only from further state taxation, but excepting their entire personal property from any taxation whatever for town and county purposes, is oppressive and wrong, and that whilst we consider the one per cent sufficient tax, we must insist upon the State refunding annually to the county Treasuries of the counties where property of companies are located, their reasonable quota of their taxes for town and county purposes."

We trust the project of the construction of the Canal will receive the favorable consideration and active zeal of our Senators and Representatives in Congress.

We might enlarge our own comments upon this subject, but the importance of it is already appreciated by the public.—*Detroit Free Press.*

We copy the following extract from a very interesting article in the London Mining Journal upon the mineral resources of Wales, a section of Great Britain, from which we import a large portion of the pig and railroad iron now used in this country. The great facilities for the manufacture of iron presented in its numerous coal and iron beds, united with their near access to tide water, renders the Welch the most formidable rival that our manufacturer has to encounter; and a correct knowledge of the advantages possessed by the former should be thoroughly understood in this country, either for the purpose of enabling us to balance it by a proper protection, or in case this cannot be done, to prevent our engaging in a branch of industry which must certainly prove disastrous.

In taking a cursory survey of these vast and various repositories of mineral wealth, we may recommend our investigations on the southern borders, and progressively extend them to the northern extremities of the principality. The magnificent coal field, trending along the shores of the British Channel, over an extent of nearly 100 miles in length, and having a variable breadth of from 5 to 20 miles, first claims our attention. The area of this coal field is estimated to be 1055 square miles. Within

this vast tract, 64 seams, or veins of coal, have been proved to exist—having an aggregate thickness of 190 ft., and embracing all qualities, from extremely bituminous coal to pure anthracite. The denuded valleys which intersect this coal field are deep and numerous, and the strata are also much broken by faults. The natural facilities, indeed, afforded both for obtaining and disposing of its valuable contents, are rarely equalled. The veins of coal and argillaceous ironstone, the latter, sometimes amounting to 16 in number, are not unfrequently so situated as to be easily worked by adits or levels; and it is affirmed that the coal can be shipped at the ports of Newport, Swansea, or Cardiff, at about the same rates as the coal in the Tyne and the Wear.

There is much coal here of an inferior quality—it varying greatly in different parts of the field; but, on the whole, it appears, according to experiments, that the useful and evaporative qualities of the various veins considerably exceed those of the Yorkshire, Newcastle, Lancashire and Scotch coal fields. Though the mining operations in this vast extent of coal formation may be said to be in their infancy, and its mineral treasures, comparatively speaking, nearly unwrought, the present annual consumption is estimated by Mr. Richardson to be as follows:—In the iron works in South Wales, 1,500,000 tons; in the copper works, 300,000; in the tin plate and other works, 200,000; in agricultural and domestic uses, 1,000,000; and in exports, 1,500,000—making together, a total consumption of 4,500,000!—an amount of destruction which, considered prospectively, with regard to the growing increase of demand, may well excite our apprehensions that this grand storehouse of Nature will be exhausted at no very distant period. However, but a glance at the magnitude of its carbonaceous contents goes far to dispel these fears; and when we attempt calculations on the data already obtained, we are compelled to acknowledge that no definite limits can well be assigned to the duration of the supply. Mr. Bakewell, the eminent geologist, computed, some 16 or 20 years ago, that the South Wales coal field would supply England with coal for 200 years after all the English coal mines are worked out; but at that period it appears that the 23 known beds of workable coal made together but 95 feet in thickness, which Mr. Bakewell calculated would yield 100,000 tons per acre, or 65,000,000 tons per square mile; whereas, as above intimated, there are now 64 seams discovered, possessing an aggregate thickness of 190 ft., which, if not exceeded, is probably maintained throughout the greater portion of the 1100 or 1200 square miles comprising the surface extent of this noble coal field. What a tearful source have we, then, here alone of national prosperity!—a very fountain of incalculable wealth, which, since the auspicious day its seal was first broken, has never ceased to pour forth a magic stream, gradually increasing in volume and importance, diffusing itself over the barren and thirsty lands in ten thousand fertilizing rills, awakening the spirit of industry, amply rewarding manual labor, and imparting impulse and success to commercial activity and enterprise.

Indeed, the increased and acceleratory value of landed and vested interests, and the vastly advancing importance of the local towns, bear ample testimony to that progressive and general prosperity which has already resulted from the development of the mineral resources of Glamorganshire. While Swansea has arisen into a handsome town of some 18,000 inhabitants, its immediate vicinity presents one universal scene of industrial energy and bustling competition, pleasingly and instructively exhibiting the power and utility of the resources entombed in the adjacent hills, when brought to bear on the skill and intelligence of the British manufacturer. The principle features of these operations are the immense establishments for the smelting of copper, the brass and tin works, and the extensive potteries. And not only are great quantities of coal, iron and lime exported from Swansea, but the quays are almost constantly burdened with large heaps of copper ore, &c., brought from the distant shores of Cuba, Chili and Australia, to be smelted in the neighboring furnaces.

Then, again, if we turn to Merthyr Tydfil, on the northeastern borders of the coal field, we shall find that this town, which was but an insignificant village towards the middle of the last century, has ra-

pidly become the largest town in the country, now numbering upwards of 25,000 inhabitants.

Its increase and prosperity have solely emanated from the vast mines of coal and ironstone existing in its surrounding neighborhood. Owing to the facilities thus afforded for smelting iron, most extensive works have been erected here, and to which the rich hematite iron ores of Devon, &c., and the black specular ores of North Wales, are brought by the canal from the port of Cardiff. It is computed that, altogether, about 160,000 tons of iron are annually produced in the immediate vicinity of the town. The coal-measure ironstone yields upwards of 30 per cent. of metal; but the imported iron ores are much richer, yielding from 60 to 80 per cent. of metal; and it would appear that much of the coal here is peculiarly adapted for their reduction, and which, in fact, to make good quality of iron from the best ironstone, should be as free as possible from every substance with which sulphur is combined, as well as possess the property of forming a hard coke. It were unnecessary here to cite further evidence of the extent and importance of mining operations in this extensive coal field—that already adduced, abundantly attests this; and it must be obvious to all, that wherever such works are duly opened, they cannot fail, according to their extent and character, to produce analogous effects, pregnant with substantial good, and abounding prosperity.

The South Wales coal field is geologically based on mountain and transition limestone, massive ranges of which may be seen traversing the western edges of the coal measures, and a narrow belt of the latter extends from Carmarthen to Wenlock, in Shropshire. These calcareous deposits repose in turn on the Silurian and Cambrian groups of slate rocks, (occasionally appearing amongst them) which occupy so large a portion of Southern and Central Wales. The former is chiefly composed of the grauwacke series, passing into the old red sandstone; whilst the latter, in which organic remains are found, is of a more homogeneous, compact, and crystalline character, affording the best material for roofing slates, &c., of which we will presently have occasion to speak. These great slate formations are regarded as the most metallic rocks; they contain nearly all the principal metallic ores found either in beds or veins, lead and copper being the greatly predominant metals. The mountain limestone is richer in lead, but the lead ore in slate rock contains a larger portion of silver; 30 ounces to the ton is here, perhaps, about the maximum, but in some of the mines scarcely a trace of silver is to be found.

Railway Management.

The great depreciation that has been going steadily on for some time past in the market value of railway shares, cannot be owing to the fact that this kind of property is any the less valuable than when it commanded the highest price. In the roads themselves, and in whatever is connected with them, there has been a constant improvement, and of course increased value, and the rapid growth of the country is steadily adding their business. The cause of this decline is mainly attributable to the over estimate put upon the value of this kind of property, both by directors and the public, from payment of a higher rate of dividend than could be sustained, which carried their stocks to a point far beyond their true value. The mistake has arisen from want of experience in these matters, which, it is not to be expected, could keep pace with the very rapid development of railroads. The full earnings of roads have been paid to stockholders, in many cases, without any provision being made out of them for depreciation of property, which, in their equipment, in the various kinds of wood work used, runs all the way from 10 to 20 per cent., to say nothing of items of a more durable character. From the faulty manner in which the reports of companies have been made, and the want of any general and uniform regulations to secure a full and correct exhibit of the absolute condition of roads, it has been impossible for any per-

son, save a director, to form a correct opinion as to the true value of their stocks. The amount of stock actually paid up was no evidence of the cost of the road. Neither was it correctly represented by the amount of stock and its reported indebtedness; for the debts generally embraced those only that were liquidated, and the amount required to complete the road after being put in operation, was a matter of entire uncertainty, and could only be determined by the result as the work progressed. The great fluctuation in the price of some of the leading Massachusetts railroads is attributable to these causes, rather than to any unwise or imprudent expenditure of money. The management of their directors has not so much lessened the real value of their stocks as their want of sufficient foresight and experience gave them a fictitious one. The result to the purchaser under these circumstances, however, is the same as if his loss had been caused by actual misfeasance, and if any measure can be resorted to, which will prevent a recurrence of the evils we have been considering, they should certainly be adopted.

Railroads are now regarded as one of the necessary instruments of business, and they will continue to be built till every portion of the country is penetrated with them, whether they pay good dividends or not. They will soon become our leading monetary interest. It is a wise feature in our laws to interfere as little as possible with individual liberty and the free management of property. We think that this can be preserved, and at the same time the public can always be put in possession of the necessary information as to the value of our roads; so that every person may know the actual worth of any railroad stock he may purchase.

Let each State institute a commission, composed of men of acknowledged character and reputation as engineers, whose duty it shall be on the opening of any road, or any section of it, of 20 miles or more in length, to make a thorough examination into the affairs of such road and report—

- 1st. The actual amount expended on the portion opened.
- 2d. The sums necessary to complete the road, or such portion as may have been opened.
- 3d. The amount of indebtedness of the road.
- 4th. The character of the work, and the probable amount that will be annually required for repairs and depreciation of property and deterioration of way; and such further information as may be necessary to give a full and accurate knowledge as to the condition and value of such road, it being made obligatory upon directors to furnish under proper sanctions all the information required of them.

The enactment of such a law, the leading features of which, we have, in general terms, indicated, would leave the management of the road entirely to the direction of the directors; and at the same time it would effectually guard as far as should be the policy of government to do so, the right of individuals, by placing in his hand proper evidence of the value of such property as he may be desirous of purchasing. It will give a steady and uniform value to railway stocks, and preserve it against those violent fluctuations so often witnessed, and effectually put an end to the present enormous amount of gambling in railway stocks, by which so many are ruined, by putting it out of the power of designing and cunning men, to make dupes of the weak and inexperienced. We hope that the suggestions we have now so hastily thrown out will before long receive the attention which we think their importance demands.

Massachusetts.

The Essex Railroad.—This Railroad, which is destined (as we believe) to be of much importance to our city and vicinity, as well as to all who dwell along its borders, even into the remote interior, still exhibits an encouraging state of business. Several full cargoes of lumber and lime have been recently transported from Philips's wharf to Laurence, North Andover, &c.; other cargoes of coal, wood, &c. are in progress of transportation as soon as the facilities of the Company can accommodate them, and other cargoes are now on the way for Salem, designed for the same destination. The permanent track is now nearly completed on to Philips's wharf, thereby affording increased facilities of transportation, and we understand that an increase of operative material of the road is to be provided in freight cars, &c. to meet the accumulating business of the road.

The passenger trains are also fairly patronized, and furnish excellent facilities for daily communication with the interior. The Freeman states, that if a sufficient number of delegates and others will leave their names at their office, to go from this neighborhood to the State (Free soil) Convention at Worcester on Wednesday next, then a special train will leave Salem at a quarter before six in the morning, pass over the Essex, Laurence and Lowell, Stony Brook [and Worcester and Nashua we presume] Railroads, arriving at Worcester about 9 o'clock and return the same night. Fare \$1 75 for the trip to and from Worcester.—*Essex Register.*

Ohio.

Central Ohio Railroad.—The first meeting of the newly elected Directors of this company was held in this place yesterday. The Board was organized by the choice of Col. J. H. Sullivan as President, Daniel Brush Treasurer, and D. H. Lyman Secretary. The resignation of A. J. Smith, Esq., of Licking, one of the Directors elect, was received, and placed on file.

It gives us pleasure to state that the Board, in compliance with the wishes of the stockholders, and in full view of the importance of immediate action upon the interests confided to them, have entered in to and partially concluded negotiations with a gentleman of much merit and experience, by which it is believed that his services as Chief Engineer will be secured for the road. Arrangements to that end have proceeded so far that a definite decision will be had by about the 20th of the current month. If engaged, he will enter, with a corps of competent assistants, at once upon his duties.

Forward is the word with the Directory, and we are sanguine that the confidence reposed in them will be fully justified by their acts.—*Zanesville Courier.*

Tennessee.

We take from the Nashville Union the following facts in relation to the Nashville and Chattanooga Railroad:

In our last, we announced, on the authority of the Philadelphia Ledger, the sale, by Mr. Stevenson, of \$300,000 of the bonds issued by the corporation of Nashville for stock in the Nashville and Chattanooga railroad. He delivered \$220,000 of the bonds. The calls due on the 1st November, and 1st January next, \$40,000 each, will complete the amount of 300,000. These bonds were purchased by some of the wealthiest and most sagacious bankers of the east, and at a higher price than city stocks sell for. This fact shows the confidence of eastern capitalists in the value of our road, and the certainty they feel that its stock will pay a handsome profit.

In addition to the facts stated in the paragraphs from the Ledger, Maj. Allison informs us that Mr. Stevenson has left for Europe, with the money realised from the sale of our corporation bonds, for the purpose of purchasing iron for the road. He expects now to purchase this iron for about \$40 per ton, deliverable in New Orleans. If we recollect right, the original estimate placed the cost of iron at \$80 per ton, and its aggregate cost at about one million dollars. If Mr. Stevenson purchases the iron now at \$40, this will be a saving of \$500,000—reducing the cost of the work in that amount. This great saving will of course add vastly to the value of stock in the road. We have no doubt whatever that the stock will bear a high premium within the first six months after the road is opened.

We learn that it is the intention of the directors to push the work on the entire line with additional energy. It is now all under contract from this place to the Tennessee river, and the contractors will be required to complete the grading so that the road will be ready for the iron, which is expected to arrive early next spring. During the next year, some fifty or sixty miles of the road, commencing at Nashville, will be completed, and the cars placed upon it. This is a most gratifying prospect, and will no doubt incite the stockholders to the prompt payment of the calls of the company. It should also be regarded as of vast importance to our city; as hastening the day when we are to become a great commercial and manufacturing city. Rapid as has been the recent growth of Nashville, the first year of its advance after the completion of the great work to which our corporation so wisely lent its aid, will outstrip in its results any ten years of its previous progress.

Buy Your Iron Now.

English railroad iron is now selling at about \$40 per ton in our market. In consequence of this extreme low price, all the rolling mills in this country have given up the making of rails, and will not commence the work again until the price goes up to about \$55 per ton. The English manufacturer therefore, has control of the market till they reach this point, and it is not reasonable to suppose that, as he can have \$50 per ton without the risk of American competition, he will long continue to sell at \$40. A rise in the price of rails must soon take place, which must sensibly increase the cost of a road that does not purchase this important article at its present low point.

Railroad Damages.

At the Supreme Court in Berkshire, on Saturday, the jury rendered verdicts for the plaintiffs in the cases of Daniel B. Campbell, and same and wife, against the Berkshire R. R. corporation, of \$4000 in the second action. The claim was for an injury caused to the plaintiffs while crossing the track in a wagon near West Stockbridge. The negligence charged upon the defendants was, in not ringing the bell for the distance of 80 rods from the crossing as required by the statute. The case had previously been tried but the jury could not agree.

The injury caused to the plaintiffs was of a remarkable character. The train struck the wagon, in which the plaintiffs and their little son were, just in front of the forward wheels, instantly upsetting it and throwing the persons upon the ground near the rail. On examination, it was found that the three were more or less hurt in the right heel. Mr. and Mrs. Campbell had each the right heel cut off, but otherwise were uninjured.—*Springfield Republican.*

California Gold.

The Philadelphia North American publishes the following authentic statement from the United States Mint.

The deposits of California gold to the 31st of August were:

At the Philadelphia Mint	\$1,740,620 07
At the New Orleans Mint	175,918 73
	<hr/>
	1,916,538 80
Add the deposits of 1848	44,177,00
	<hr/>
Total deposits from California	1,960,715 50
The coinage of gold dollars at the Mint in Philadelphia to the 31st ultimo was	462,539 00
At the Branch Mints to July 31st	133,227 00
	<hr/>
Total coinage of gold dollars	\$595,766 00

Cumberland Coal ;

A writer in the Philadelphia Inquirer states that notwithstanding the extravagant accounts of bituminous coal being found near Panama, as well as a few miles from Monterey, and on Vancouver's Island, Howland and Aspinwall are now supplying their Pacific steamers exclusively with Cumberland coal, which is taken around Cape Horn. The British West India steamers are also importing large quantities of it into Bermuda; and the Cunard line

of steamers from New York to Liverpool consume no other on their return trips.

AMERICAN RAILROAD JOURNAL.

Saturday, September 15, 1849.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.

Sept. 15, 1849.

3m37

Pennsylvania Railroad.

PROPOSALS will be received at Johnstown, Cambria county, Pa., between the 1st and 12th of October next, for the Graduation and Masonry of that portion of the Western Division of the *Pennsylvania Railroad* east of Section No. 54, opposite Blairsville—a distance of 26 miles—embracing a considerable amt of heavy excavation and embankment.

Plans and specifications of the work may be seen at the office, in Johnstown, within the periods above mentioned.

For further information apply to Edward Miller, Esq., Engineer of the Western Division, Summit P. O., Cambria county, J. EDGAR THOMSON,

Chief Engineer and General Superintendent.
Engineer Department P. R. R. Co., }
Philadelphia, Sept. 6, 1849. }

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz: 2 Wrought Iron Cranks, 60 inches from centre to centre.

- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

The Memory of the late G. W. Whistler.

We take pleasure in giving place to the proceedings of a meeting of Civil Engineers recently held in this city to take measures to erect a suitable testimonial to the memory of the late Col. Whistler. In our paper of the 19th May we noticed his greatly lamented demise in what we deemed appropriate terms, and in our paper of the 2d of June we gave a minute account of the great work, with which, of all others, his memory will be most intimately connected. His position at the head of his profession in this country, with his great experience and reputation as a man of practical science, secured to him, an American, in the face of all European competition, the construction, for the Emperor of Russia, of far the greatest work ever yet attempted in modern engineering; and though he was not permitted to witness its final completion, the work was so far advanced under his care, that its completion could have added nothing to his reputation had he lived.

The character of such a man is an honor to us as a nation, and as we all share in the advantages it secures to us, it is but fitting that we should unite in a testimonial to his worth, and we feel assured that his grateful countrymen while they cherish his worth will give expression to their regard by erecting a suitable monument to his memory.

At a meeting of Civil Engineers, held on the 27th August, at the office of the Panama Railroad, in this city, for the purpose of suggesting measures expressive of their respect for the memory of the late G. W. Whistler, W. H. Sidell was called to the Chair, and A. W. Craven appointed Secretary.

The following resolutions were then offered and unanimously adopted:

Resolved, That the memory of the late G. W. Whistler should be, and is warmly cherished by the members of that profession, of which, both at home and abroad, he was an ornament.

Resolved, That the erection of a monument in Greenwood Cemetery would be a suitable mode of expressing the feelings of the profession in this respect, and that an association be formed to collect funds, and take all steps necessary to effect this object.

Resolved, That as officers of said association, Captain W. H. Swift be appointed President, Major T. S. Brown, Treasurer, and A. W. Craven Secretary;—and that such officers have power to issue the necessary notices, collect funds, and disburse them, to call meetings, and in general to take all other steps which may be necessary to promote the object of this meeting, and moreover that they have power, and are hereby especially requested to invite the brethren of the profession generally throughout the United States, to join them in this common tribute to professional and private worth.

Resolved, That Horatio Allen, W. C. Young, J. W. Adams and A. W. Craven be appointed a committee to procure designs and estimates for the proposed monument, and to select a suitable piece of ground at Greenwood Cemetery.

Resolved, That feeling that a proper appreciation and respect for the memory of the late G. W. Whistler is not confined to the members of his own profession, but is widely and warmly felt by all who were known to him, both in his public and private life—the opinion of this meeting is, that a cordial invitation should be given to all such friends to join them in raising and dedicating this monument to his memory.

Resolved, That to give to all who wish to join in the object of this meeting, the earliest information of these proceedings, they be published in the Railroad Journal, and in one or more of the daily papers of this city.

On motion, the meeting adjourned.

Signed. **W. H. SIDELL**, Chairman.

Indiana.

Peru and Indianapolis Railroad.—Unavoidable absence from our office prevented our earlier notice of the report of the Chief Engineer of this road, W. J. Holman, Esq., which was received a few weeks since. The line of this road, as its name indicates, extends from Indianapolis to Peru on the Wabash and Erie Canal, a distance, we believe, of about 80 miles, making, with the Madison and Indianapolis road, very nearly a direct line between Madison on the Ohio and Peru, which fact alone constitutes it one of the most important roads in this State.

We have frequently spoken of roads in this State, and as they all possess very similar characteristics, we should be in danger of repeating what we have already said in our Journal, should we give a lengthened notice of this. The topographical features of this State, the abundance of timber, and the comparatively small cost of land for right of way, enable its people to build their roads much cheaper than the roads of any other State. At the same time there is no state where they will be more useful and nowhere will they exert a more beneficial influence upon the value of property, by bringing the farmers in communication with a market at all seasons of the year. The first section of this road, embracing 22 miles, is in a state of forwardness, and it is expected that this portion will be in operation in the month of October next.

The cost of this section is estimated as follows:

For grubbing and clearing, grading and bridging.....	22,955 02
For the superstructure.....	32,780 00
For the iron, estimated at 2,000 per mile.....	44,000 00

Total cost of 1st division ready for locomotive power.....	\$100,745 02
Total cost per mile.....	4,670 32

From the estimated cost of iron, we presume that the flat rail is to be used. This, as a general rule, is poor economy in the long run, where means can be obtained to lay down the heavy rail. This item would nearly double the cost of the road, and if required, might postpone its construction for some time. As the great use of the road is for the conveyance of freight where high speed is not necessary, the kind of rail proposed will answer very well until the country should acquire sufficient strength to purchase a more expensive one, which will not be many years after the road shall be opened. The wooden superstructure obviates a part of the defects of the flat rail, consisting of heavy mud sills, 12 inches thick, facing at the least eight inches, with cross ties six feet apart from centre to centre, let in the mud sill so as that the string piece, four by five inches may have a perfect bearing at every point.

We have for sometime expressed the opinion that the western roads will be the best paying roads in the country. The great necessity that exists for them secures the encouragement of the whole community and the grant or sale at the lowest cost of such lands as are necessary for right of way, and depots etc., while the immense amount of agricultural products of this section seeking a market, will give them ample business, and we believe them to be worthy the attention of capitalists, as offering good opportunities for investment, and affording undoubted security for loans after a proper amount shall first have been expended by those living along the lines.

The President of this road is E. Cottingham, Esq., of Nobbville.

Great Western Railway of Canada.

We have in hand the prospectus of this company, which is prosecuting the construction of a railway from Niagara Falls, via Hamilton, to Windsor opposite to Detroit. A mere glance at a map of the Canadas and the United States is sufficient to convince any one of the great importance of this road as a connecting link between the roads west of Buffalo and extending to the cities of New York and Boston on the one hand and the Michigan Central, which will be soon extended by the construction of an additional link to the Mississippi river, on the other. It must always possess the superiority over any other route, by uniting leading and important roads by the shortest possible line, thus securing a large part of the business they enjoy. In addition to this source of income, it passes through one of the finest agricultural sections in this country, which is alone capable of affording it a good support. The route presents more arguments in favor of the construction of this road than can be brought in support of almost any other road that we know of.

Its estimated cost is \$6,000,000, of which \$1,000,000 has been subscribed in Great Britain, and 1,000,000 in the United States, and 500,000 in Canada, leaving 3,500,000 to be provided for. Renewed efforts are now being made to obtain further subscriptions in Canada, and agents are about to visit this country and Great Britain for a similar object.

The general characteristics of the road we give as follows:—

TABLE OF DISTANCES IN MILES.

DIVISIONS.	Mail Road.	Rail-way.	Air Line.
Niagara Falls to Hamilton.....	49-50	42-10	41-22
Hamilton to London.....	85	75-84	74-20
London to Windsor.....	115-50	109-95	108-54
Total.....	250-00	227-89	223-96

LINEAR ARRANGEMENT.

DIVISION.	Tangent in miles.	CURVES IN MILES				Total Length.
		Radius 11460 ft.	Radius 5730 ft.	Radius 2865 ft.	Radius 1910 ft.	
Eastern	39-82		1-87		0-41	42-10
Central	70-94	0-39	1-42	2-52	0-58	75-84
Western	106-38	1-53	2-04			109-95
Sarnia Branch.	47-24	1-59		1-02		49-85
	264-38	3-51	5-33	3-54	0-99	277-74

TABLE OF GRADIENTS.

DENOMINATION OF GRADE.	NAME OF DIVISION.				
	Eastern.	Central.	Western.	Pt. Sarnia Branch.	Total.
Level and under 5 feet per mile	21-37	34-83	85-52	41-40	183-12
5 to 10 ft per m.	4-15	2-06	8-50	8-45	23-16
10 to 20 ft. p m.	8-55	14-75	6-11		29-41
20 to 30 ft. p m.	8-03	9-75	6-82		24-60
30 to 40 ft. p m.		3-35	3-00		6-35
45 ft. max. west		11-10			11-10
Total	42-10	58-84	109-95	49-85	277-74

We learn that Mr. Tiffany, one of the Directors of this road, is soon to be in New York to present its claims before our people.

Georgia State Manufacturer's Convention.

A convention of manufacturers of this State, was held at Stone Mountain on the 17th ult., the object of which was the adoption of such measures as would promote this interest, which has now become a very important one in this State. The meeting was organized by the appointment of Dr. C. Rogers of Upson, to the Chair, and appointing John S. Linton of Athens, Secretary.

The following manufacturing companies were found to be represented, viz:

Factories.	Represented by	Capital
Newton,.....	John Webb,.....	\$300,000
Thomaston,.....	Dr. C. Rogers,.....	32,000
Roswell,.....	G. H. Camp, N. A. Pratt,.....	100,000
Troup,.....	Thomas Leslie,.....	40,000
Augusta.....	W. M. D'Antignac,.....	200,000
Curtwright,.....	J. Cunningham, G. Moore,.....	100,000
Bowensville,.....	John Bowen,.....	30,000
Planter's.....	H. P. Kirkpatrick, J. Hill,.....	50,000
Flint River,.....	George Moore,.....	50,000
Howard,.....	Harvey Hall, E. T. Taylor.....	100,000
Houston,.....	D. W. Parr,.....	22,000
Eatonton,.....	A. D. Gatewood,.....	75,000
High Shoals,.....	Isaac Powell,.....	44,000
Athens,.....	John S. Linton,.....	92,000
Alcovey,.....	Hugh White,.....	14,000
Milledgeville,.....	R. G. Nickols,.....	90,000
Lawrenceville,.....	J. M. Gordon,.....	41,000
Macon,.....	R. Collins, J. A. Nisbet, and S. T. Chapman,.....	100,000
Savannah Sash.	Charles Van Horn,.....	10,000

Total Capital.....\$1,220,000

Total Companies 19—Delegates, 25.

On motion of M. D'Antignac, Mr. S. T. Chapman was requested to state the objects of the meeting and the circumstances which led to its call.—Mr. C. stated that the original suggestion touching the movement had been made by Mr. Allen Mc Walker of Upson county, since deceased, that Mr. Mc W. had called the attention of Manufacturers to the importance of some greater concert of action, and also to the necessity of establishing some com-

mon depot for the exhibition and sale of their goods. These views had been so fully expressed by Mr. McWalker in an article which had appeared in the columns of the *Journal and Messenger* of Macon, that it was deemed unnecessary to do more than refer to them.

After some further conference, on motion of the Rev. N. A. Pratt, it was

Resolved, That a committee of five be appointed to report some general place for a future organization of the convention.

The Committee appointed were Messrs. N. A. Pratt of Roswell, Wm. D'Antignac, Augusta, R. J. Nickols, Milledgeville, S. T. Chapman of Macon, and John Cunningham of Curtwright, who were instructed to report to an adjourned meeting at 4, P. M. this day.

August 17th, 4 P. M.

The convention met pursuant to adjournment.—The Committee of five, through Mr. Chapman submitted the following report, which is unanimously adopted:

The Committee to whom was referred the consideration of the propriety of organizing a Manufacturers' Association for the State of Georgia, having given the subject the reflection which their limited time would admit, beg leave to report, that by association and interchange of views and opinions, much good will result to this great and growing interest which now employs nearly three millions of capital, and which is rapidly developing the industry and enterprise of the State. They therefore present to the Convention, the following recommendations:

1. That an Association be immediately formed, to be styled the Manufacturing Association of Georgia.

2. That any company or individual engaged in manufacturing pursuits of any kind whatsoever and paying the sum of five dollars per annum, shall be entitled to all the privileges and immunities of the Association.

3. That a Committee of three be appointed to report a more perfect plan of organization, to an adjourned meeting, to be held at: Augusta, on the second Wednesday of October next; and that said Committee be requested to open a correspondence with every Manufacturing Company in the State, urging the importance of being represented in said adjourned Convention.

4. That the said delegates be respectfully requested to present said adjourned Convention a complete history of their respective establishments, embracing all particulars which may properly be laid before the public.

5. That the delegates from the Cotton and Woolen Manufactories, be particularly requested to furnish not only the general history of their respective establishments, but also

- The time when they commenced operations;
- The quantity of raw material annually consumed;
- The number of spindles and looms employed;
- The style and quantity of fabric produced;
- The number, sex, color and mental and moral condition of the operatives;

And all other statistical information, the publication of which would not be inconsistent with their respective interests.

6. That the Convention proceed at once to the election of a President, and Secretary and Treasurer, to serve for the term of one year, or until their successors be chosen under the more perfect organization contemplated.

Under the third recommendation of the Committee, the following gentlemen were chosen as a Committee of organization and correspondence, viz: W. M. D'Antignac, Henry W. Merrill, and Dr. C. Rogers.

Barrington King, Esq., of Roswell, was unanimously chosen President, and James Hope, of Augusta, Secretary and Treasurer of the Association. The Convention adjourned.

CURRAN ROGERS, Pres't.

John S. Linton, Sec'y.

The above is an important movement, and will exert a very beneficial influence upon the Manufacturing interest of this State. The various branches of Manufacturing industry have a mutual interest, and by means of the proposed association, the harmonious action of the whole can be secured where these interests are concerned. The experience of one man, or company, is by the above means, imparted to the whole, and a mutual interchange of good offices secured. It will give a new impulse to this already flourishing branch of industry in this State.

Virginia.

We have much pleasure in noticing the appointment of C. O. Sandford, Esq., to the chief engineering of the South Side railroad.

We understand that the Petersburg and Roanoke railroad company, have lately concluded a contract for 2400 tons of Iron, ("Bridge pattern," weighing 51 lbs. per yard, sufficient to relay the balance of this road) with James Dunlop, Esq., of Petersburg—agent for one of the Iron houses in Wales, at the extremely low rates of \$42-00 per ton, duties included, delivered at City Point. Mr. Dunlop we understand guarantees that the Iron shall be of the same quality as the best Iron in use upon the English roads.

Hudson River Railroad.

We have in hand the second annual report of the Directors of this company, made to the stockholders on the 29th ult. The general report of the President of the company is draw up with singular good taste and perspicuity, and presents in a clear and distinct form its conditions and prospects. The progress of the work has been very much delayed the past month in consequence of the prevailing epidemic among the force employed on the road.—The work is now so far advanced as to ensure the opening of the road for travel to Peekskill by the first of October, and probably to Poughkeepsie by the month of November next, a distance of about 71 miles.

The whole amount expended on account of the road up to Aug. 1, 1849 was \$3,901,794 60. The whole estimated expense of the road to Albany is \$7,865,330; to meet which the company have, as will be seen by the annexed tables resources provided to the amount of \$2,508,797, leaving to be provided the sum of \$1,454,738 40, which is proposed to be raised by a further issue of bonds, which course is considered to be preferable to the issue of additional stock.

The amount received on stock subscriptions is \$30,688 50; on interest account 42,490; from proceeds of bonds sold, \$969,808 31. In reference to the sale of the mortgage bonds the Directors say—

In respect to the sale of the mortgage bonds of the company, the board have the satisfaction to state that in both instances in which proposals were invited, an amount greater than that advertised for has been taken. In February, \$500,000 of bonds were offered, and proposals for \$525,500 were received and accepted. There was a condition, however, imposed by some of the parties who bid for that loan

that they should have a pre-emptive privilege to all future issues, under an arrangement to extend the same privilege for thirty days to all stockholders at that time, during which \$115,500 more was taken up with the like privilege, making the aggregate amount of the first class issue \$641,000. Of this amount, \$611,908 32 had been paid in up to the 1st inst., and on the remainder 5 per cent. had been paid by parties who had stipulated for some delay in the time of payment. On the 21st of June, notice was given of another issue of \$500,000, and tenders were made and accepted for \$629,000, on which \$378,000 have already been paid up.

No bonds have been issued at less than par for those bearing 7 per cent. interest, and 912-3ds per cent. for those bearing 6 per cent. interest, nor has any allowance or advantage been conceded on any, other than one per cent. brokerage or commission, which was publicly offered in the first case to brokers or agents who procured takers.

It will thus be perceived that \$1,270,000 of the \$3,000,000 of bonds specially authorised to be issued by the amendment act of March 10th, 1848, have been sold, and that \$1,730,000 more remain to be issued, which the board have no doubt of realising as the funds may be wanted, as will partially be the case in October.

Provision has been made in the mortgage, which has been executed for issuing an additional \$1,000,000 under it, and the board are satisfied that it will best comport with the interests of the stockholders to make a further issue of bonds, rather than to apply to the Legislature for permission to increase the stock, it being found on examination, that under the peculiar provisions of the original act, and of the amendment of March, 1847, as to the mode of taking subscriptions for stock beyond the \$3,016,500 originally subscribed, and ten per cent. in addition, ("to enable the company to provide for and pay interest on instalments") has terminated, and that the amount of stock cannot hereafter be increased except by the conversion of bonds into stock. This is a fact which the stockholders will do well to bear in mind.

In relation to the cancelling of the contracts made some time since for the purchase of iron, the Directors say—

"An existing agreement with the Trenton Iron Company, for the future supply of 6000 tons of iron, was mentioned in the report of February last, and it was then stated that the company were in negotiation for its modification, which negotiation has terminated in an agreement with that company to pay them in the bonds of this company, the sum of \$51,000 or \$8.50 per ton, and to cancel the contract. Their 150 shares of stock, as originally agreed, to be forfeited, with 10 per cent paid thereon, thus reducing the actual pecuniary loss of the company to \$49,500. The case has been treated with commendable liberality on the part of the Iron Company, and though this is a heavy tax upon the funds, it will, by the cancelling of the contract, and by re-contracting for the same quantity at the present depressed price of the article, (for which measures are in progress to be delivered next year,) make the outlay the means of an actual saving of upwards of \$100,000 by cancelling the contract for receiving the 6000 tons at \$67.50, it being expected that the same will be replaced at less than \$42.50 per ton; if so, it will be found that including this \$49,500 commutation paid, the cost of the whole 18,000 tons, originally estimated by Mr. Jervis at \$75 per ton, will average under \$58 per ton, a less price than many companies, which commenced operations after this did, have paid for this article.

The cost of right of way for this road has been enormous, far exceeding that of any other road in this country. The amount already paid for this item between New York and Poughkeepsie amounts to about \$400,000, equal to about \$5500 per mile, which sum will be largely increased by the purchase of land for depots and station houses in New York and along the line. Above Poughkeepsie the cost of this item will be very much less.

The Directors have adopted the only true economical policy of constructing the road in the most thorough manner, and of doing in the outset what

those having charge of roads are too much inclined to leave to the future, thus often involving a loss of nearly the whole amount expended in a particular piece of work, which in the end is abandoned for a more thorough construction, when a small addition to the original amount expended might have saved the whole amount lost on the imperfect work. In relation to this, we quote the following from the report:—

"It will be seen by Mr. Jervis' last report, that he has raised his estimate for the completion of the work to Albany to \$7,865,330. Expense so far, might have been spared, by sacrificing something in the mode of construction; by raising the grade through the rock cuttings, by extending the pile bridging across the bays, by less attention to drainage—and by a less careful selection of materials for the road-bed;—the expenditure might have been greatly diminished. This, however, would have been a false economy, which has been uniformly rejected. On a road thus perfectly constructed, with a grade practically level, as will be seen by the table of grades—appendix D; and deviating but 6 1/2 per cent. from a straight line, it is manifest that a rate of speed can be attained equal to that on the best roads in other countries. As this will be the best road in this country, so must its police be maintained with unceasing vigilance. With these two elements of high speed and safety combined, there is no question that it can successfully sustain the most powerful competition from the boats. Indeed, from the experience of other railroads on the margin of navigable waters, this question may be considered as already settled.

For a greater part of the year the road must encounter a competition with steamboats navigating a river parallel with it, and admirably adapted to this mode of travelling. The success of the road, therefore, must depend on its capacity for great speed united with the most perfect safety. This can only be secured by the most thorough work in every thing that relates to the road, and it is the only way to avoid the enormous wear and tear inevitable on poorly constructed roads running at high speed. All these matters seem to have been well considered, and no pains appear to have been spared to invest the road with every quality essential to success. In relation to its ability to compete with river transportation, and also as to its business prospects, the Directors say—

The increased cost beyond the original estimates, falls far short of what has been experienced in other similar works, is not more than might be expected in a work of such magnitude, peculiar in its character and will not affect the value of the investment as a good dividend paying stock. When it is considered that the vast trade of the Valley of the Hudson will be entirely at the command of this Road, one-third of every year, and that no inconsiderable portion must be drawn towards it during the remainder, when it will have a large share of the transportation of passengers; that to the large and rapidly growing population in its vicinity it will always prove the readiest means of conveyance, besides being unsurpassed as a thoroughfare of general travel; that at the one extremity it holds the most direct communication with Canada on the North and with the Lakes on the West, while at the other is situated the present commercial centre of the Union, and the future commercial centre of the world; that these advantages must always be enjoyed alone, because there can be no competing road to interfere with it—all calculations of its resources, when in full operation, would probably fall short of the reality.

And if the Albany and Boston road can traverse a distance of two hundred miles to reach the seaboard at an expenditure of over \$13,000,000, with its high grades and sharp curves, on a forced instead of a natural avenue of trade, and can yet yield a dividend of over 7 per cent., how can it be doubted that the Hudson River road only 142 miles long, so far its superior in all these respects, will be able to make a larger return even on a cost greatly exceeding that which is anticipated?

Mr. Jervis's estimate of income presented to you in June, 1848, is again submitted in appendix C.—it is based on a charge of one dollar and a half for the summer (or open river,) fare to Albany. The experience of the present year in the operation of the New York and New Haven railway, satisfies the board that the adoption of the charge of two dollars for first class passengers during the summer will secure the bulk of that portion of the travel; and when it is considered that on the road a charge of \$1.50 is made to New Haven, a distance of 76 miles and of \$1 to Bridgeport (59 miles), and that at those prices, it competes successfully with steamboats running on the Sound to those points, it is a very obvious inference that \$2 to Albany (142 miles = 1 1/4 cents a mile,) and proportionably for way travel, will be found sufficiently reasonable to secure such a portion of this at present enormous and annually increasing travel, as to afford an abundant income on a much larger cost than will be incurred in completing the work to Albany. The charter admits of a charge of two cents a mile during summer, and two and a half cents during the winter, but not more than \$3, through to Albany at any season. On the charge for freight there is no restriction of rate.—During open navigation, \$50,000 from this source has been the estimate of Mr. Jervis, which is now considered much below the probable result.

The Directors feel no misgivings on these points. They think that to Poughkeepsie the net earnings, if not entirely adequate, will go far towards paying the interest on its cost even to that place. It is only however, when it can reach the business from the North and West, that its powers will be fully developed. True policy, therefore requires that it should be carried on to Albany as fast as may be consistent with a judicious view to the finances of the Company.

Indications having been given on the occasion of the late sale of bonds, that contracts might be made in advance for the \$1,730,000 remaining to be issued of the three millions authorized by the act of February, 1848, or for a part thereof, and the holders of the pre-emptive privilege having waived their rights thereto, the Board are now at liberty to negotiate at large for the same, payable in monthly instalments of \$250,000, and, according to their prospects in this respect, will they be regulated in the extent of the contracts they will make for work above Poughkeepsie, but measures will be immediately taken for having the whole line put in a complete state for letting, and the purchase of right of way will be continued with renewed assiduity. But while the Board speak cautiously as to their future action, they see no reason to apprehend that the whole line will not be under contract before the coming winter."

Annexed to the report of the Directors, are the reports of Mr. Jervis, formerly Chief, now consulting Engineer, and of Mr. Young, Chief Engineer of the road. The report of Mr. Jervis gives the progress of the work up to the 17th ult., at which time his successor took charge of it. It gives in detail what we have indicated in more general terms. The route is one of great difficulty, involving an immense amount of expensive rock excavation of side embankments, the crossing of numerous streams and indentations of the Hudson. So much of the work as is exposed to the water and ice, has stood remarkably well, which has tended to allay much apprehension felt for the safety of this part of it.—Great difficulty has been experienced from the soft and yielding nature of the bottoms of many of the small arms of the river, which the road crosses, and into which the embankments have, in many cases, sunk when they were supposed to be completed.—These unforeseen and inevitable accidents have been repaired as fast as possible, and they are not believed to present any insurmountable obstacle to the opening of the road to Poughkeepsie within the time set. The route from this place to Albany is much less difficult than the portion below it.

* Note.—Estimated for last summer at 10,000 passengers per day, including way and through.

The public will learn with regret that Mr. Jervis has been compelled by ill health, to relinquish the laborious duties of Chief Engineer of the road, a post which he has held since the commencement of the work to the great acceptance of those interested in its construction. He still continues a member of the board of direction, and holds the position of consulting engineer, in which the company will still receive the benefit of his great experience and engineering abilities.

Mr. Young has so recently assumed the duties of his office, that his report professes to contain but little information not already appearing in that of Mr. Jervis'. He brings to his new position the reputation of a skilful engineer, and of having conducted with distinguished ability the affairs of one of the most successful roads in this State, the Utica and Schenectady railroad, and we think that this company have good cause to congratulate themselves in their fortunate selection of a successor to their late distinguished Chief Engineer.

The following are Mr. Jervis' estimates of the ultimate cost of the road:—

For Grading, Bridging and Superstructure, single track, except the grading from New York to Poughkeepsie, which is for double track..... \$6,365,330

Estimated for right of way, Land Stations and furniture..... 1,000,000

The following expenditures on account of the last item have just been furnished me by one of the officers of the company—namely:

For Right of Way..... 423,183 82
 " Depot Land at 31st st. 88,010 00
 " " " and Way Stations between N. York and Poughkeepsie, including the latter..... 56,246 02
 " Buildings in course of construction..... 21,147 25
 " Cars and Locomotives paid for or contracted for..... 115,300 00
 Estimated as still due for right of way below Poughkeepsie..... 25,000 00

728,887 09
 Leaving a balance of..971,112, 91 to complete this branch of expenditure above Poughkeepsie, with some heavy expenditures for the New York stations yet to be provided for. I am therefore of the opinion that an addition will be required for these items, and have thought proper to add to the general estimate..... 500,000

Making a total of.....\$7,865,330

Statement of Receipts and Expenditures of the Hudson River Railroad Company, up to the 31st day of July, 1849.

RECEIPTS.

Installments—on 30,165 sh's of stock (being original subscription) received in money.....\$2,857,260
 Credited as paid, to make full stock at 517 shares forfeited..... 42,490
 2,899,750
 For stock—issued at par under amended Act of 20th March, 1847, to meet payment of interest on stock..... 189,100
 Amount received on account of Bonds for \$1,270,000 sold.....989,808 31
 Interest.—Amount received on deposits in New York Life Ins. and Trust Co and from other sources..... 42,208 53
 Total receipts.....\$4,120,866 85

EXPENDITURES.

Grading—including piling and bridging, road bridging, dock extensions and bridges.....\$2,158,811 45
 Superstructure—being amt. paid for rails, chairs, laying track, and expenses connected therewith.... 683,511 07
 2,842,322 52
 Stations—cost of land between 30th and 32d sts. and 10th and 11th Avenues..... 88,010
 Expended on buildings in course of construction..... 21,147 24
 Cost of land at Manhattanville, Peekskill Poughkeepsie and other places..... 53,007 89
 Expenses connected with this department..... 2,338 13
 165,403 27
 Land for road—New York county 99,237 50
 Westchester " 180,392 21
 Putnam " 19,950 63
 Dutchess " to Poughkeepsie.. 91,616 62
 Dutchess co. above Poughkeepsie.. 26,437 23
 Expenses of this department, being salaries of agents, and cost of procuring land by assessment..... 31,986 86
 449,621 05
 Engineering, being salaries of engineers and expenses connected with this department..... 120,550 54
 General expenses.—Of commissioners, prior to organization of the co'y... 6,134 27
 Of office, salaries of officers and clerks..... 32,621 87
 Brokerage paid on bonds sold..... 6,645
 Contingent expenses, (being expenses not properly belonging to any of the preceding heads)..... 7,347 25
 173,300 93
 Paid for cars..... 17,783 25
 " machinery for shop..... 1,838 37
 Total expenditures in building and furnishing road.....\$3,650,269 39
 Interest payments to stockholders.....\$201,035 25
 Paid for 80 shares stock, temporarily held..... 8,000
 Instalments unpaid on 517 shares stock forfeited, and now held by the Co. 42,490
 251,525 21
 Balance on hand, deposited with New York Life Ins. and Trust Company. 219,072 25
 Agreeing with receipts as above stated.....\$4,120,866 85
 E. E. New York, Aug. 1st, 1849.
 JOHN M. HOPKINS, Treasurer.
 ESTIMATE OF RESOURCES.
 Cash on had August 1st, 1849.....\$219,072
 To be collected on bonds sold for..... \$1,270,000
 Less 8 1/2 per cent. on \$110,000 taken at 6 per cent. interest... 6,167
 1,260,833
 Off amount paid up..... 989,808
 271,025
 (Subject to 8 1/2 per cent. deduction on any more taken at 6 per cent.)
 Installments due on 1973 shares of stock

on which \$80,800 (averaging 41 per cent.) has been paid..... 116,500
 Forfeited and other (80 shares) stock held by the Co., 597 shares, cost to the co. \$50,490—estimated at par..... 59,700
 Interest stock remaining to be issued, mostly engaged for payments to contractors at par..... 112,500
 Mortgage bonds remaining to be issued, 1,730,000

Resources August 1st, 1849.....\$2,508,797

TABLE OF GRADE.

On the Hudson River Railroad, between Thirty-second street in the City of New York and Albany.

Distances.	Inclination per mile.	Ascent.	Descent	Total ascent & descent.
Miles.	Feet.	Feet.	Feet.	Feet.
100.221	Level.			
9.204	0.271	2.5		2.5
5.993	0.500	3.		3.
1.759	1.136	2.		2.
2.454	2.445	6.		6.
1.	5.	5.		5.
2.250		22.5		
3.007			30.	
2.006	10.	20.		127.5
2.505			25.	
1.503		15.		
1.503			15.	
2.301	13.	30.		30.
2.240	13.160		30.	30.
0.504	15.	7.5		7.5
138.450		113.5	100.	213.5

3.958 Distance from 60th st. to the foot of Canal st. through which the grades are adjusted to the corporation regulations.

142.408 Total distance from Greenbush, Albany, to foot of Canal st., New York.

BOARD OF DIRECTION.

James Boorman, President.
 Edward Jones, Vice-President.

OTHER DIRECTORS.

Gardiner G. Howland, Moses H. Grinnell,
 Gouverneur Kemble, Elisha Peck,
 Thomas Suffern, Japhet Bishop,
 John B. Jervis, Edwin D. Morgan,
 James Hooker, John D. Wolfe,
 Erastus Corning, of Albany.

OFFICERS.

George B. Butler, Secretary and Attorney.
 John M. Hopkins, Treasurer.
 E. Elmendorf, Jr., Assistant Secretary.

ENGINEERS.

John B. Jervis, Consulting.
 Wm. C. Young, Chief.

ALBANY AND BUFFALO RAILROADS.—

Four Trains daily, Sundays excepted, viz:
 Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m.
 Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.
 Arrive from Buffalo, 7 p.m., 2 1/2 a.m., 12 1/2 m., 3 1/2 p.m.
 Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.
 For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 1/2, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.
 The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.
 E. FOSTER, Jr., Sec'y
 Albany and Schenectady Railroad Co.
 Albany, August, 1849.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

**P. S. DEVLAN & CO'S
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. ly14

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, No. 74 Broadway, New York.

NOTICE TO**Superintendents of Railroads.**

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
C. CROZET,
Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849,

Notice to Contractors.**OHIO AND PENNSYLVANIA RAILROAD.**

PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company.

Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Stranghan, the Resident Engineer of the Western Division.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.

Pittsburg, August 11, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Patents for Inventions.

THE Subscriber offers his services for the procuration of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

ENGINEERS.**Arrowsmith, A. T.,**

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works, Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

IRON.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head

From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, 7-97, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Easton, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR
TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,
Patentee.

28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,
22 South William street,
New York.

February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
63 Broad street.

New York, June 1, 1849.

☞ The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.

100 Tons No. 1 Gartsherrle.
100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia

BUSINESS CARDS.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best Taggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Amer-
 ican iron, at their works at Jersey City, N. J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1½ to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chalm, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES
 imported to order, and constantly on hand, by
A. & G. RALSTON,
 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
 leghany county, Maryland, having recently pass-
 ed into the hands of new proprietors, are now prepar-
 ed, with increased facilities, to execute orders for any
 of the various patterns of Railroad Iron. Communi-
 cations addressed to either of the subscribers will have
 prompt attention. **J. F. WINSLOW, President**
 Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
 November 6, 1848.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by **WM. JESSOP & SONS,**
 91 John street, New York.
 Also by their Agents—
Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

Railroad Iron.

100 Tons 2½ x ½, | **30** Tons Railroad.
 All fit to re-lay. For sale cheap by
PETTEE & MANN,
 228 South St., New York.
 May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE
 and Cables for Inclined Planes, Standing Ship
 Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the
 planes of the Portage railroad in Pennsylvania, on the
 Public Slips, on Ferries, and in Mines. The first rope
 put upon Plane No. 3, Portage railroad, has now run
 four seasons, and is still in good condition.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared to
 execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crane do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, ½ to 4 inch by ½ to 1 inch thick.
 Do do Rounds and Squares, ½ to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, ½ to 1 in. Ovals & Half Ovals ½ to 1½ in.
 Bands, 1½ to 4 inch. Hoops, ½ to 2 inch.
 Trunk Hoops, ½ to 1½ in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

American Pig, Bloom and
Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hill* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
 American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *Agents*
 for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests,
 Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

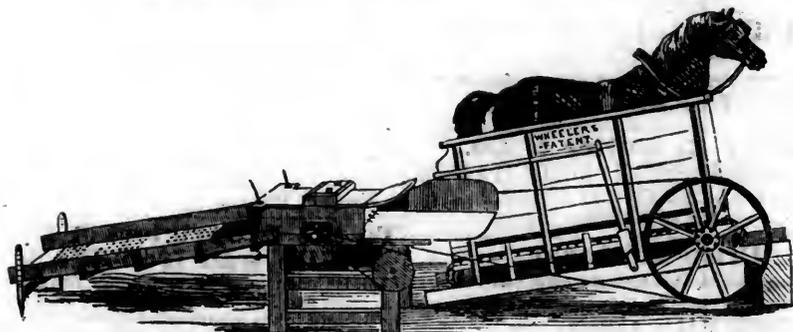
American and Foreign Iron.

FOR SALE,
 300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " "
 50 " Catoctin " "
 250 " Chikiswalungo " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x ½ Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 64 South street.
 New York.

Roman Cement,

Of the best quality, now landing from ship *Hendrick*
Hudson, from London, made by *Billingsley, Mial*
& Co., and superior to anything of the kind manufac-
 tured in England. For sale by **G. T. SNOW,**
 109 Water Street, New York.

Railroad Horse Power and Saw Mill.



The above cut represents the most simply constructed Endless Railway Power in use. As shown it is at-
 tached to a threshing machine, with which it is most extensively used; but for sawing wood at railroad sta-
 tions it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single
 power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing
 eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12
 to 20 cords of four foot wood per day. They have been used several years on several roads in New England,
 and for manufacturing establishments more than three thousand of these powers are in use, and without ex-
 ception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed
 being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satis-
 faction as above described, or may be returned at my expense, and the purchase money refunded.

HORACE L. EMERY,
 Nos. 469 & 371 Broadway, Albany, N. Y.
 September 6, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Bilster, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyler & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

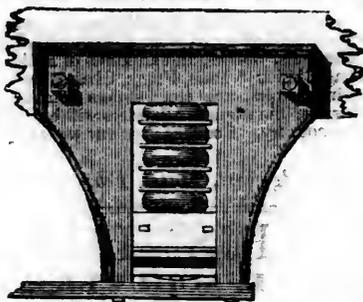
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2 1/2 feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.
May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by extraneous statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyler & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Kneivitt the Agent, at 33 Broadway New York, and of Messrs James Lee & Co., 19 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO.,

114 Baltimore St., Baltimore, Md.
Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

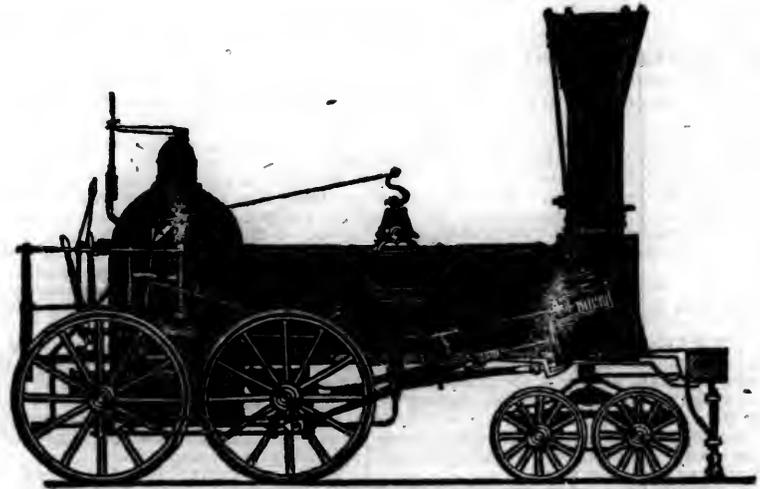
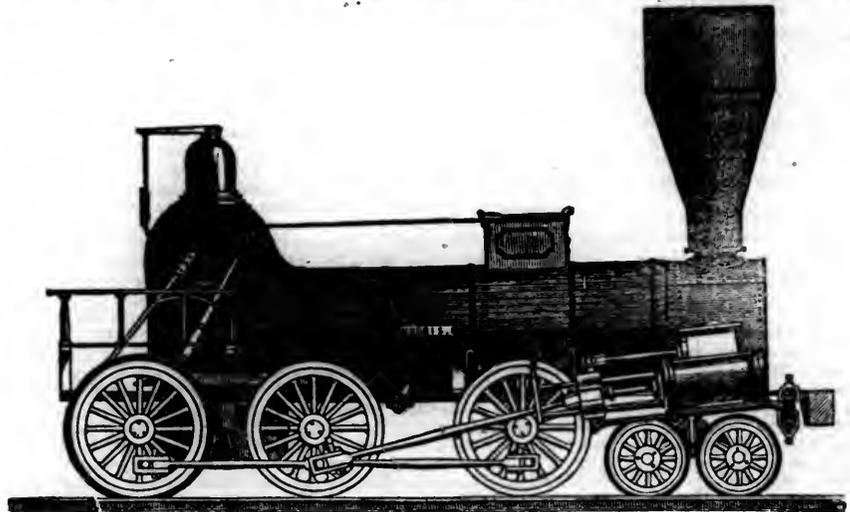
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufacturing firm in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

Port Henry Furnace, No. 2—(Continued.)

DATE.	FUEL USED.			ORES.		FLUXES USED.					PIG IRON MADE.			Whole amount	Blast. No. 1.	Coals per ton, 116 bush. } Bush. = 162.
	Coal. bush.	Brands. bushels.	Wood. cords.	Cheev-er.	Cinder	Lime stone.	Clay.	Sand.	Plate made	No. 1.	No. 2.	No. 3.	Blast. No. 2.				Coals per ton, 122 bush. } Bush. = 187.
1846.																
<i>Blast No 6, (continued.)</i>																
March.....	22,608	4,572	128	361 15	25 12	7 6	51 0	31 14	.....	123 0	65 5	48 10	236 15	No. 2.	Coals per ton, 128 bush. } Bush. = 187.
April.....	16,932	4,413	118-24	297 0	25 3	6 6	40 0	19 0	6 6	47 0	113 5	34 5	200 16		Brands " 83 " } = 187.	
May to 27th	14,632	3,687	79-10	242 17	21 7	7 6	32 0	16 0	.....	2 10	124 10	39 10	166 10		Wood " 1-13 crds. } = 207.
	54,172	12,672	325-34	902 12	72 2	20 18	123 0	66 14	6 6	172 10	303 0	122 5	604 1	No. 3.	Per cent. of ore, 57.	
<i>Blast No. 7, 1847.</i>																
Jan. 4th...	25,904	2,676	78½	297 19	27 13	8 19	33 2	16 11	.....	66 15	97 15	18 5	182 15	No. 4.	Coals per ton, 122 bush. } Bush. = 271.
February...	26,664	3,078	91-29	324 12	28 17	7 4	36 1	18 0	.....	43 15	117 10	53 0	214 5		Brands " 71½ " } = 271.
March.....	31,168	4,254	98-10	389 3	33 14	8 8	43 5	21 12	.....	79 0	103 15	65 10	248 5		Wood " -23 crds. } = 154.
April.....	26,651	2,937	99-12	346 0	37 16	9 9	38 9	19 4	.....	47 0	119 5	49 5	215 10		Per cent. of ore, 47.
May.....	27,010	6,474	61-2	347 2	34 9	8 12	39 7	19 13	5 14	30 15	116 0	53 15	206 4	No. 5.	Coals per ton, 130 bush. } Bush. = 138.	
June.....	27,480	6,522	63-3	389 2	32 14	8 4	.....	.....	9 12	34 0	115 5	74 15	233 12		Brands " 9 " } = 154.
July.....	31,875	6,480	87-1	455 0	38 0	9 10	50 13	25 6	.....	53 15	104 5	22 15	280 15		Wood " -29 cords } = 138.
August....	33,945	4,086	129-2	423 15	39 18	10 0	47 1	23 11	2 18	21 0	102 10	133 0	259 8	No. 6.	Per cent. of ore, 57.	
September..	30,450	4,548	106-6	397 18	36 5	9 2	45 0	22 18	3 15	31 0	140 0	71 15	246 10		Coals per ton, 109 bush. } Bush. = 160.	
October....	34,005	6,150	103-5	453 4	40 9	20 5	50 7	25 4	3 18	78 0	191 5	14 0	287 3		Brands " 15 " } = 160.	
November...	30,210	2,520	141-1	418 16	35 19	18 0	46 11	23 5	0 19	80 15	139 10	33 10	254 14		Wood " -29 cords } = 160.	
December... 1848.	32,315	2,682	151-7	433 8	40 9	17 18	48 4	24 1	.....	51 0	171 15	61 5	284 0		Anth. coal 12 } = 160.
January...	29,950	5,856	66 1-6	392 12	34 12	17 6	43 13	21 16	.....	108 15	114 10	25 15	249 0	No. 7.	Per cent. of ore, 65.
February...	23,950	3,332	103-10	356 11	28 17	14 8	39 23	19 16	.....	27 10	162 10	31 10	221 10		Coals per ton, 122 bush. } Bush. = 160.
March.....	28,425	3,984	116-5	388 1	33 16	16 18	43 2	21 11	.....	72 5	134 0	34 5	240 10		Brands " 18½ " } = 160.
April.....	28,760	5,148	26½	361 8	34 4	17 2	40 3	20 2	.....	77 5	80 15	62 15	220 15		Wood " ¼ crds. } = 160.
May to 23..	24,480	4,010	9-7	303 7	29 11	14 15	36 14	13 17	.....	88 0	95 0	18 10	201 10		Anth. coal 7 4-5 } = 160.
	493,242	74,737	1528-121	6477	18587	3216	0681	5336	726	16990	102105	10923	104046	6		

English Railways.

The North British Review for August, contains a long article upon the railways in the United Kingdom, in which is collected much valuable information from the various works it professes to review—the most important of which is a recent volume by Harry Scivenor, upon the "extent, capital, amalgamation, financial position, the Acts of Parliament by which regulated, creation and appropriation of shares, calls, dividends, &c., of the railways of the United Kingdom." The article is evidently written by a novice in railway matters, and is only valuable for the statistical information and opinions of others, compiled from the works reviewed; and as indicating the views of a large party in favor of government interference in the management of roads. The writer, like all ignorant men, talks with a most authoritative air, and illustrates his knowledge of railways in the following manner.—In a minute description which he gives of them, after speaking of the earlier attempts in their construction, he says: "the rails of railways, however, are now almost universally made of cast iron!"—This is news on this side of the water, and we presume it is to every one in England, save the writer of the article. We dislike exceedingly to meet such gross ignorance in an article which we wish to read, for it generally shuts the book against any further perusal. We promise our readers, however, to give them nothing based upon his authority without due notice of the fact. In another part of the article he introduces prophesy, as foreshadowing the present mode of locomotion, and gravely suggests, whether the following passage from Isaiah—"Make straight in the desert a highway for our God. Every valley shall be exalted, and every mountain and hill shall be made low, and the crooked shall be made straight, and the rough places plain, and the glory of the Lord shall be revealed." And also the following from Daniel—"The time from the

end, when many shall run to and fro, and knowledge shall be increased," do not actually refer to the present railway system!!! So much for the knowledge and Biblical criticism of one of the leading English Quarterlylies.

With the history of the earliest attempts at railways in England, we presume that most of our readers are familiar. They were first used at the New Castle collieries in the beginning of the seventeenth century. They were constructed in the outset entirely of wood, and in the latter part of the last century they were merely tracks of wood, iron or stone, over which wagons loaded with coal were drawn by horses. The great saving made by the use of these rude contrivances over the ordinary road, led to the construction of these lines on a much larger and more comprehensive scale. In 1801, the first act for a public railway was granted, and from that time to 1837, 178 acts were obtained. From one or two annually, they began to increase in 1825, when their number rapidly augmented, as will be seen by the following table:—

Acts.	Acts.
1824..... 2	1831..... 9
1825..... 5	1832..... 8
1826..... 6	1833..... 11
1827..... 6	1834..... 14
1828..... 11	1835..... 18
1829..... 9	1836..... 35
1830..... 9	1837..... 14

The most important of the earliest of these railways was the Stockton and Darlington in the neighborhood of New Castle. It obtained its act in 1823, and was opened Sept. 27, 1825. All kinds of locomotive power was employed on this line. The ascents and descents on it were numerous, and it was found very difficult for the imperfect locomotive of that day to work to any advantage. When the Liverpool and Manchester road was first opened, two professional engineers were sent by this company to inspect the workings of the Stockton and Dar-

lington road. These engineers reported that the advantages of the stationary and locomotive engine, as a motive power on a railroad, were nearly balanced, but that on the whole, the stationary engine was preferable. Mr. Stephenson, the engineer of the Liverpool and Manchester road, was, however, of a different opinion; and through his influence the Directors of the company were induced to offer a premium of £500 for the most approved locomotive engine, to be submitted to public heat on the 6th day of October, 1829. Four engines appeared as competitors for the prize, the Novelty, by Braithwait & Ericsson, the Rocket, by Robt. Stephenson & Co., the Sans Pareil, by Mr. Hackworth, and the Perseverance, by Mr. Burstall. The experiments were in the highest degree satisfactory, and established conclusively the superiority of the locomotive engine; and we, at the present day, and in the perfect state to which the locomotive is now brought, are surprised at the speed then obtained. The premium was awarded to the Rocket, though the Novelty proved itself superior in point of speed.

The results these experiments established, proved conclusively the superiority of railway over every other kind of locomotion, and gave to railroads the most decided impulse they had yet received.

The Liverpool and Manchester was the first great line of railway with which England is now covered. It was, as Mr. Scivenor calls it, "the first born of the great family of railways—the pilot—the pioneer—the model, after which all others were to shape their course, their fashion, their appearance."

No works of extreme magnitude were required in its construction. The line of its course was comparatively level, and, uniting the manufacturing metropolis of England with Liverpool—the greatest thoroughfare in the world—its success as a commercial speculation was certain, and hence it gave encouragement to other undertakings, where

equal success could scarcely be anticipated, and to some where ultimate loss was unavoidable. In this respect it bore the same relation to the railways of England, as did the Erie Canal to works of a similar kind in various parts of the United States. The unexampled success of this great work led to the construction of numerous canals on a scale of great magnitude from which similar results were anticipated, without taking into consideration that in no part of this country, and perhaps we may say in the world, did such conditions, which here rendered success certain, exist. The Erie is the grand trunk line between the ocean and great inland seas, while most of the canals in the country, with the exception of those of Pennsylvania and Virginia, are but feeders to it, most of them have failed to realize the results anticipated, and there is hardly a canal in the country the proprietors of which would not now gladly convert into a railroad if they could.

In 1833, Acts were obtained for the Grand Junction Railway from Warrington to Birmingham, and for the London and Birmingham railway, so as to unite with the Metropolis the three great cities of Manchester, Liverpool, and Birmingham. Although these new lines presented great difficulties of construction, or occasioned a greater outlay of capital, than the parent line, yet the original shareholders realized high profits; and when the public saw that all the practical difficulties of the railway system were overcome, and that the three first lines that were executed yielded large profits, they rushed headlong into a course of wild speculation, which was attended with the most ruinous consequences. The following account of the panic which ensued is given by Mr. Scrivenor:—

"The early struggles for existence which every new-born system has to endure in this country, have already been brought under notice.—These past and overcome, then came the wild burst of popular feeling in its favor, at a season (1815) when many combined causes prevailed to induce an over estimate of its value. The public had witnessed the success of those who were the first proprietors of shares in the Liverpool and Manchester railway, the Grand Junction railway, and the London and Birmingham. Dazzled by the profits that had been received from these undertakings, they eagerly grasped at original shares in new lines, deeming the same success awaited them. The results and consequences are well known. Many were ruined! because in those days when giddy speculation of all sorts abounded, men bought shares at an advanced premium in a line not even commenced. Then succeeded a reaction most lamentable in its effect, prostrating at once those who had been blinded by the illusive prosperity of the period, and retarding the advancement of good *bona fide* projects. The public omitted in their calculations the element of *Time*; and it does not follow, that because a line, without even a rail laid upon it, or a barrowful of earth removed from its surface, was wrongly valued at a premium in 1815; yet that same line, in *due time*, will have struggled through the infancy of its construction, and will yield to its promoters a goodly dividend; *then*, but not till then, can the premium it is worth be truly computed.

"The vicissitudes of the period did not end here. The public became alarmed, and panic after panic followed in quick succession, reducing to a nominal value the better class of shares. Scarcely had these panics commenced their destructive influence in the railway world, when the mercantile world suffered calamitous reverses—so intimate are the relations of property. Commercial men, to meet their engagements, sold the railway stock they possessed, reducing, by their sales, to a lower level, this depressed property. Times did not mend; the pressure upon the money market increased; and convulsion after convulsion rent and struck the delicate fabric of commercial credit. The huge structure at last gave way, and, in its crash, seemed to involve all in one common ruin. The bitter storm blew round the world; for England's stability is the keystone in the arch of commerce, and that touched and shaken, quickly spread a baneful influence over ever colonial market, and, indeed, more or less, over every

market in the known world."—Introduction, p. 20.
In 1843, the number of miles of railway opened at the middle of the year were

	1857 miles.	Increase.
In 1844, at Jan. 1st	1952	95
1845, " " "	2148	116
1846, " " "	2441	293
1847, " " "	3036	595
1848, " " "	3870	834
1849, " " "	5007	1137

Previous to December 31, 1843, Parliament authorized the opening of 2285 miles of railway, and every one of these has been executed.

In 1844, 805 miles were authorized, and of these only 21 miles remain to be executed.

In 1845, 2700 miles were authorized by Parliament; and of these, at the present moment, 1298, or nearly *one-half*, are yet unexecuted.

In 1846, the mania was at its height, and 4538 miles were sanctioned by the legislature. Of these 4056 miles, or nearly 8-9ths are yet unexecuted.

In 1847, when the speculation had begun to subside, 1354 miles of railway were authorized by Parliament; and 1300 remain to be executed, the companies having found the means only to complete 54 miles, or 1-25th of the whole.

In 1848, only 330 miles were authorized, and not a single mile of these has been executed.

How many of these lines thus authorized will be opened, the following statement of the railway commissioners of Great Britain, will enable us to conjecture.

"There can then be little doubt that a very large proportion of the authorized railways will not be completed, although no estimate can at present be formed of the extent likely to be abandoned. The time for the completion of nearly the whole of the lines authorized in 1845 and 1846, which are not in progress, has been extended by the commissioners of the Act above referred to, (11 Vict. cap 3, passed in December, 1846,) as applications for such extension are under their consideration. And at present it can only be considered that about 85 miles of the lines authorized in 1844, and about 415 miles of those authorized in 1846, are abandoned; but from the financial statements published by *thirteen* of the principal companies, it appears probable that not less than 1260 miles, in addition to the above, (1710 in all,) may be abandoned. When it is remembered by how few companies these statements have been made, is not perhaps too much to assume that *one-half* of the 4300 miles of authorized railways, of which the works are not in progress, will never be completed under the existing Acts of Parliament.—*Report of Railway Commissioners, 1848. Part II. pp. vi. vii. Dated May 1, 1849.*

The following tables exhibit the traffic possessed by these railways the pecuniary returns they have yielded.

Years.	Number of Passengers.	Receipts from Passengers.
1843, "	23,466,896, "	£3,110,257
1844, "	27,763,602, "	3,439,294
1845, "	33,791,253, "	3,976,341
1846, "	48,796,983, "	4,725,216
1847, "	51,352,163, "	5,149,002
1848, "	57,965,070, "	5,730,382

Years.	Receipts from Goods.	Total Receipts from Goods and Passengers.
1843, "	£1,424,932, "	£4,535,189
1844, "	1,635,390, "	5,074,674
1845, "	2,233,373, "	6,208,719
1846, "	2,846,353, "	7,565,569
1847, "	7,362,884, "	8,510,886
1848, "	4,213,169, "	9,933,552

In order to learn what classes of society contribute to the support of the railway system in Great Britain and in what proportion, we take the year from 30th June, 1847, to 30th June, 1848, the number of miles that were open at the beginning of this period being 3507, and the number open at the end of it, 4357:—

	Passengers.	Receipts.
First Class, "	7,190,779	£1,792,533
Second Class, "	21,690,509	2,353,153
Third Class, "	15,241,529	661,038
Parliamentary Class, "	13,092,489	902,851
Mixed, "	749,763	11,807

The above tables show a remarkable diversity in the social condition of the United States and Great Britain, and in the ideas which are the result of such diversity. In the latter country only about $\frac{1}{4}$ of the whole number of passengers travel in the first class cars. In this country at least $\frac{1}{3}$ ths are first class.—In a recent conversation with an intelligent superintendent of one of the Massachusetts roads upon this subject, he said, "none but Irishmen take the second class cars; an American feels humiliated by doing so; even the Negro always takes the first class." In the Slave States we presume that the case is different; but as a general rule, so strong is the sense of equality in this country, that an American would feel himself degraded, by placing himself in a position that would imply any distinction between the richest or most favored with us. Our social condition confers none, but extends the same privileges and political rights to all; and this theoretical equality is most zealously maintained in practice. It is this real equality that secures such uniform courtesy which characterises the intercourse between all classes in this country, and which is witnessed in no other.

Taking the average number of miles open during the half year at 4756, the receipts for each mile would average £1208. On the following principal lines this average differs greatly:—

On the London and North Western it is	£2625
" Edinburg and Glasgow,	1853
" Great Western,	1795
" Lancashire and Yorkshire,	1681
" South Eastern,	1675
" London, Brighton, and South Coast,	1657
" Midland,	1385
" South Western,	1341
" Eastern Counties,	1298
" York, Newcastle, and Berwick,	1170
" Caledonian,	837
" York and North Midland,	723
" Eastern Union,	700
" Great Southern and Western of Ireland,	592

In their latest Report the Railway Commissioners have endeavored to estimate the amount of money expended on the construction of railways:—

"The returns which will enable them to do this accurately are being received by them, and will, on their completion, be laid before Parliament. They believe, however, that the expenditure in 1848 was less than that in 1847, nearly as large as the expenditure in 1846; that at the end of 1848, rather more than £200,000,000 (*two hundred millions*) had been expended on railways; that the companies retained power to expend upon authorised railways £140,000,000, (one hundred and forty millions,) and that the extension of time which has been granted to so many companies, will allow this expenditure to be distributed over five or six years. But it has already been stated, that it appears probable that a large proportion of the lines not now in progress, will never be completed; and if it be assumed that at least one half of the lines which are not in progress will be entirely abandoned, it may also be assumed that £50,000,000 (fifty millions) of authorised capital will not be required."—Report for 1848, Part ii. p. 7.

The following tables show the progress and extent of the decline in some of the principal English roads within a period of two years:

	London and N. Western.	London and S. Western.	G. Western.	Midland.	Average.	Consols.
July 3, 1847,	184	134	146	130	148	89
Jan. 1, 1848,	150	102	112	109	118	85
July 1, 1848,	120	92	99	100	110	84
Dec. 30, 1848,	124	80	91	85	95	88
April 20, 1849,	133	76	95	76	95	92

This enormous decline we presume was owing in part to similar causes that has caused such an uni-

form decline of stocks in this country; to an over-estimate put upon their value, from declaring dividends based upon one-half or two-thirds of the cost of the road, which could not be sustained when the whole amount of expenditure required, were completed. In addition to this, the stocks in all the English roads were at that time very nearly under the control of the stock jobbers, and a fictitious value given them by the influence of this class. The cost of the English roads, however, in proportion to the business is much greater than ours;—and when we look at some of the items of their cost, we shall cease to wonder at their great decline. The following table shows the cost in dollars of the most important English roads.

The present market value of the stock in the roads which represent this enormous expenditure is not over £75,000,000, making a loss of over £125,000,000, or more than \$625,000,000! The ability of a country no larger than the United Kingdom, to lose so large a sum and still save itself from bankruptcy, is full evidence of its enormous wealth and resources.

	Per Mile.
Blackwall railway	\$1,400,000
Croydon	402,000
Manchester and Bury	350,000
Manchester and Leeds	322,940
Manchester and Birmingham	301,000
Brighton	285,000
Manchester and Sheffield	280,000
Eastern Counties	230,000
Great Western	235,000
South Eastern	222,000
North Western	222,000

Leaving out the Blackwall, which is a short London road, and the average expense of the remaining per mile is \$284,575! Some idea of the cause of apparently such profligate expenditure may be formed from the following facts:

	Per Mile.
Parliamentary Expenses of the Blackwall railway	\$72,070
“ “ Eastern Counties	4,430
“ “ Manchester and Birmingham	25,950
“ “ Brighton	24,030

Parliamentary expenses embrace the cost of the appliances made use of to obtain a charter. Thank heaven our Legislation is not so completely corrupt as to make the cost of obtaining a charter, the price of bribery. As a general rule with us, they do not cost the grantees one cent.

The following sums per mile were paid for land and right of way:—

	Per Mile.
Manchester and Birmingham	\$81,310
Eastern Counties	79,405
Brighton	50,525
Average per mile	70,415

The cost of the right of way of these roads exceed by 2½ the average cost of railways in this country.

The following is a list of a few of the principal tunnels on English lines:

	Length in Yards.	Height in Feet.	Width in Feet.
The Box tunnel, Manchester and Leeds	3123	27	25
Kilsby tunnel,	2860	21½	24
Liverpool and Manchester tunnel, from Wapping to Edgehill,	2423	27	23½
Abbots' Cliff tunnel, Dover	2216	16	22
Lime Street, Watford, on the London and Birmingham,	2286	25	24
Leicester and Swanton,	2000	19	25
Shakespeare tunnels, Dover double,	1830	13½	10½
Primrose Hill,	1660	30	24
Edinburgh and Granton,	1430	25	22
Bangor tunnel,	1250	17	24
	924		

Canterbury and Whitstable,	880	12	12
Callander, Edinburgh and Glasgow,	830	22	26
Leeds and Selby,	700	17	22
Penmaenbach, Chester and Holyhead,	632	24	

The following extract illustrates the superior productiveness of modern over ancient labor:

The great Pyramid of Egypt was, according to Diodorus Siculus, constructed by three hundred thousand—according to Herodotus by one hundred thousand men; it required for its execution 20 years, and the labor expended on it has been estimated as equivalent to lifting 15,733,000,000 (fifteen thousand seven hundred and thirty-three millions) of cubic feet of stone one foot high. Now, it in the same measure the labor expended in constructing the Southern division only of the present London and North Western railway be reduced to one common denomination, the result is 25,000,000,000 (twenty-five thousand millions) of cubic feet of similar material lifted to the same height, being 9,267,000,000 (nine thousand two hundred and sixty-seven millions) of cubic feet more than was lifted for the pyramid, and yet the English work was performed by about 20,000 men only, in less than five years.

Every one has read Sidney Smith's celebrated description of the universality of taxing in great Britain, the price every man is daily compelled to pay for the aggregate national glory of centuries. Had he lived to the present day, the progress since made in the arts of life would more than have doubled his catalogue of taxables. In that country every process in nature that ministers to mans comfort, every expression of his thoughts, every invention of his ingenuity, every exercise of his freedom, every thing that supports life, or that even makes it tolerable is taxed to support the enormous superincumbent structure, which, like some hideous excrescence of the human body grows more and more rank just in proportion as the enfeebled constitution is, unable to oppose any resistance to its progress. The following table shows the revenues derived to government railroads in that country:

	Government Rates and Duty.	Taxes.	Aggregate T.
London and North Western	\$252,525	292,245	544,770
Great Western	148,015	192,775	340,790
Midland	115,215	165,625	280,840
Eastern Counties	84,085	123,770	207,855
London and Brighton	81,880	114,170	196,050
London and S. Western	75,165	97,455	172,620
South Eastern	74,475	111,835	186,310
York and North Midland	35,460	69,800	105,260
York, Newcastle, and Berwick	33,355	72,065	105,420
Lancashire and Yorkshire	21,680	83,965	105,645

The article referred to urges strenuously the passage of Lord Monteagle's bill, which has for its object the creation of an official department, to see that the receipts and expenditures are properly classified and explained in the books and accounts, for the information of the proprietary, and that a form of accounts, in certain heads of expenditure are given. It also advocates the purchase by government and the consolidation of all the roads into one general system, to be directed and controlled by the state. This, which is a popular doctrine in Great Britain, would be rank heresy here. There is a continually growing feeling with us, to divest government of all its powers not absolutely necessary to carry out the great objects for which it was instituted. The tendency of all power is to strengthen itself, irrespective of popular rights. We guard against its abuse by giving to our rulers only so much authority as is absolutely necessary to carry out their several

functions. Power, which in other countries is represented by the government, with us resides with the people, which effectually prevents its concentration in particular hands to be used as the instrument of selfish purposes. We pay our officers as we do our workmen that build our ships or houses, according to the value of their labor. Every one feels, therefore, that he is not unreasonably taxed, and this burden he bears as cheerfully as any other necessary expenses he incurs. Every one sees that government is worth to him it all costs. Consequently it has the support of his convictions, as well as his prejudices. This is the great secret of the strength of our government, and of the order and quiet of our people. In Europe the subject feels that government is worth but little and that it costs every thing, that he gets no equivalent for what he contributes to its support, but that all is squandered to sustain in luxury and dissipation those possessed of power, or to strengthen the bonds by which they hold their fellow men in oppression. Hence the dissatisfaction and desire of change which we every where witness in Europe. If John Bull makes better railroads we are certainly setting him an example in the economy of government.

The following table presents a general view of the railway system in Germany:

Names of the States.	English miles constructed.	English miles in project.	English miles to be constructed.	English miles Total.
Austria	716½	229	158½	1103
Prussia	677½	403	794	1874
Duchy of Anhalt	39½	12½	—	52
Kingdom of Saxony	176	148	7	331
Duchy of Saxe	137½	43½	87	144
Bavaria	149	308½	174½	632
Wurtemberg	24	148	32	204
Grand Duchy of Baden	154½	35½	—	195
Do. of Hesse Darmstadt	34½	43½	40	118
Duchy of Nassau	27	—	—	27
Frankfort-on-Main	2	14	—	16
Electorate of Hesse	—	178	4	182
Duchy of Brunswick	73	—	7	80
Hanover	59	154	161	374
Hanseatic Towns	9	—	2½	11½
Grand Duchy of Mecklenburg	46	—	94½	140½
Holstein and Lauen-	96	31	43½	170
Total	2294	1748½	1595½	5637½

The total number of miles thus projected in all Germany is not much greater than the number now executed in England.

The lines of railway in other parts of Europe are given below:

The lines in Belgium constructed by the State amount to 347 miles, and cost £5,945,148. They unite Brussels with Ostend, Bruges, Ghent, Antwerp, Malines, Courtray, Lille, Tournay, Douay, Valenciennes, Mons, Charleroi, Namur, Mariembourg, Liege, and Aix-la-Chapelle.

In Holland there are railways joining Amsterdam and Rotterdam, 50 miles; and with Utrecht and Arnhem, 60 miles.

In the North of Italy, a line partly finished passes from Venice to Turin and Alessandria, by Vicenza, Brescia, Milan, and Novara; and one from Milan to Monza. There is also a line from Florence to Leghorn through Pisa, and to Pontedera; another from Pisa to Lucca and St. Salvatore, and another from Florence to Prato.

In the south of Italy, there is a railway from Naples to Pompeii and Castellamare, and another from Naples to Caserta and Capua; but no line has been projected in the States of the Church. The Pope, indeed, is said to have objected to their introduction.

There is a railway in Switzerland twenty-five English miles in length from Zurich to Dietken and Baden; and even in Spain, a railway 17½ English

miles in length has been recently opened from Barcelona to Mataro.

The most eastern railways in Europe terminate at Warsaw and Cracow. A line is in progress to Bochnia, east of Cracow, and another from Pesh to Debretzin, still farther east.

AMERICAN RAILROAD JOURNAL.

Saturday, September 23, 1849.

Boston and Maine Road.

We have been favored with a copy of the annual report of the Directors of this corporation, submitted to the Stockholders, at their meeting held in Dover on the 12th inst. A large portion of the report is devoted to the correction of sundry statements made by the committee of investigation, and indeed the whole pamphlet may be considered rather as a general reply to the report of the committee.

In the commencement of the report the Directors give a statement of the progress made during the past year.

The Methuen branch, and the 9½ miles of new road through Andover and Lawrence have been completed, and open for use. A double track has been finished from Boston to Reading, 12½ miles, and one from Ballard Vale through Lawrence to North Andover, 7½ miles; besides one from the junction of the Lowell and Lawrence railroad to the northerly part of Lawrence, making it in all about 21 miles of double track between Boston and North Andover, including Lawrence. The freight house in Dover, which was burned the last season, has been replaced, and expense charged to repairs. A brick freight house at Salmon Falls, another at South Andover, a station house at Salmon Falls and one at Ballard Vale, have been built during the last year. The bridge which was destroyed by fire at Salmon Falls in January last, has been entirely rebuilt, and is now one of the most perfect structures on the line of the road. It is 550 feet long; the foundation of the masonry are carried down to the solid rock; and the superstructure is finished so as to be entirely water proof. The new bridge has cost about \$18,000; the old one was built at an expense of about \$20,000. The loss by the destruction of the car shop at Lawrence (August 15th,) is supposed to be about \$40,000.

The directors state, that from the opening of the road to Dover in 1841, to December 1847, there was an annual and regular increase in its business of 33 per cent., till its gross receipts for the last mentioned year amounted to over half a million of dollars.—In view of this and the prospective increase of business, the fares and freight charges were reduced about 14 per cent; but for various reasons which have operated on all railroads, a comparative reduction of business and travel took place. In the meantime large expenditures were making by the corporation, in preparation for the business expected from Lawrence and other quarters, in accordance with the approval of the stockholders. In addition to these untoward circumstances, the losses by fire at Salmon Falls and Dover, had their influence to prevent an increase of the net income, to correspond with the increased means and expenditures. Notwithstanding all these disadvantageous circumstances, the net earnings of the road, for the two years ending June 1, 1849, have been an average of 8 per cent. per annum, and for the worst twelve months of the time, the last year, the net income was fully 7 per cent.—This is considered a satisfactory result in view of the severe trials to which the road has been subjected.

The report then alludes to the recent action of the

legislature in relation to the bridge over Charles River, by which the privilege given in 1848 to another company, to use the bridge of the Boston and Maine road over this river, has been superseded.—A few brief remarks are then made in justification of the extensive expenditure made in the construction of branches, etc., which seem very satisfactory. The directors then come to the consideration of the report recently made by the committee of investigation. For the satisfaction of our readers we give the following copious extracts from the reply of the directors:—

The Committee of Investigation have animadverted, with a good deal of emphasis, upon the shops and the building of cars and engines by the company. There may have been some error in so great an addition to the company's means at the time that the Lawrence shop was built. But the history of our own road, as well as that of many others, proves the great convenience and want of economy, in depending entirely on others for the running furniture of a railroad. This company early commenced the building of its own cars; and undoubtedly made a very considerable saving by so doing. There was a time when we could neither purchase at a reasonable price, nor build—with the means which we had and as fast as we needed—the cars to meet the requirements of the road. There may be a state of things in which it would be expedient for railroads to do much less in the way of building their own cars, than under other circumstances. It is by no means a settled question, however, that, as a matter of economy, railway corporations, as extensive as this and its connections, should not build their own cars.

We cannot refrain from adverting to another view of the subject of somewhat greater importance than that of the mere cost of this apparatus in the beginning. And this we do, without meaning to reflect upon the respectable car builders in Massachusetts. It we have this running furniture built in our own shops, we may be able to know the character of the materials used; indeed, there will be no temptation to put into that portion of the machines on which the safety of the passengers depends, any inferior work. This view of the subject was forcibly presented, a few days since, by a gentleman in our cars, a constant patron of the road. He remarked, "I shall ride on this road with much less of a feeling of security, when the company cease to build their own cars."

The fixtures and furniture of the shops have required a large outlay. Previous to the fire at Lawrence, this whole establishment, with all its apparatus, was believed to be quite ample to the exigencies of the road, for some years to come. There may have been some misjudgment as to the extent, at this time, of these additions to the company's means in this department. It is to be remarked, however, that the Boston and Maine railroad is—besides its branches—50 per cent. longer than any other railroad connecting with Boston; and promises as great a proportionate increase to its business, from tributary roads, and from the growth of establishments along its main line, as any other road. A comparison of the cost of its whole amount of buildings and fixtures, with those of the other railroads connecting with the city of Boston, is far from showing an extravagant outlay in these particulars on the part of this road. And a comparison of the expenses of its management with those of other roads, does not afford a presumption that, in the administration of its general affairs, there has been waste, improvidence, or neglect.

If we compare the cost of stations, buildings and fixtures' on the Boston and Maine railroad with the cost of the same items on the Fitchburg, Old Colony, Boston and Lowell, and the Eastern railroads, we shall find the average cost of these items on the four last mentioned roads, (in proportion to their length,) has been over 50 per cent. greater than that of the Boston and Maine. [We would have included in this comparison the Boston and Providence and the Boston and Worcester, if these items had been given in their returns.]

If we compare the entire cost of building and furnishing the Boston and Providence, the Boston and Lowell, the Boston and Worcester, the Fitchburg,

and the Eastern Railroads, with that of our own, we shall find that the average cost per mile, of these five roads, is 30 per cent. more than that of the Boston and Maine.

The expense of keeping in repair the engines and cars of the Boston and Maine railroad, for the year 1848, was 10 per cent. less than the average of the other five principal railroads connecting with Boston, viz: The Boston and Providence railroad, the Boston and Worcester, the Boston and Lowell, the Fitchburg, and the Eastern. And if we except the Fitchburg, which had run about three years at the time taken for this comparison, and whose furniture must have been nearly new, we have the average charge for this item of expense on the other four roads, 19 per cent. greater than the same item of expense on the Boston and Maine road, the proportion to the miles run.

If we compare the general expenses of these five roads, with those of the Boston and Maine for the same year, we shall find that the average expense per mile of maintaining and running these five roads, is (as before) 10 per cent. greater than that of the Boston and Maine. And if, as in the other case, we leave out the comparison the Fitchburg railroad, whose track, bridges, &c., as well as the running apparatus, could have required much repair during the time—we shall find that the average expenses of the other four were 18 per cent. greater than those of the Boston and Maine. These comparisons are deduced from the official returns made by the Directors of the roads severally, and some of these are only approximations to a strict analogy, though they speak a general truth.

It may be remarked of these five railroads, there is only one whose expenses are less per mile than those of the Boston and Maine. And the comparative smallness of the expenses on that road, is accounted for, not only from the fact that the road and its equipment were comparatively new, but from the additional fact that the branches which were run by this road, were kept in repair by their own corporations.

It is also worthy of remark, that of these six roads, there is only one without ample car and engine shops of its own; this road depends mainly upon "outside shops" for most of its considerable repairs. And the expenses of maintaining the moving apparatus on that road, for the time taken for the above comparisons, were much greater than those of either of the others.

Some errors have crept into the report of the Investigating Committee, partly from the subject being new to them, and partly from the unintentional failure of the officers of the company to furnish every necessary explanation; though they were desirous so to do. But, from misapprehension of what was wanted, and of the object of the Committee in some of their inquiries, omissions and mistakes have occurred, through the books and files of the company were placed at the disposal of the committee, and such explanations as were supposed to be necessary were readily given. But as the Directors and officers of the road did not see the report till after it was printed, they had no opportunity of correcting any mistake or misapprehension.

On the 37th p. of the report, the committee have stated the expense of labor and materials charged to the Boston shop for the 18 months ending June 1st, 1849, at..... 130,965 04 and at the Lawrence shop for the same period, at..... 115,656 16

amounting in the whole to..... 246,621 20

The Treasurer's books give us the following additional information with regard to this subject:

On November 30th, 1847, the stock on hand in the engine shop was..... \$11,817 77
Materials and labor charged for the 18 months ending June 1st, 1849..... 130,290 13

Amounting to..... \$142,107 90
Deduct stock on hand, June 1, 1849... 19,005 64

Balance against engine shop for the 18 months ending June 1, 1849..... 123,102 27
On the 30th November, 1847, the stock on hand in the car shop was..... 22,778 36
Materials and labor charged for the 18 months ending June 1, 1849..... 115,327 02

Amounting to.....	138,105 38
Deduct stock on hand July 1, 1849.....	22,679 14
Balance against the car shop, for the 18 months ending June 1, 1849.....	115,426 24
RECAPITULATION.	
Balance against engine shop.....	123,102 27
" car shop.....	115,426 24
Amounting to.....	\$238,528 51
The committee's statement of the balance against the two shops was.....	246,621 20
Over statements of committee.....	8,092 69
In the statement of what should be credited to the shops, the following amounts were omitted, viz:	
Work done for repairs of road in Massachusetts.....	915 51
Work done for repairs of road in N. Hampshire.....	1,031 74
Work done for repairs of road in Maine.....	278 03
Work done for depots in Massachusetts.....	174 63
Lawrence machine shop, (for boilers, machinery, &c).....	5,467 61
Under statement of cost of new engines and cars.....	3,318 43
	\$11,185 95
To the above omissions, add the over statement of amount charged to the shops, for labor and materials as above.....	8,092 69
And we have here the sum of.....	19,278 64
which is to be deducted from the....	24,254 89

stated by the committee on p. 41, as being the cost of the general repairs of engines and cars, for the six months ending June 1, 1849.

Leaving that cost only..... \$22,976 25
 In justice to the committee, it should be stated that a part of the above error was occasioned by the returns made to them, not including every thing which properly should be credited to the shops, as the object of the committee in making the inquiries, and the use for which they wanted the information, were not understood.

It will be perceived however, that the above correction exhibits the whole subject of the shops under quite a different phase from that contemplated by the committee, as it reduces very nearly one-half the charge against these establishments, as arrived at on the 41st page of their report.

The Directors exceedingly regret that this error occurred, or that it could not have been corrected before the report was printed. It changes so entirely the whole aspect of the case, that the committee would have probably been induced to qualify, if they did not entirely omit, the three or four following pages of their report."

We have given the above as the most important part of the reply to the Investigating Committee; but the directors take up in detail the several points which came under the animadversions of the committee, and make out upon the whole a very good case. In regard to free passengers, the directors show that no cause of complaint exists, and give the following statement of their character, and the relative number carried over any part of the road during the month of August, 1849:

Directors.....	115 passages.
Families of Directors.....	33 "
Employees.....	1119 "
Contractors, including Stage Drivers, &c.....	574 "
Others.....	35 "
	1876

This statement shows a curtailment in the free list made since May, 1849, of 3140, the number in that month having been 5016. This reduction was made by the action of the directors, previous to the appointment of the committee. They wind up this subject with the following paragraph:

"On no other railroad leading from Boston, is the

limitation of free passengers so strict as on this road —this has been ascertained by actual inquiry. The Directors are fully of the opinion that the privilege of free passage should be closely restricted to as few persons as possible, consistently with the interests of the road."

As we gave a large part of the report of the committee of investigation, we have in consequence made copious extracts from the report of the directors. We congratulate the company that every thing has turned out so well, and that all parties in this road seem so well satisfied. The report of the committee of investigation was unanimously accepted, "with a will," though it reflected severely upon the directors. At the annual meeting the old board was re-elected, and the two retiring members complimented for their very valuable services. The committee of investigation were thanked for their disinterested services. The investigation showed, that if the stockholders were not so rich as they once supposed themselves to be, that their property was nearly as valuable as it ever was. The election of the old board proves that the road has not been very badly managed, to say the least, and the result of the investigation will not only correct the mistakes that have been made, but secure a better state of feeling among those interested.

The following gentlemen constitute the board of Directors for the current year:

- John Howe,
- Sam'l. A. Walker,
- James Hayward,
- John Flint,
- Andrew Pierce,
- Samuel Batchelder,
- George H. Kuhn,
- Mr. Howe succeeds Mr. West as President of the company.

Boston, August 6th, 1849.

E. M. STILLWELL, ESQ.,
 Dear Sir—We have already put down one of Tyler's patent safety switches, and are preparing to put down several others. I am satisfied that it is the best thing of the kind I have ever seen. It answers the purpose remarkably well, and I think it generally adopted by railroads it will save a good deal of money, by preventing accidents in running off at switches. One great merit of this switch is its simplicity, and the certainty of both tracks always being left whole, even though the switchman is remiss in his duty. It likewise is so constructed as to require no alteration in any of the machinery for operating the road. It does not interfere in the least, with snow ploughs, cow catchers, or scrapers. I can with confidence recommend it as a valuable invention.

Yours respectfully
 S. M. FELTON.
 Supt. Fitchburg Road.

We have conversed with a number of the superintendents of the leading railways running into Boston, who are putting down this switch, and who gave it as their opinion, without hesitation, that no road can be considered in proper running order without using it, and that none can be excusable for accidents occurring from misplacement of switches unless this is used, and that the omission to adopt it, is alone sufficient reason to make companies responsible for any accident that occurs.

The Hudson River Railroad is now in running order to Peekskill.

We invite attention to the advertisement of Messrs. Lee & Blanchard, Philadelphia, of valuable scientific works published by the m.

New Hampshire.

The receipts on Cheshire Railroad for August exceeded \$18,000, an increase of \$3000 on the preceding month. The cattle train, on Thursday evening, consisted of 71 cars of cattle and sheep. There were also about 30 cars of other freight from the North, making over a 100 cars.

The friends of the Ashuelot Railroad met at Keene on Tuesday. The President announced that a vacancy in the Board of Direction had been filled by the election of Philip Ripley, Mayor of the city of Hartford. The contract for a lease of the Ashuelot Road to the Connecticut River Railroad Company, "on terms that shall secure seven per centum per annum for ten years on the investment of stock in the Ashuelot Railroad Corporation," was approved and confirmed, and additional stock to the amount of 10,000 dollars was taken.

NOVELTY IRON WORKS.
 New York, August 5th, 1849.

HORATIO ALLEN, ESQ.,
 Dear Sir—On a careful perusal of "Mushet" on "Shrinkage and expansion of Cast Iron" I am surprised that one having possessed the advantages which were at his command, should betray such inconsistency with his own principles: which are,

1st. "That cast iron when fluid is more dense than in any other state."

2nd. "That immediately upon its passing from the fluid to the solid state, it acquires its greatest volume."

In illustration of these principles, he says "several pieces of iron may be put into a ladle and hot iron poured upon them, they will immediately rise to the surface and expose a considerable portion of their bulk above the surface of the liquid iron. This buoyancy diminishes and as the pieces of metal approach more and more to the state of fusion that exists in the ladle, they gradually sink till they disappear entirely under the surface."

It will be conceded that the foregoing is a statement of facts, and that it apparently affirms the 1st of Mushet's propositions, but unfortunately for him, it clearly negatives the 2nd, for he admits the diminution of buoyancy of the pieces of iron, at the very point at which it should be increased, viz., at the point of its largest volume.

Another illustration is given by filling a gun mould with fluid iron:—"we find, when cold, that the piece of casting has shrunk interiorly, has diminished in point of length, and has lessened its diameter."

The rationale of this he gives as follows:—

1st. "Their shrinkage appears to be dependent on two causes, the gravitation of the fluid metal, and the expansion of the mould. The latter I conceive acts a very powerful part; the immense quantity of caloric combined with the iron is in part easily and almost instantaneously communicated through the sand to the iron box. This creates a disposition to expand, in which it is greatly assisted by the great pressure of fluid iron. That portion of the metal in contact with the interior of the mould is the first to lose its fluidity, and is acted upon and forced to give way in the same ratio of expansion before the subtle and denser fluid. The diameter of the shell of the gun is at this period increased in every part; the fluid iron in the interior descends to occupy the enlarged space, and the head of the gun presents an increasing chasm like the concave of a sand glass."

"In proportion as the cast iron resolves itself into a solid, a diminution of pressure should take place upon the mould. This would inevitably follow were not its force replaced by the increased volume of the metal passing into a solid state, which is equivalent to that law which I have termed—

2nd expansion—"Of the extent of this operation

we may judge from the following facts: all patterns of castings are made somewhat larger than the piece of goods is wished to be; in common cases 1-8 of an inch to the foot is allowed, but in many cases the allowance will be nearly 3-16 of an inch. In the case of the gun therefore the mould would be, plus the allowance upon the pattern, what space was gained by beating the pattern to loose it from the sand, and all the extra space acquired by the increased volume of the consolidating iron. These taken collectively may amount to $\frac{1}{4}$ or 5-16 of an inch, and so much less will the diameter of the gun be found when cold, to what it would have measured at the climax of its expansion."

"3rd., contraction immediately takes place of the metal ceasing to expand. To its effects are chargeable the reduction of the increased diameter of the gun, and which seems merely in consequence of the escape of caloric."

Now it appears to me that this case positively conflicts with both propositions, for if the casting when cold is found to be so considerably smaller than was the mould which was filled with fluid iron, it is beyond peradventure more dense in the former state than in the latter, consequently the first propositions is negated.

As to the interior shrinkage it should not have existed if the 2d., proposition is true, for after the exterior of the casting had congealed it could not yield to the expansion of the remainder without bursting, and so long as there was room for this expansion interiorly, we could not reasonably look for such a consequence but, to the contrary, the entire closing of the shrinkage would be inevitable.

Yet another example he gives in the casting of shot in an iron mould. He says, "the mould is always filled by the shot till cooling has so far taken place as to reduce the shot mould to its former diameter. Beyond this however the shot still continues to lessen its bulk, so that when cold it will be found to have left its mould by nearly 1-66 part of its diameter." If this does not prove iron to be more dense when cold than when fluid I do not know from whence proof can come.

To a part of this work already quoted, as follows "all patterns of castings are made somewhat larger than the piece of goods is wished to be," the question may be addressed, why the necessity of this if iron when cold is not smaller and consequently more dense than when fluid?

Thus far I have not gone beyond the writers examples, I will now endeavor to strengthen my objections to his theory by some observations of my own.

In preparing the mould for a hydraulic cylinder weighing about eight tons, recently cast under my direction, great care was taken in selecting loam with a large proportion of clay—and a sand of established character for resisting vitrification. With this mixture a strongly built brick wall of eight inches in thickness was coated. When thoroughly dried, the mould was carefully measured and transferred to the casting pit. Here strong boiler iron curbs were encircled about it at the distance of eight inches. The intervening space was filled with sand very closely pounded. When thus prepared, the estimated strength of this mould was sufficient to resist fourfold the gravitation required; and upon it caloric would exert very little if any expansive force.

In a few moments after the mould was filled a gradual sinking of the fluid iron was observed in the feeding head which was supplied with other iron very hot. This process continued four hours, at the end of which time the mould had received in ad-

dition to its first filling 264 pounds or 1,016 cubic inches of iron.

Upon measuring the casting, when cold, it was found to be 687 cubic inches smaller than the mould in which it was cast.

The result of these experiments presents insuperable difficulties to the admission of Mushet's theory, for it is impossible, on the commonly received principles of gravitation, that the iron when first poured into the mould should be more dense than after it had resolved itself into a compass diminished 687 cubic inches, with an increased weight of 264 pounds.

As to expansion, I can see no room for it, whatever, for the mould certainly could not yield to it, and the result must have been as before noticed in the gun. I find thrown in by the way of a passing remark "that melted cast iron supports lead and tin." This assertion is so visionary that I am at a loss to determine whether the writer is in earnest or not. As well might he, with the hope of being believed, tell us that water will support a flint stone.

I close this communication with the remark that my only endeavor has been to show the fallacies of Mushet, without attempting an elucidation of this difficult subject, which I confess is quite beyond my ability.

I think Sir, in this I have succeeded, and conclude with the assurance that the phenomenon of solid iron floating upon liquid remains yet unexplained.

I remain Dear Sir,

Your Obedient Servant

N. M. STRATTON.

We have permission to publish a copy of the above letter, which we give without comment of our own, only expressing a desire that it may lead to a discussion which shall solve the apparent contradiction of principles, which are now assumed as proved, in relation to the action of heat in enlarging the area of bodies.

Savannah Georgia September, 13, 1849.

H. V. POOR, Esq.,

Dear Sir—I have been induced by the perusal of an article in your valuable Journal of the 8th inst., to mention a few suggestions on the subject of a railroad from the Mississippi river to the Pacific.

Three facts seem to be self-evident in connection with this subject: first that public opinion demands that a road should be commenced; secondly that no individual or association can build the road without the aid, (direct or indirect) of the general government; and thirdly, it is a scheme of such vast importance that no sectional feeling should have any weight in the selection of the route.

As a starting point for the Eastern terminus I would propose Fort Smith; and for the following reasons among others: it would remove all constitutional objections which many members of Congress would have to any location within a State—it can be approached by water now at nearly all seasons of the year, with the largest boats, and therefore save the cost of building the road to that point.—If a road should start from St. Louis, or the Ohio, it would necessarily pass near Fort Smith, provided it passed over the mountains to the valley of the Gila; and as I believe that to be the best, shortest and cheapest route, I have but little doubt but that route will be selected. Roads could be eventually built, from St. Louis, Memphis, Vicksburg or New Orleans to Fort Smith, but at present, all could be accommodated by steamboats and thus several millions of dollars immediate expenditure, could be saved.

From Fort Smith the road would pass up the south side of the Canadian river; and as there would be no large streams to cross for 4 or 500 miles, this would save the expense of bridges, which would be the most costly part of the road on account of the scarcity of timber, and great distance from all localities where mechanical labor can be procured. I think the first four hundred miles from Fort Smith would not cost more than \$15,000 a mile, as the country is represented to be an open prairie almost level. The route would pass one or two hundred miles south of Santa Fe: and the fertile valley of the Rio Grande would furnish subsistence for the laborers on the road.

After passing the Rio Grande, the road would of course be expensive, but not as much so as a more Northern route; as the laborers could work the whole year; while the work on the route from St. Louis by the south pass, would be interrupted for a long time each year by snow. Following down the Gila would again avoid bridging; and though I would propose San Francisco as the western terminus; to be approached by the valley of the San Joaquin, I would have the road or a branch built to the point where the Colorado could be navigated by steamboats; and thus secure the trade of the Gulf of California and all the western coast of Mexico down to Acapulco. As this route would approach nearer to Chihuahua than any other, the trade of that important city, in fact of all the States of Northern Mexico, would be secured for ever to this road.

The distance from Fort Smith to San Francisco, for a located line would not probably exceed 1700 miles; and this must be shorter than any other route. I believe the road can be built for one third of the cost of a road by Mr. Whitney's route, or two thirds of the St. Louis, and south pass route. Now if this route is the shortest and cheapest, and one that will control more trade and business than any other; and one at the same time that can have no sectional or constitutional objections, would it not be for the interest of all to unite upon it, and have the question of route settled; and then have all future exertions directed to the raising of the means to build it. I believe Congress would more willingly vote money to build the road, then to give Mr. Whitney a grant of an extent of domain, larger than many kingdoms in Europe. The proceeds of the sales of public lands for five years, would probably be as large an amount of money as could be profitably expended; and by that time the whole people would look upon it as a great national measure which every one would be proud to aid by all the means in his power. If there should be any doubt about the proper expenditure of the appropriations, a board of commissioners might be appointed, say seven, one to go out each year, not to be eligible for re-appointment, after holding the office three years.*

We fully agree with the writer of the above, that the time has come when our people demand a railroad to the Pacific—that no individual or company can build it without the aid of government, and lastly that the selection of the route should be entirely uninfluenced by sectional or party interests; but for the best of reasons, we can by no means so readily answer the questions, how shall be provided the means for its construction, where shall be the western terminus, or by what route shall it be reached?

The solution of the two last depends upon evidence within our reach; but not yet developed.—The western terminus shall be the point best fitted

to be the commercial centre of our Pacific possessions. San Francisco is undoubtedly our best harbor on this coast; while it is equally clear, that it can never be the ultimate centre of population west of the Rocky Mountains. The question of terminus must, however, depend mainly upon that of the route; and this can only be determined by mathematical survey. The physical characteristics of the country must decide this point. As San Francisco is at the present time, and must for many years continue to be, by far the most important port on the Pacific, we have no doubt but this will be selected as the terminus of the road if a favorable route can be found in that direction; and if the means by which the road is to be built are equally applicable to this as any other route.

In deciding the question of route and terminus, we must expect great diversity of opinion, but these differences must yield to the existence of certain facts in their nature demonstrable. But when we come to the discussion of means we have no such guide, and the soundness of any particular plan can only be demonstrated by the results. This is a question in which every man thinks himself as wise as his neighbor, and as no facts exist by which the absolute correctness of any particular views can be tested previous to commencing work, we may here expect to encounter the greatest obstacle to the commencement and successful progress of the road. The examination and discussion of this branch of the subject may yet elicit a plan, which may be generally acceptable, and secure the completion of the work. As yet we have met with no "matured" plan which we can approve. The one which originated in Boston, requires too much governmental aid for what is to be a private work. By that plan government is to assume almost the whole expense of the work, and must incur the loss in case of failure while individuals reap the benefit, if successful.—We feel satisfied that government will never consent to place the amount required in the hands of private persons, to be expended under their direction. Apart from mere prudential considerations, there are in our minds other insuperable objections to it. We have already examined Mr. Whitney's plan at some length. Instead of being a plan to build the road, the direct tendency of it is to defeat it. Mr. Whitney gives no guarantee that he will build it; and as his means constantly diminish, and his expenses increase, as he progresses, there must certainly be a point where it is against his interest to go any further. Where there is no obligation imposed we must conclude that his interest will regulate his conduct. If so he would never build the road. It we are not so sanguine as to the early completion of the work as some others, it is only we think, because we more carefully consider the difficulties to be encountered. We must bear in mind the repeated failures of some of the richest States in constructing public works of infinitely less magnitude with all the aid and facilities, furnished by abundance of skill, labor, and even capital. We cannot now appreciate the difficulties to be encountered in this great work. Still we must commence and complete it, and the sooner, as a people we thoroughly examine it in all its bearings, the sooner we shall be prepared to act, and the greater the probability of our acting right.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
 Square " Flat " Scroll "
 Axles, Locomotive Tyres,
 Manufactured at the Glendon Mills, East Boston, for
 sale by **GEORGE GARDNER & CO.,**
 5 Liberty Square, Boston, Mass.
 Sept. 15, 1849. 3m37

Pennsylvania Railroad.

PROPOSALS will be received at Johnstown, Cambria county, Pa., between the 1st and 12th of October next, for the Graduation and Masonry of that portion of the Western Division of the *Pennsylvania Railroad* east of Section No. 54, opposite Blairsville—a distance of 26 miles—embracing a considerable amount of heavy excavation and embankment.

Plans and specifications of the work may be seen at the office, in Johnstown, within the periods above mentioned.

For further information apply to Edward Miller, Esq., Engineer of the Western Division, Summit P. O., Cambria county, J. EDGAR THOMSON, Chief Engineer and General Superintendent. Engineer Department P. R. R. Co., Philadelphia, Sept. 6, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz: 2 Wrought Iron Cranks, 60 inches from centre to centre.

- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
 No. 57 South Gay St., Baltimore, Md.
 Sept. 12, 1849.

Illustrated Scientific Works.

LEA AND BLANCHARD, Philadelphia, publish the following important works on various branches of Practical Science. They will be found exceedingly low in price, while their mechanical and typographical execution are of the best kind.

I.

Principles of mechanics applied to machinery and engineering by Julius Weisbach. Translated by Professor Gordon of Glasgow, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 872 illustrations on wood.

From Charles H. Haswell, Esq., Engineer in Chief, U. S. N.

The design of the author in supplying the instructor with a guide for teaching, and the student with an auxiliary for the acquirement of the science of mechanics, has, in my opinion, been attained in a most successful manner. The illustrations, in the fullness of their construction, and in typographical execution, are without a parallel. It will afford me much pleasure to recommend its use by the members of the profession with which I am connected.

This work is one of the most interesting to mathematicians than has been laid before us for some time; and we may safely term it a *scientific gem*.—*The Builder*.

The most valuable contribution to practical science that has yet appeared in this country.—*Athenaeum*.

Unequaled by anything of the kind yet produced in this country—the most standard book on mechanics, machinery and engineering now extant.—*N. Y. Commercial*.

In every way worthy of being recommended to our readers.—*Franklin Institute Journal*.

What the "Mechanique Celeste" is to the astronomer, a treasury of principles, facts, and formulae on which he may draw on almost any and every occasion, that can be conceived to arise in the field either of demonstration or operation.—*Methodist Quarterly Review*.

II.

Technology, or chemistry applied to the arts and to manufactures. By D. F. Knapp. Translated by Drs. Ronalds and Richardson, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 460 illustrations on wood.

One of the best works of moderate times.—*New York Commercial*.

We think it will prove the most popular, as it is decidedly the best of the series. Written by one who has for many years studied both theoretically and practically the progress which he describes. The descriptions are precise, and conveyed in a simple unpretending style so that they are easily understood, while they are sufficiently full in detail, to include within them everything necessary to the entire comprehension of the operations. The work is also carefully brought down to include the most recent improvements introduced upon the continent of Europe, and thus gives us full descriptions of processes to which reference is fre-

quently made in other works, while many of them are we believe, now for the first time, presented in a complete state to the English reader.—*Franklin Institute Journal*.

In addition to the valuable scientific matter contained in the original work, very extensive American additions have been made to it by the editor, which are exceedingly valuable, and of much interest to the general reader. The publishers have spared no pains in bringing out a work of superior mechanical execution and rare excellence, with numerous skillfully engraved cuts, designed to illustrate the various subjects treated in this work. We feel confident that, as a truly useful publication, it will be eagerly sought after and highly appreciated.—*N. Y. Farmer and Mechanic*.

III.

Principles of Physics and Meteorology, by Professor J. Muller, Edited with additions by R. Eglsfeld Grifith. In one large octavo volume, with 550 wood engravings and two colored plates.

This is a book of no ordinary or ephemeral value.—It is one of a series, now republishing in London, on the different branches of science, which from its thorough character and extended range, is much needed in this country. Its design is to render more easily accessible an extensive knowledge of the general principles of physics and meteorology; and the distinguished author has certainly realized the design to a wonderful extent. The subject treated upon are very numerous—statics, hydrostatics, dynamics, hydrodynamics, pneumatics, the laws of the motions of waves in general, sound, the theory of musical notes, the voice and hearing, geometrical and physical optics, magnetism, electricity and galvanism, in all their subdivisions, heat and meteorology. The size is nevertheless convenient—one handsome octavo volume, of six hundred pages—in clear, bold type, and profusely illustrated. In the execution of the illustrations we have rarely seen any thing equal to this American edition.—*N. Y. Commercial*.

IV.

Practical Pharmacy; comprising the arrangements, apparatus, and manipulations of the Pharmaceutical Shop and Laboratory. By Francis Mohr, Ph. D., and Theophilus Redwood. Edited with alterations and additions by W. Proctor, Jr. One very handsome octavo volume, with 506 engravings on wood.

We had scarcely finished a glance at the beautiful London edition of Mohr and Redwood's pharmacy, before Professor Proctor's improved edition of this fine technical treatise, was laid on our table by Messrs. Lea and Blanchard. This work is one which will at once find its place in every laboratory and pharmaceutical shop, and is well calculated to recommend new and improved methods of manipulation to both chemists and pharmacists. In the absence of highly appointed laboratories and of pharmaceutical instruction which is so general in this country, such works as the present are particularly valuable. The beautiful and abundant wood cuts which adorn almost every page of the book, enter the descriptions of apparatus perfectly plain, and its reconstruction easy even by the tyro. Professor Proctor has long been known to pharmaceutical readers in this country, as the author of numerous and important researches in the *Materia Medica*, and his additions to the present edition of Mohr and Redwood are frequent and valuable.

The American Journal of Science and Arts.

V.

The Young Millwright and Millers Guide; Illustrated by Twenty Eight Descriptive Plates, by Oliver Evans. Twelfth Edition, with additions and corrections, by Thomas P. Jones, with a description of an Improved Merchant Flour Mill, with Engravings, by C. and O. Evans. In one volume 8vo., with 110 figures on twenty eight plates.

ALBANY AND BUFFALO RAILROADS.—

Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.

Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ m., 3½ p.m. Passengers by the *Express Train* reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For *Schenectady, Saratoga Springs & Whitehall*, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The *Eastern Trains* leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
 Albany and Schenectady Railroad Co.
 Albany, August, 1849.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

**P. S. DEVLAN & CO'S
Patent Lubricating Oil.**

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office.

KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

**Journal of the Franklin Institute
of the State of Pennsylvania,
for the Promotion of the
Mechanic Arts.**

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to original communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumes annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

August 4th, 1849.
au7tf

M. M. White, Agent,
No. 74 Broadway, New York.

NOTICE TO**Superintendents of Railroads.**

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albemarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
Proposals will also be received until the 15th of Oct. next for the construction of the Railroad on the Eastern side of the Mountain, about eight and a half miles. It comprises much heavy work and a Tunnel about 720 feet long.

C. CROZET,
Engineer Blue Ridge Railroad.
Brooksville, July 26, 1849,

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company. Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Straghan, the Resident Engineer of the Western Division.

By order of the Board of Directors.

WM. ROBINSON, Jr., President.
Pittsburg, August 11, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. Burr Hewson, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite A Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Salsus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Bro: 1st, Baltimore, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR **TUBULAR BOILERS,**
FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT

Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

J. F. MACKIE,
Nos. 85 and 87 Broad St.
New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
63 Broad street.
New York, June 1, 1849.

The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2 1/2 by 1/2 Flat Bars.
25 Tons of 2 1/2 by 9-16 Flat Bars.
100 Tons No. 1 Gartscherrie.
100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., Philadelphia

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous **Adover** iron. The position of the works on the Delaware River, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 23, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by **A. WRIGHT & NEPHEW,** Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES Imported to order, and constantly on hand, by **A. & G. RALSTON,** 4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL- leghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President** Troy, N. Y.

ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD, Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,** 91 John street, New York.

Also by their Agents—**Curtus & Hand,** 47 Commerce street, Philadelphia. **Alex'r Fullerton & Co.,** 119 Milk street, Boston. **Stickney & Beatty,** South Charles street, Baltimore. **May 6, 1848.**

Railroad Iron.

100 Tons 2½ x ½, **30** Tons Railroad.

All fit to re-lay. For sale cheap by **PETTEE & MANN,** 228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

- 150 tons No. 1 Boonton Foundry Pig Iron.
 - 100 " No. 2 do. do.
 - 300 " Nos. 2 & 3 Forge do. do.
 - 100 " No. 2 Glendon do. do.
 - 140 " Nos. 2 & 3 Lehigh Crane do do.
 - 100 " No. 1 Pompton Charcoal do.
 - 100 " New-Jersey Blooms
 - 50 " New-Jersey Faggotting Iron, for shafts
 - Best Bars, ½ to 4 inch by ½ to 1 inch thick.
 - Do do Rounds and Squares, ½ to 3 inch.
 - Rounds and Squares, 3-16 to 1 inch.
 - Half Rounds, ½ to 1 in. Ovals & Half Ovals ½ to 1½ in.
 - Bands, 1½ to 4 inch. Hoops, ½ to 2 inch.
 - Trunk Hoops, ½ to 1½ in. Horse Shoe & Nut Iron.
- DUDLEY B. FULLER & Co.,** 139 Greenwich-st. and 85 Broad-st.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md.,

Offer for sale, **Hot Blast Charcoal Pig Iron** made at the **Catoctin** (Maryland), and **Taylor** (Virginia), **Furnaces**; **Cold Blast Charcoal Pig Iron** from the **Cloverdale** and **Catawba**, Va., Furnaces, suitable for **Wheels** or **Machinery** requiring extra strength; also **Boiler** and **Flue Iron** from the mills of **Edge & Hilles** in Delaware, and **best quality Boiler Blooms** made from **Cold Blast Pig Iron** at the **Shenandoah Works**, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and **Rolled and Hammered Bar Iron** furnished at lowest prices. Agents for **Watson's Perth Amboy Fire Bricks**, and **Rich & Cos. New York Salamander Iron Chests.** Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

- 300 Tons A 1, Iron Dale Foundry Iron.
- 100 " 1, " " "
- 100 " 2, " " "
- 100 " " Forge " "
- 400 " Wilkesbarre " "
- 100 " "Roaring Run" Foundry Iron.
- 300 " Fort " " "
- 50 " Catoctin " " "
- 250 " Chikiswalungo " " "
- 50 " "Columbia" "chilling" iron, a very superior article for car wheels.
- 75 " "Columbia" refined boiler blooms.
- 30 " 1 x ½ Slit iron.
- 50 " Best Penna. boiler iron.
- 50 " "Puddled" " "
- 50 " Bagnall & Sons refined bar iron.
- 50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

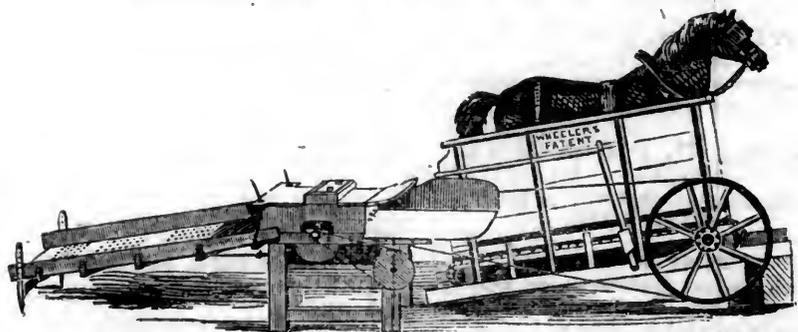
GOODHUE & CO., 64 South street

New York.

Roman Cement,

OF the best quality, now landing from ship **Hendrick Hudson**, from London, made by **Billingsley, Mial & Co.**, and superior to anything of the kind manufactured in England. For sale by **G. T. SNOW,** 109-Water Street, New York.

Railroad Horse Power and Saw Mill.



The above cut represents the most simply constructed Endless Railway Power in use. As shown it is attached to a threshing machine, with which it is most extensively used; but for sawing wood at railroad stations it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12 to 20 cords of four foot wood per day. They have been used several years on several roads in New England, and for manufacturing establishments more than three thousand of these powers are in use, and without exception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satisfaction as above described, or may be returned at my expense, and the purchase money refunded.

HORACE L. EMERY,

Nos. 469 & 371 Broadway, Albany, N. Y.

September 6, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.



Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

TO RAILROAD COMPANIES AND MANUFACTURERS of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Junlata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

Large Pumps.

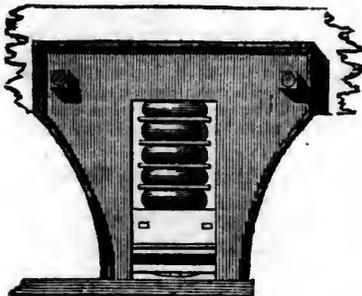
THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevit has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevit, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevit came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models,

however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevit the Agent, at 33 Broadway New York, and of Messrs James Lee & Co., 18 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAURENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.

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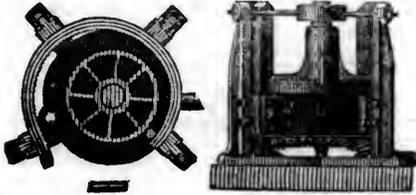
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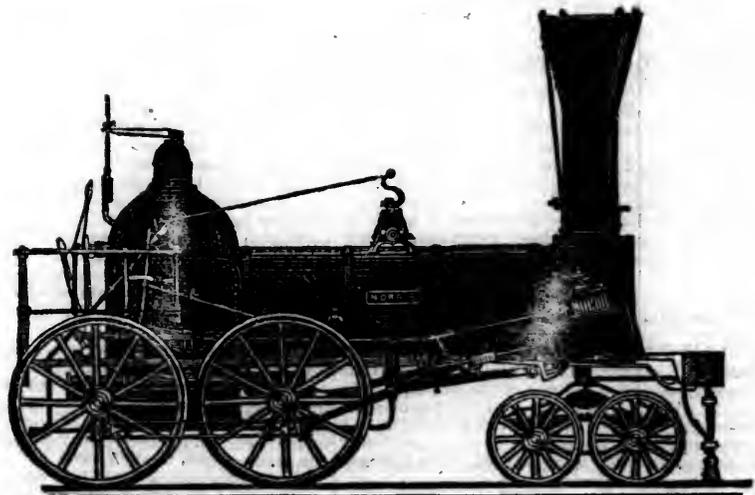
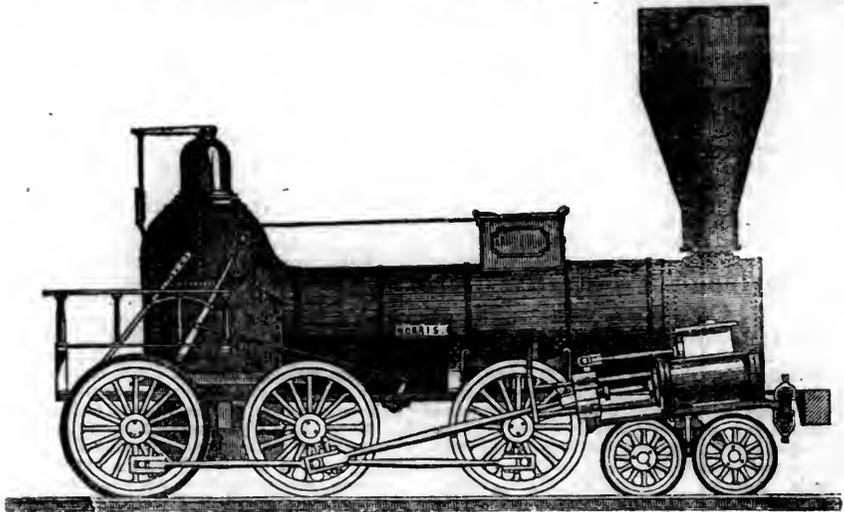
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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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 Mechanic Arts.*
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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, September 29, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 595.

NEW YORK

East Moriah Furnace.—This furnace was built in 1848, four miles back from Port Henry. There being no water power in the place selected, a steam engine was provided of 40 horse power. The stack is 40 feet 3 inches high from bottom of hearth to the filling plate; its diameter across the boshes is 10 feet 4 inches; across the tunnel head 3 feet 4 inches; and its capacity is 1260 bushels. The boshes slope, according to the usual plan of furnaces in this region, in three planes of 60°, 55° and 50°.—The hearth, five and a half feet high, is 2 feet 10 inches square at the bottom, and 3 feet 10 inches at the foot of the boshes; its length to the dam 6 feet 4 inches. The tweres, three in number, come in 22 inches above the bottom of the hearth.

The dam is 5 inches below the tympan, and 15 inches high. There are two blowing cylinders 4 feet diameter and 5 feet stroke, with a regulator 18 feet long and 32 inches diameter—the blast is introduced through nozzles of two inches and three eighths in diameter. The gases for the boiler and heating oven are taken out eleven feet down by one pipe of 22 inches diameter. The upright heating pipes are

28 in number, of circular form, 6 inches diameter inside, arranged on two bed pieces and connected by an ox-bow at top.

The ores are to come principally from the Sanford ore bed two miles distant; and according to a statement in my possession, they are estimated to cost at the furnace only \$1-25 per ton—they must then be delivered at the mine as low as by the contract with Mr. Jackson before referred to. Other ores, as the Hall ore, are estimated at \$2 per ton. Charcoal at six cents a bushel, about the usual cost in this section. Transportation to the lake fifty cents per ton, allowing 170 bushels of charcoal to the ton of iron, and a ton and two thirds of ore at \$2 per ton, we have the following estimate of costs of pig iron delivered at the lake.

Charcoal, 170 bushels at 6 cents	\$10 20
Ore, 1½ tons at \$2	3 33
Flux, say 50 cents, other items \$5	5 50
Transportation, to the lake,	0 50
	<hr/>
	\$19 53

Crown Point Furnace.—Owned by Messrs Hammond and Tower. This furnace is situated in Crown Point, ten miles from the village of this name on the lake shore. It was built in 1815; and has since been steadily run by Jonas Tower, Esq. The result of its operations is given in the table below, and the form and dimensions of the furnace in the accompanying figure. The furnace is blown by a steam engine of 45 horse power.—The blast is estimated in volume, at from 2400 to 2500 cubic feet a minute, blown through three tweres with three inch nozzles, at a pressure of 1½ to 2½ lbs.

Charcoal and wood is the only fuel employed—The coal is prepared in part in kilns in the furnace yard, and partly in pits in the woods. It costs about six cents a bushel. The quantity consumed, as seen in the table, averages 163 bushels to the ton of iron.

The ore bed which supplies all the ore is situated a little less than a mile from the furnace on a hill several hundred feet above it. So convenient is the bed that one team of two horses, I am told by Mr. Tower, draws all the ore, and hauls away beside it the cinder. The unusually low sum of sixty cents is reckoned sufficient to pay for both the mining and hauling of the ore. The hill in which is the mine is made up of a rock of quartz and feldspar, with which some hypersthene is mixed. This rock lies



in stratiform masses, dipping 35° towards the east. Interstratified with it are layers of the magnetic ore, more or less mixed with quartz gangue, but much of it very pure and free from foreign matters.—What the thickness and number of the layers of ore

may be, cannot be ascertained. They are traced over a considerable portion of the eastern and southern sides of the hill, and one of them, not entirely uncovered, already shows a thickness of over 30 feet. It is worked open like a quarry, and is evidently inexhaustible. From its position, high on this steep hill, no trouble from water need ever be apprehended.

Penfield crebed is also conveniently situated near the furnace, being about three quarters of a mile south of the mine just described. Some ore from it has been used in the furnace, but it is principally in demand for the forges, among which it has the highest reputation—the mine being regarded one of the most valuable in the vicinity of Lake Champlain.—It has been opened on what appears to be a saddle, or anticlinal axis of the stratum of ore; as this is seen curving over and dipping both east and west. Its thickness is unknown, but it is evidently very great, and is turning out a very large quantity of ore. The bed is in a granitic rock, and some of its minerals, as mica, hypersthene and chlorite are found mixed with the ore. Much of this, however, is of very pure character, and remarkable for its extremely coarse grain—another variety is very striking for its great lustre, much of it resembles the magnetic ores used in the north of Europe for the manufacture of steel. It is easily mined, and has been followed many hundred feet along its north and south course. At this mine a hole was drilled in the wall rock *nineteen feet deep*, and charged with several kegs of powder. Several thousand tons of rock were removed by the explosion.

There are other mines also in the vicinity of the furnace, one of which, in the adjoining town of Ticonderoga, has furnished some very good red oxide of iron—of the specular variety—were this in quantity it would be valuable for mixing with the magnetic ores of more difficult reduction; but I am informed the vein is not more than a foot or two thick.

What is peculiarly striking in the workings of this furnace is the regularity of its running and production. This is owing wholly to the care and skill displayed by Mr. Tower in its management; for the ore, if it have none of the injurious elements in its composition, so common to the magnetic ores, still belongs to this difficult class of ores to work, it is apparently not very different from many varieties which have caused trouble in neighboring establishments. But by a proper selection and adjustment of fluxes, the cinder is made to run of very uniform composition, clear like glass, and beautifully shaded with many bright colors, among which the prevalence of a light blue indicates the presence of some portion of titanium: this however, is evidently in too small quantity to be of any injury. So well proportioned are the fluxing materials to the impurities of the ore, that the cinder, a compound almost in exact chemical quantities, runs freely without any action upon the hearth, other than the mechanical wearing. As seen by the table, this had stood sixteen months up to the 21st October 1848, during which time there had been run over 4000 tons of iron. The hot air pipes have stood even larger than this, one set having been in use for 23 months, while over 7000 tons of iron were run. These pipes were made of Port Henry iron, which is found to be of the very best character for this use.

The iron made at the Crown Point furnace is not the best for puddling; but it bears a high character as a strong foundry iron. It is produced at the average rate of about eight tons a day, though nine or ten tons are often obtained.

Crown Point Iron Works.

DATE.	FUEL USED.			ORE.		IRON MADE.															
	Coal bushels	Brands bush.	Wood cords.	T. cwt.	PLUX.	Castings T.cwt.q. lb.		Extra No. 1.	No. 1.	No. 2.	No. 3.	Total.									
1846.																					
<i>Blast No. 1.</i>																					
Jan. from 1st.	27,284	2,300	77-99	335	6	3	0	1	14	.....	144	5	27	5	4	5	178	15	1	14	
February ...	24,615	3,355	84-30	341	19	2	13	1	7	.....	145	0	38	15	6	5	192	13	1	7	
March	22,170	4,061	112	335	16	12	16	1	27	.....	98	17	65	7	7	15	184	15	1	27	
	74,069	9,719	273-120	1013	1	18	10	0	20		388	2	131	2	18	5	556	4	0	20	
<i>Blast No. 2.</i>																					
June from 17.	12,925	3,351	10-64	151	10	0	7	1	10	17	15	28	10	6	0	12	0	64	12	1	10
July	23,690	6,401	.....	336	10	9	8	2	9	84	5	33	15	29	5	12	10	174	3	2	9
August	28,338	6,575	.....	392	3	1	10	3	13	123	15	62	15	26	0	.....	214	0	3	13	
September ..	27,885	8,060	19-64	365	7	2	9	2	14	138	10	46	0	34	0	35	0	224	4	2	14
Oct., to 17th..	15,521	4,534	33-9	187	2	7	0	0	21	31	15	66	10	.....	6	0	111	5	0	21	
	108,359	28,921	63-2	1432	12	20	16	2	11	396	0	242	10	95	5	35	15	788	6	2	11
<i>Blast No. 3.</i>																					
Nov. from 11.	17,246	2,517	70-104	274	11	1	17	0	6	36	5	67	15	44	15	.....	147	12	0	6	
December ...	24,910	6,227	160-88	418	13	0	5	3	14	45	0	132	5	49	5	2	10	229	5	3	14
1847.																					
January	24,040	6,010	155-82	410	9	0	7	3	7	115	15	86	0	22	5	3	10	227	17	3	7
February ...	22,740	5,685	142-16	373	18	2	4	3	14	68	10	79	0	42	15	15	10	207	19	3	14
March	29,260	7,210	165-32	415	0	20	19	1	4	4	10	173	10	21	0	11	0	230	19	1	4
April to 9th..	5,423	1,260	60-00	92	8	2	1	2	15	6	0	43	5	2	15	4	15	58	16	2	15
	123,619	28,909	755-66	1984	19	27	16	2	4	276	0	581	15	179	15	37	5	1102	11	2	4
<i>Blast No. 4.</i>																					
June, from 24	7,604	1,430	33	75	0	0	9	2	26	.....	28	5	2	0	.....	30	14	2	26		
July	30,107	6,843	144	524	8	1	7	1	18	78	15	167	0	12	15	6	10	266	7	1	18
August	33,297	7,568	170-33	575	9	3	10	3	23	66	10	202	5	35	5	15	5	322	15	3	23
September ..	37,200	4,255	163-92	515	5	5	7	0	4	147	0	122	0	26	0	.....	300	7	0	4	
October	38,280	3,988	149-68	518	4	1	11	1	18	66	5	189	15	33	0	3	10	294	1	1	18
November ...	37,118	3,905	136-96	431	13	4	4	3	7	3	5	232	10	15	15	16	10	272	4	3	7
December ...	17,908	3,745	46-96	362	4	1	12	2	23	33	0	143	15	10	5	7	10	196	2	2	23
1848																					
January	32,340	9,843	217-20	469	18	0	14	2	7	.....	244	15	14	10	10	10	267	9	2	7	
February ...	30,660	9,920	104-30	424	16	0	10	1	1	13	0	194	0	25	5	7	0	239	15	1	1
March	34,517	8,790	130-22	476	10	1	5	3	0	4	0	194	0	49	0	17	15	266	0	3	0
April	39,013	7,915	98-120	481	12	3	6	2	26	64	0	163	5	93	15	4	10	268	16	2	26
May	40,682	8,833	98-58	512	2	12	4	0	24	113	0	84	5	55	5	18	0	282	14	0	24
June	26,302	7,542	182-98	380	15	1	6	1	23	4	0	146	10	32	5	12	15	196	16	1	23
July	29,731	7,173	152-24	405	7	0	11	2	24	61	10	97	5	54	0	7	15	221	1	2	24
August	30,208	8,708	125-92	470	7	0	9	0	2	12	10	214	0	28	5	.....	255	4	0	2	
September ...	38,172	6,780	70	458	6	1	17	2	4	23	0	139	0	51	15	41	15	257	7	2	4
Oct. to 21....	26,652	9,329	.....	331	2	1	17	1	19	56	0	52	5	48	15	29	15	188	12	1	19
	529,791	116,567	2023-61	7412	18	42	7	2	25	745	15	2551	15	587	15	199	0	4126	12	2	25

RESULT.

Blast No. 1.

Coals per ton, 133 bush. } All the wood used was soft; and about one third of the coals and brands, call-
 Brands " 17 " } ing soft coal two thirds the value of hard, and allowing 1 cord of wood to 50
 Wood " 1 cord. } bush. would be equal to 168 bush. hard coals and brands per ton iron made.
 Per cent. of ore, 55.
 Days of blast, 90.
 Iron per day 6-18 tons.

Blast No. 2.

Coals " 137 bush } All the wood soft; and about one sixth of the coals and brands, reduced as
 Brands " 37 " } above, equal 167 bushels.
 Wood " -08 c'ds. }
 Per cent. of ore, 55.
 Actual days of blast, 112.
 Iron per day, 7-04.

Blast No. 3.

Coals " 112 bush } All the wood soft; and about one seventh of the coals and brands, reduced as
 Brands " 37 " } above, equal 154 bushels.
 Wood " 1 cord }
 Per cent. of ore, 56.
 Actual days of blast, 149.
 Iron per day, 7-4.

Blast No. 4.

Coals " 128 bush } All the wood soft; and about one sixth of the coals and brands, reduced as
 Brands " 28 " } above, equal 163 bushels.
 Wood " -49 c'ds. }
 Per cent. of ore, 56.
 Actual days of blast, 471.
 Iron per day, 8-76.

In the above table it is seen that a portion of the iron produced is called "extra No. 1." This is a quality of foundry iron little known at the different works in the country, though at many of them it is produced in large quantity.—Resembling at first eight more the *hard iron* of No. 3 quality, used for puddling, it is often mixed by mistake with this, causing no little trouble in this process. Its appearance is white and silvery, almost precisely like *high iron*: it is made only when the furnace is working hot; but, as Mr. Tower informs me, great heat does not always produce it. Excepting in two instances—at Middlebury and at Elyrica, Ohio, he has never seen it produced by cold blast; "but it is readily produced with the *hot blast*, where it was, unknown before using it. It is a very valuable iron to mix with hard white iron, or old scrap, to soften it up.—It becomes much stronger by repeated meltings."—Beside the above places, Mr. Tower informs me, he has seen it at *Hanging Rock*, *Jackson furnace*, and some furnaces in *Scioto county*, Ohio, also at the *Katahdin works* in Maine, where it is made in large quantity; at the *Mount Savage* and *Lonaconing works* in Maryland; and at *Port Henry*, where it was for some time mixed with the puddling iron to its serious injury. Specimens of it sent from Port Henry to Lowell Mass, for trial, though condemned beforehand for casting, proved of very superior character for this use.—From the frequency of its occurrence it is important that founders should learn to recognise it, as much good pig iron has certainly been condemned at many furnaces, because it proved difficult to puddle, a use it would never have been put to, had its true nature been suspected.

It is sometimes called "highly carbonated (carburetted) iron," a name evidently given it in the old impression that the Nos. 1 and 2 contained more carbon than the high iron; and this iron is considered by those who are acquainted with it, as the most carboniferous of all the varieties. From the conditions under which it is produced and its qualities as a foundry iron, it no doubt does most resemble this in composition, and consequently contains a *small* proportion of carbon; but from the color and lustre of the iron, this carbon appears to be combined with the metal, and not mechanically mixed with it, as in the foundry irons.

The cost of pig iron manufactured at this furnace, according to the data given above, will be as follows.

Ore, 1½ tons at 60 cents.....	\$1 05
Charcoal, 163 bushels at 6 cents.	9 78
Fuel, say 50 cents, other items \$1.....	5 50
Transportation to the lake.....	1 25
	\$17 58

Mount Hope Furnace.—This furnace, owned by E. Woodruff and Son, is situated in Washington County, twelve miles from Whitehall at the head of Lake Champlain, or nine from the canal at Fort Ann, and four miles from South Bay. It was built to use some magnetic ores, that are very abundant within six or eight miles; but as these proved troublesome, and of little value from the large percentage of sulphur they contain, the supplies were finally brought from the mines near Port Henry. These cost, as before stated, on the shore of the lake from \$2 50 to \$2 80 a ton, and the transportation by boats to Fort Ann, and thence in wagons to the furnace is a dollar and a half more, making the whole cost not less than \$4 25 per ton. With them is mixed a certain proportion—about ten per cent., of the Whitehall ores.

The furnace is well built and provided with ne-

cessary apparatus including hot blast pipes; but its production has never been very great. The stack is 40 feet high, and the diameter across the boshtie nine feet—of the tunnel head three and a half feet. The hearth is seven and a half feet high and thirty inches square at bottom. It is blown by water power, with one cast iron cylinder and a water regulator, through three twers with two and a half inch nozzles. Charcoal is abundant, and costs about five and a half cents a bushel. The yield of iron is from four to five tons a day. It is of Nos. 1, 2 and 3—of good quality, both the forge pig and foundry iron.

Rating the ore to the ton of iron at \$7, and 160 bushels of charcoal to the ton, these two items come to \$15 80; to which adding for the other items the usual allowance of \$5 or \$5 50, the pig metal costs about \$21. At the works, connected with the furnace property, are 3000 acres of land and about 21 dwelling houses.

Virginia and her Resources.

Having recently returned from a trip through the interior of Virginia, and taking considerable interest in the public improvements of this country, I will endeavor to give you and your readers a schedule of the present and proposed public works of this State. First upon the list, from its importance, comes the James river and Kanawha Canal. This extensive work has been so long under course of construction from various causes, that the inhabitants generally of the southwestern portion of the State, have scarcely any knowledge of the present immense works that are going forward on the extension of this important improvement from Lynchburg to Buchanan, 52 miles. From Richmond to Lynchburg, 146 miles, the canal traverses one of the most fertile and picturesque valleys in this country. This, however is not the case with the extension. From Lynchburgh, westward until the canal reaches Buchanan, (with one or two exceptions,) the valley of the river is narrow and bounded on both sides with high mountains, rendering it extremely difficult in many places to find ground to build a towing-path upon. The works, many of them, are very extensive. The extension chiefly consists of a series of locks and dams, one of which, the Judith Dam, 4 miles above Lynchburg, is, I believe, the heaviest piece of masonry at present in course of construction in the United States. The dam is intended to raise the water in the river 32 feet; thereby securing a navigable reach of 5 miles. There will be, I was informed, nearly 20,000 cubic yards of solid masonry in this work and its appurtenances, and the cost of this alone, will be one hundred thousand dollars. From this place to the mouth of the North River, the valley is extremely narrow, and at present, very unhealthy; so much so, that the work is very much delayed for want of workmen, although the contractors offer \$2 50 per day, and steady work, for masons. At the junction of the North with the James river, 30 miles above Lynchburgh, the company have constructed a large dam, and are using the water power for the purpose of driving their cement mills.—They manufacture their own cement, and from the samples I examined, I think it will compare most favorably with the best Rosendale cement. The contractors for manufacturing this article, Messrs. C. H. Locker & Co., are at present making 1000 bushels a day at this place, of a superior quality. They have also another mill some miles distant upon the river, where they also manufacture a large quantity. All of the improvements upon the extension are of a solid and substantial character, and are in this respect far superior to the works west of

Lynchburg. The engineer in charge of the division west of Lynchburg, D. S. Walton, Esq., has been long connected with the public works of this country, and has, I believe, been for several years past engaged upon the ship canals of Lower Canada.—The appointment of Mr. Walton to the charge of the extension is, from his known reputation, sufficient guarantee of the permanent character of the work.

At Buchanan and Pattonsburg the canal reaches "the valley," and will, I have no doubt, when completed to these villages, receive a large addition to its present tonnage. The tide water connection recently let, will also contribute materially to its success. The next division from Buchanan to Covington, a distance of 40 miles, will, I learn, be let some time next year. From this place across the Alleghanies, to the head waters of the Kanawha, it is not as yet, I believe, decided whether the extension shall be, by canal or railroad. From Lynchburg to Covington, the canal traverses a region of country that is rich in its mineral wealth alone.—There are at present very many iron furnaces in active operation, and from the great facilities that will be afforded by the canal when finished, we may expect to see many more in operation. The iron deposit is boundless, and as fuel and all the necessary materials for manufacturing are at hand, and at slight cost, iron can be manufactured in this portion of Virginia so as to compete with any other part of the United States. I was informed that when the canal is completed to Buchanan, the iron manufacturers will save \$3 per ton in transportation alone—as the transportation of this article, and also others, is now done in "Batteaux," at a cost of \$4 per ton to Lynchburg, where the most of it is transhipped to canal boats. I had the pleasure some few days since of visiting the *Ætna Furnace* (not blast) of Messrs Allbright, Sherrerd & Co., some 3 miles from Buchanan. I found their works to be the most extensive, and at the same time, the best managed and conducted works I have ever seen in Virginia. They have shown a spirit of enterprise in the construction of the railway to their mines that alone should insure them success. Their ore bank is situated on the extreme top of "Garden Mountain," 9½ miles distant from the furnace, and elevated 2,000 feet above it.

The vast expense of transporting the ore from this great height and distance to the furnace by means of horses and wagons, rendered it necessary for them to devise some cheaper mode. The only way in which this could be done was to build a railway, and they with true northern spirit, and at an expense of some \$12,000, commenced and completed a work that will well repay a person for a visit. As before stated, this road is 9½ miles long, and ascends to the mine 2,000 feet—1400 feet of this great elevation is overcome in the last five miles—the maximum grade being 5 feet per 100, and the minimum curvature 30°. Almost any other persons would have been discouraged by looking at the formidable mountain they were obliged to ascend. The location of the road upon the most vertical face of the mountain displays great judgment upon the part of Dr. Sherrerd, who had the entire control of it. They were obliged in order to get distance sufficient to overcome the great ascent, to build a switch line, and there are 3 of these, each one mile in length. As you reach the top of the mountain and look back, the whole road is distinctly visible from the base of the mountain to your feet, and it is indeed a singular sight to see the crooks and turns of it as it follows the projections and depressions upon the face of the moun-

tain. They are enabled by means of this road to compete with any other furnace in the country, and they make at present in one furnace 50 tons per week. I was much pleased to see even such a rail road in the interior of Virginia, and I hope it is but the predecessor of many others (if not of a like character) of such a one as will develop the immense (at present dormant) resources of this truly favored State.

The Great Virginia and Tennessee line railroad from Lynchburg to the Tennessee line near Abingdon, now engrosses the attention of the leading men in this portion of the State. I am sorry to learn that a considerable amount of stock, \$70,000 yet remains to be subscribed in order to secure the splendid amount subscribed by the State. The city of Lynchburg, with only 8000 inhabitants, all told, white and black, stepped forward gallantly, subscribed and became security for the interest upon a subscription of \$500,000. But even with this splendid example before them, the people, the most to be benefited by this great improvement, still hold back, and the State subscription may yet be lost. There was a convention lately held at Christianburg, at which I was present, and was surprised to see so much apathy existing among those who are perfectly able to subscribe, and who are most deeply interested.

If a railroad with the assurance that this has, of being one of the best paying roads in the Union, was started among the eastern people with a State subscription of three-fifths its capital, the remainder would be taken in 24 hours. Yet at the convention able speakers and gentlemen who commanded the utmost confidence of the people, were unable to get a single share subscribed, although at that time only \$90,000 was required to secure the road. The region of country traversed by this route is rich in every thing.

It is without exception one of the best agricultural portions of the State, and its mineral wealth is indeed wonderful. Iron, lead, copper, gypsum, coal, salt, and every mineral in use abound; but they are at present worthless, as the cost of transportation by teams is so great that it is impossible to send off the manufactured article. Yet with this railroad all these great mines of wealth will be opened and who can compute the results? The road is also designed to connect at the Tennessee line with the East Tennessee and Virginia railroad running to Memphis.

It will also connect with the Richmond and Danville road, and eventually crossing the James river, will connect with the Louisa railroad, and thence by the Alexandria and Gordonsville road, give a direct railroad communication (with the exception of 6 miles between Alexandria and Washington,) from Memphis to Baltimore, Philadelphia and New York. It will become, when finished, the great route for the immense southern travel, and from the healthy character of the country it runs through, and its many attractions in the shape of beautiful scenery, and the celebrated Springs of Virginia, will certainly command all the pleasure travel from the south to the north and vice versa. The road also can be constructed so, say the estimates of competent engineers, for \$14,300 per mile, with a rail of 50 pounds to the yard, being less than one-half the cost of the New England roads, and only one-third the average cost of all the roads in the United States.

The maximum grades are even over the 'Blue Ridge' and the 'Alleghanies' (the heretofore supposed insurmountable barriers), only 68 feet per mile, and the minimum curvature 600 feet radius. When

I look upon the rugged and barren hills of Maine, New Hampshire, Vermont and Massachusetts, and see them cut up with railways, constructed at a cost of 30 or \$40,000 per mile, where there is not enough produce raised to sustain the inhabitants, and no mineral wealth, and contrast with them the portion of Virginia traversed by this proposed road, that can be constructed at so small a cost, and which will develop such sure resources of a large revenue, you need not think strange if I wonder at the apathy that exists along its line. The able President of the company, Gen. O. G. Clay, is, however, sanguine of success, and will, I trust, be able to carry out this great work.

The road has been confided to good hands, and will, I trust, be carried forward to a successful completion. Notwithstanding the great indifference that exists with regard to the road at present, the surveys are going forward under charge of Col. C. F. M. Garnett, as Chief Engineer, and I was informed by him that the company intend letting 60 miles (to Salem) this fall. That this great work may be carried forward and vigorously prosecuted to an early completion, is very desirable, as it will serve to open the eyes of many who will not see at present, where their best interests lie.

The Richmond and Danville Railroad is moving forward rapidly and it will, I believe, be in operation next spring. The Louisa railroad is already completed to Charlottesville, or nearly so; and the extension from the junction to Richmond, is being pushed forward rapidly. The State Tunnel through the Blue Ridge, in connection with the Staunton road will open to this road a boundless source of trade, and it will, in a few years reach the Ohio river, thereby securing to Richmond her portion of the western trade.

Petersburg is also in the field, and with the State and her subscription, will be enabled to complete the South Side railroad, which is intended ultimately to connect her with the Virginia and Tennessee railroad. She has already the Richmond and Petersburg railway, giving her railway connection with the north—the Petersburg and Roanoke railroad (now relaying with a heavy rail) giving her connection with the south—the Clover Hill railroad giving a railway connection with the inexhaustible coal fields of Chesterfield; and the Appomattox railroad, giving a connection with tide water at City Point. Norfolk and Portsmouth are also beginning to wake up, and a railroad is spoken of to run direct to the Virginia and Tennessee road. The Portsmouth and Roanoke railroad, after a long resting spell, is now being relaid with a heavy rail, and they expect also to reach the line of western improvements.

A railroad to run from Richmond direct across to the head of York River or bay, is in contemplation, thereby giving to Richmond a superior tide water connection at that place.

The Alexandria and Gordonsville railroad has already been laid before your readers in a previous publication. Suffice it at the present time to say that the road is going forward vigorously.

The Richmond, Fredericksburg, and Potomac road has been too long before the public to be classified among the new internal improvements. The Rappahannock Canal, terminating on top of the highest land in Fredericksburg, with tide water some hundred feet below, is also in operation.

The policy of thus terminating long lines of internal improvements on the top of the highest land, in the neighborhood of the termini, is, I must confess, a policy I cannot fully understand, and one

that I feel confident is not practised in any other State but Virginia, and even she has awakened to her error in this respect as the recent letting of the tide water connection at Richmond fully proves.

Virginia has slept, but she awakens refreshed by her slumber, and will ere long be where she should be, not only among the first of the internal improvement States, but in the front rank as a political State.

R.

Ohio.

Central Railroad--Eastern Extension.—The *Granville Intelligencer*, concludes a very sensible article, advocating the Licking Co., subscription, with the following paragraph:

We will say, however, that before our citizens vote money for this object they should have some assurance that the road will be built between Zanesville and Wheeling. How is this, friend Layman; can you tell us what is being done towards that object? Our citizens would like to hear something about it.

We cannot offer a better answer to these queries, than is given in the concluding paragraph (and only one touching that point) in the report submitted by the President, Col. Sullivan, to the late meeting of Stockholders, and by the latter accepted. It is appended, and we hope that it will be satisfactory to our Western friends. Col. S. says:

"There is much interest felt in the extension of our line easterly from Zanesville, that it has been thought advisable to invest the Agent of the Company (who is canvassing the country for subscriptions to be used on the West end of the road) with power to collect subscriptions for the Eastern division of the work, to be used exclusively in that direction so soon as circumstances shall justify. Viewing the anxiety of the Central Ohio to make, at an early day, an eastern railway connection, aware that if we do not furnish facilities for such a connection, some other route will, and also in justice to the citizens of the eastern division of our county, good policy, and good faith dictate an extension of our line to the Ohio river as soon as practicable.—*Zanesville Courier*.

Cleveland and Pittsburg Railroad.

It gives us great pleasure to learn that a contract has been completed with Messrs. J. & S. Chamberlin & Co., of Vermont, for the entire completion of our road, ready for the running of the cars, from Cleveland to the Ohio River. Sixty-five continuous miles from Cleveland to the mouth of Hahn's Run, on the Sandy, to be completed by the fall of 1850, and from that point to the River in one year from that time.

The ability of Messrs. Chamberlin & Co., to complete the contract, notwithstanding it is large, is not doubted. They have been largely engaged on Public Works, for the last fifteen years. They had work on the Pennsylvania and Ohio canal, near our place. From here they went to the Erie Extension Canal, and completed heavy work there.—Their next work was on the Wabash and Erie Canal; and although heavy, was promptly completed. From there they went to Canada, and completed under Government, heavy work on the St. Lawrence Canal. Their next work was seventy-two miles upon the Rutland Rail Road, amounting to near a million of dollars; this work they have just completed. They have seventy-five miles of the Ogdensburg Rail Road, which they will complete early next summer, which will amount to nearly as much as their Rutland contract. We have not time to say more at present—but will recur to the subject again.—*Portage Co., Whig*.

New Hampshire.

Opening of the Cocheo Railroad.—The opening of this road from Dover to Farmington, N. H., a distance of 18 miles, took place on Tuesday 18th inst. The road is built upon a ridge rising from the valley of the Cocheo river, thus giving to passengers a very fine and extensive view of the country along the line. It is proposed to continue the road as soon as practicable to the head of Alton Bay; thence along the southern and western side of Winnipisogee Lake to the Weirs, there connecting with the Boston, Concord and Montreal railroad. There

is also a road in progress from Portsmouth to Dover, to connect with the Cohecho.

According to the surveys, this line of road brings Montreal and other places on the route, some 55 miles nearer the seaboard than any of the proposed routes.

The length of the road from Dover to the Weirs is 44 miles, of which between 15 and 16 miles are level, 17 at a grade of less than 26 feet, the remainder, about 9 miles, varying from 26 to 60 feet.—From Dover to Farmington, the present termination of the road, there is not a losing grade, and the cost of the road has been something less than \$20,000 per mile.—*Traveller.*

Boston Concord and Montreal Railroad.—We last week reported the earnings of this road, for the month of August, at \$9000. We are informed by the Treasurer that the amount was not correctly stated, the earnings have been as follows:

Total receipts.....\$15,574 90
Less paid to connecting roads.. 5,301 02

Net.....\$10,273 88

We understand that ten miles more of the road is soon to be put under contract, which will carry it to Warren Village, 14 miles from Haverhill.

Tennessee.

Nashville and Chattanooga Railroad.—We copy the following from the Nashville Union, relative to the progress of the above road.

"It is now all under contract from this place to the Tennessee river, and the contractors will be required to complete the grading so that the road will be ready for the iron, which is expected to arrive early next spring. During the next year, some fifty or sixty miles of the road, commencing at Nashville, will be completed, and the cars placed on it. This is a most gratifying prospect, and it will no doubt incite the stockholders to the prompt payment of the calls of the company. It should also be regarded as of vast importance to our City: as hastening the day when we are to become a great commercial and manufacturing City. Rapid as has been the recent growth of Nashville, the first year of its advance after the completion of the great work to which our corporation so wisely lent its aid, will outstrip in its results any ten years of its previous progress.

While upon this subject, we may remark that the citizens of North Alabama are already moving to secure a connexion with our road by a branch road from Huntsville. The point at which this connection should be made is evidently at Nashville. Our road, it is true, might be reached at a point much nearer to Huntsville, but as the people of Williamson, Maury and Giles, three of our wealthiest counties, will also need a road, the connection by the way of Pulaski, Columbia, and Franklin, would be the easiest made and the most profitable. Besides, a part of this road would be also a part of the one which is destined soon to be constructed from Nashville to Memphis, and perhaps eventually, from Memphis to the Pacific ocean. We want then only a road from Cincinnati to Nashville to connect us with the entire chain of Northern and Eastern railroad and canals, by the way of Sandusky City, Buffalo, etc., as we shall be already connected with the Southern and Eastern works, by the way of Charleston, Richmond, Baltimore etc. Virginia is pushing her road to the East Tennessee line, and our neighbours of that section of the State will, we cannot doubt, extend the work until it joins the Georgia road, and thus connects with ours. We are making no extravagant predictions. Most of the works we have referred to are already in progress; and he who lives ten years longer will live to see them all completed. Nashville will then be the great central city from which all these roads will diverge, and it is past the power of human calculation to predict its rapid advance and its boundless prosperity."

Georgia.

We copy the following letter from the Chattanooga gazette, in relation to the probable course of trade in Tennessee, after the completion of the Western, and the Nashville, and Chattanooga road.

FORT HILL, GILES CO., (TENN.) AUG. 29, 49.

Mr. Parham:—We are glad to learn through the Gazette that the railroad will be completed this fall

to the river. Our citizens are unanimous in desiring to change the current of trade from New Orleans to the South, and are willing to send this fall and winter the whole of their surplus produce—Cotton, Corn, Bacon, etc., to Charleston, Savannah and Augusta.

We can send from Elk river twenty thousand bales of cotton, and the amount of bacon, corn, oats, flour, etc., cannot be well calculated.

Some of our enterprising citizens contemplated erecting a pork packing house, with the expectation of shipping to Charleston and Savannah.

Two of our citizens also, are holding themselves in readiness to bring a light steamboat into the Elk river trade, the moment our citizens determine to change their trade to the South. The only difficulty which will stand in the way, after the completion of the road, is the heavy freight of the railroad. The rate is too high for our people. It is a little more than double the freight to New Orleans. One of our neighbours, last season, sent one half of his cotton crop to New Orleans and the other half to Charleston, and although he got the best price at the latter place, yet the half sent to New Orleans yielded him the best profit.

If the railroad proprietors can find it to their interest to reduce the rates of freight, you may look for us in your town as soon as our cotton is baled.—The penny postage in England increased the receipts in that department, and the reduction in postage is about producing the same results in our own country, and might it not have the same effect in the railroad interest?

We have anticipated, with some enthusiasm, the change of trade from New Orleans to Charleston and Savannah, by the way of your railroad, and nothing but compulsion will drive us down the Tennessee river instead of up it, and we shall relinquish with much reluctance, the idea of freighting on your road to these great marts of trade.

Ours is a rich, fertile valley, abounding in every useful and convenient commodity, and the amount of produce we can send down our beautiful little stream is incalculable; and its influence will be felt upon any road or in any market. In Giles county, alone, our surplus produce amounts to one million seven hundred and fifty thousand dollars, and this, too, with every inconvenience of getting to market. It will be more than double when the route is opened to your markets.

I expect our citizens will send a deputation to the proprietors of the road, to ascertain what can be done in reference to the reduction of freight. We are more than anxious, as it will be greatly to our advantage to take your route to market,

Iron Manufacture in Georgia.

We make the following extracts from a letter of the editor of the Macon Journal, who has recently made a tour through the northwest portion of this State, and whose observations have been published in a series of instructing letters. In speaking of the iron manufacture of that State he says:—

"The Etowah Mills are located on the Etowah river, a few miles from Cartersville, on the Western and Atlantic railroad. They consist of two extensive furnaces, a rolling mill, a nail factory and machine shop. The nail factory and machine shop are not yet in operation, though the building is in process of construction, and Major Cooper is now at the north procuring the machinery. It is expected that it will be on hand and ready for use by the first of January, when they will be enabled to make from three to four tons of nails per day. This branch of business, it is anticipated, will be profitable.

The furnaces, known as the Etowah and Alatoona, are situated about two miles from the rolling mill. The former belongs to Messrs. Cooper and Wiley, and the latter to Messrs. Stovall and Lother. At these furnaces the ore is taken in its crude state and converted first into what is termed, "pig iron," and then into every variety of hollow ware, mill and gin gearing, etc. Allatoona Furnace is situated on the Allatoona creek, about 1 1/2 miles from its mouth, and 2 1/2 miles north of the celebrated "Allatoona Old Town." There are employed here about 75 hands, who turn out, every 24 hours, about 1,500 pounds of hollow ware, and 4,500 pounds of pig metal—making together about 6,000 pounds. The

ore here is convenient to the furnace, as well as the coal—the distance which they are brought being only three-quarters of a mile to two miles. The ore which they are at present working at this furnace, yields 50 per cent. of pure iron; and they have recently discovered a quality which is said will yield 75 per cent. The proprietors dispose of their pig iron mostly to the Etowah company; but, being within 2 1/2 miles of the railroad, they enjoy peculiar advantages for supplying distant purchasers. The Etowah Furnace is pretty much a counterpart of one just described. I shall, therefore, omit a minute description.

In this branch of business, there are employed about 30 operatives, who are divided into two gang; and work night and day, producing about 6 tons of merchantable iron every 24 hours. There are daily consumed in the mill about 25 cords of wood and 350 bushels of charcoal. There are also planing machines, turning lathes, and several blacksmiths' forges, which are constantly in operation in making mill spindles, gudgeons, etc., and in finishing such portions of the castings as are intended for machinery. It is in contemplation, we understand, very greatly to extend the business in the machine department, and a building is now being erected for that and the nail factory, which is 150 feet in length by 40 feet in width.

There are employed, directly and indirectly, about this establishment, over 200 hands, who, with their families, consume per week 200 bushels of corn, 30 barrels of flour and 1,000 pounds of pork, besides fresh meats, poultry, vegetables etc.

About half way between the rolling mill and the railroad is the celebrated Etowah flouring mill—one of the best in the south. This mill is said to have cost \$50,000 and is capable of producing 200 barrels of flour per day. It is also owned by the same company, and, I regret to add, is now doing but a limited business, in consequence of the almost total failure of the wheat crop in this region.

I have not the data upon which to estimate the precise amount of capital invested in these various establishments, as I have not been able to see either of the proprietors. It cannot, however, be much under Two Hundred Thousand Dollars.

Industrial Heroes.

Richard Arkwright, it would seem, was not a beautiful man; no romance here, with haughty eyes, Appollo lip and gesture like the herald Mercury—a plain, almost gross, bag-cheeked, pot-bellied Lancashire man, with an air of painful reflection, yet also of copious free digestion;—a man stationed by the community to shave certain dusty beards, in the Northern parts of England, at a half-penny each. To such end, we say, by forethought, oversight, accident, and arrangement, had Richard Arkwright been, by the community of England and his own consent, set apart. Nevertheless, in strapping of razors, in lathering dusty beards, and the contractions and confusions attendant thereon, the man had notions in that rough head of his; spindles, shuttles, wheels and contrivances plying ideally with the same; rather hopeless looking; which, however, he did at last bring to bear. Not without difficulty. His townsfolk rose in mobs round him, for threatening to shorten labor, to shorten wages; so that he had to fly with broken washpots, scattered household, and seek refuge elsewhere. Nay, his wife too, as I learn, rebelled; burnt his woollen model of his spinning wheel; resolute that he should stick to his razors rather; for which, he decisively as thou wilt rejoice to understand, packed her out of doors. O reader, what a Historical Phenomenon is that bag bellied, much enduring, much inventing man and barber? French Revolutions were a brewing; to resist the same in any measure, imperial Kaisers were impotent without the cotton cloth of England; and it was this man that had to give England the power of cotton.

Neither had Watt, of the Steam Engine, a heroic origin, any kindred with the princes of this world. The princes of this world were shooting their partridges; noisily in Parliament, or elsewhere, solving the question—Head or Tail? While this man with blackening fingers, with grim brow, was searching out, in his workshop, the Fire secret; or, having found it, was painfully wending to and fro, in quest of a "monied man," as indispensable man-midwife of the same.—*Carlyle.*

AMERICAN RAILROAD JOURNAL.

Saturday, September 29, 1849.

A New Plan for Building a Railway to the Pacific.

In a few weeks two large conventions are to be held on the Mississippi river, one at St. Louis and the other at Memphis, to consider the subject of a railway from these respective points to the Pacific. They will constitute the first grand demonstrations in reference to this measure that have yet been made—and their action will impart an additional impulse to the public mind, which now demands the immediate commencement of this great work; and as we have reason to expect that the next Congress will take definite action in relation to it, any suggestion or plan which may aid in securing the adoption of the best mode by which the work may be accomplished, becomes valuable. For the purpose, therefore, of rendering such aid as may be in our power, we respectfully submit to the public consideration the following

PLAN FOR BUILDING A RAILWAY TO THE PACIFIC.

In the first place, we premise, that we believe it to be the wish of every citizen among us, that, if possible, the road should be built with the proceeds of the sale of the public lands, and that so strong is this feeling, no other source will be resorted to till these shall be found to be inadequate. We shall, therefore, assume this point, that the public lands are to furnish means to build the road.

In the second place, we believe that the public mind is equally decided upon the point, that the general government should have as little connection as possible with the construction and management of the road; for the reason, that government cannot directly construct it without an enormous waste of money, and that if under its immediate control, it might be made the instrument of vast political power, consequently of corruption. And as it is in harmony with the genius of our institutions, to entrust only so much power to our government, as may enable it to accomplish the objects for which it was instituted, it will be only as a last resort, and not till every other plan shall be found impracticable, that our people will authorise the general government to undertake directly the construction of this work. On both of these points we sympathise fully with the popular sentiment of the country, and we believe that the work is in fact practicable only when built upon a plan which is in harmony with the popular will.

In the first place, therefore, we propose that government should set apart the proceeds of the sale of the public lands, from and after the first of January next, to constitute a fund for the building of a railway from the Mississippi to the Pacific.

In the second place, the general government should authorise the several States to appoint one of its citizens, who shall constitute a board of direction of said road, and who, and their successors, shall for certain purposes, be constituted a body corporate, and to a certain extent, amenable to the laws of the United States, and such states through which the road shall run, both for the protection of the rights of individuals as well as the rights of said corporation, and shall possess those powers in the construction and management of the road, as are usually possessed by the directors of railroads throughout the country. The term of office shall be so fixed by the general government, that one-third or one-fourth of their number shall go out of office each year, their place to be supplied by the several States in which the vacancy occurs. The appointing pow-

er of the directors shall always reside in the States, each of which shall appoint an equal number, who on their appointment being duly certified, shall be commissioned by the President, and shall receive a stipulated sum for their services, to be paid out of the road fund. The road when completed shall always remain the joint property of the States, to be forever managed by a board of directors appointed as aforesaid, and only such rate of toll shall be charged as may suffice to run and maintain the road.

Such are the general outlines of the plan. We propose now to consider it somewhat in detail, examine how far it is in harmony with the propositions which we laid down in the outset, and state some of the arguments in its favor, and endeavor to remove such objections as may be made to it.

This plan, in the first place, completely precludes all possibility that the road should be made an agent or instrument of political influence and corruption by the general government, from the simple fact, that this power would possess no improper control over the money to be expended in, or over those entrusted with, the construction and management of the road. It would be equally impossible for the several States to exert any improper influence. The great political parties into which this country is divided, are so nearly equal, that if the State governments should appoint their political adherents, the political character of the board would always be nearly balanced, and constantly changing, to correspond with the oscillating state of popular opinion, which would render any scheme for political aggrandisement or intrigue, requiring any length of time to mature to carry out, impossible. But when we take into consideration that each State would be more interested in the completion and proper management of the work, than in any improper collateral or incidental advantage to be derived from it, and the laudable ambition that each would have of appointing its best men to the direction, and of making itself felt through the influence of high scientific and moral qualities of its representatives, than by low intrigue; and the perfectly independent position of the directors, and the absence of all power to abuse their trusts, or temptation to do wrong, we cannot conceive how any body of men can be constituted, with whom may be so safely trusted the vast responsibilities of this great work. This plan then, we think, is more unobjectionable than any other proposed, on account of the political influences to be feared from it; and has this to recommend it, that it makes the interest of the directors and the public identical—while in all others, public and private interests come into direct collision.

The proceeds of the public lands, after being paid into the treasury, should be held in trust by the government, as a fund for the road. Until this fund is wanted, government, to prevent a large accumulation of money in the treasury, should be authorised to use this money for its ordinary expenses, for which the road should have credit to the amount so used, to be returned whenever wanted. If thought expedient, the directors might be authorised to withdraw certain public lands from sale for a given time, either upon the line of said road, or in any other place, as may have a great prospective increased value, for the purpose of increasing the means for the work. But all land so reserved should be sold at public auction; and the money for these, and all the money in any way applicable to the road, shall be paid into the treasury, to be drawn out only in a legal manner. If it should be found that in the progress of the work, the public lands did not furnish means sufficiently last for the work, then gov-

ernment might advance such deficiency, charging it to the public land fund to be eventually reimbursed from this source. This plan, therefore, proposes to draw the means for the road from the proper source, and would to a certain extent create the necessary means from the increased value it would impart to the lands through which it would run; the proceeds of which, as well as of all the other public lands would, we think, furnish the means as fast as they could be economically expended. But in case they should fail to do so, the additional aid furnished by government, anticipating such revenue would always secure the prosecution of the work.

The source of this fund, the public lands, would remain under the management of the general government. All lands the value of which would be affected by the road, should be sold at auction. As far as practicable all the work on the road, and the furnishing of all material should be let at auction, to be paid for when the contracts are executed by drafts upon the treasury of the United States, vouched, and as the United States would always have the custody of this fund, there could by no possibility be any loss, or misapplication of it.

The road, when completed, would represent a great fund, in which each State would be equally interested, and from which, by the low rate of its tolls, each would derive as substantial benefit, as if it received in money its proportion of the actual difference between the amount charged by this and dividend paying roads, by the diminished cost of articles of consumption carried over it, and the great cheapness of travelling. The railway systems of each State would be gradually connected with this as a great trunk line, and thus the bonds of our union would receive all the strength that mutuality of interest could give, while the care and management of this great work, requiring the co-operation of all the States, would promote a more intimate acquaintance between the different sections of the country—a more frequent interchange of the kind offices and hospitalities of life—and, more than all, an uniformity of ideas, which is the true bond of all political union.

The selection of the route we think should be left to the directors of the road. In deciding this point, the representatives of each State would be just as likely to carry out its wishes, as its delegation in Congress, and would be much better qualified to decide upon the claims of rival routes than members of Congress, for the reason that the board of direction would probably be composed of men of experience in railway affairs, and who would have before them, from inspection of the routes, and from the results of actual survey, the proper evidence upon which to base a decision—evidence that members of congress cannot be supposed to possess.—Should Congress assume the decision of route, it would not only be much more likely to decide wrong than the directors, but from the great benefits it is supposed the road will confer upon the section through which it shall run, and the point of its eastern terminus, this decision would not probably be effected without much political intrigue and corruption—all of which will be avoided by the above plan.

The work would be of too great magnitude to be under the direction of one engineer. A corps of engineers should be constituted, each one of which should have the care of particular sections of the work. This corps should hold regular meetings, at which questions of great magnitude, arising in the progress of the work, shall be determined by the decision of the majority. Each engineer therefore would be able at all times to avail himself of the ad-

vice and counsel of his brethren employed on the road. This would give us every assurance that we could have that the engineering of the road would be done in the best manner possible.

The board of directors should annually hold a meeting at the seat of government, on the 1st day of January, and at other times if necessary, for the transaction of the business of the road. Its meetings should always be public, and all its proceedings, as well as everything relating to the construction of the road, should be made a matter of record—a certified copy of which should be deposited with Congress. The directors should make reports of their proceedings direct to Congress, at such times and as often as this body shall determine. Congress should also have the right of determining what amount of compensation should be paid to directors, and all persons employed upon the road, and should have the power to remove any director for cause shown, and should generally have such supervision over the road, and over the action of the directors, as may be necessary to protect its own right and those of the public, and best conduce to the interest of the road.

A work like the one proposed, should be constructed in a manner to correspond with the office it is to perform. True economy will dictate liberal expenditure of money in the outset on the permanent works on the road, such as grading, bridging and stone work of every kind. All these should be as lasting as the ground over which the road will run. A most comprehensive plan will be required in every thing that relates to the road and to the facilities for the accommodation of its vast business, to meet all these wants, such as only can be matured by men of distinguished ability and experience, executed by no less a power than the general government. It will be a work for ages, and all its characteristics should harmonise with its design. Those entrusted with its execution will have more regard to its real and permanent value than to the haste with which it can be opened for use, while if it should be made a subject of private enterprise, the great object will be to open it in the shortest possible time and at the least expense; so that the imperfect manner in which it would be built, would render it unfit for any useful end.

Finally, this plan would secure the construction of the road sooner than any proposed, or any that we have been able to conceive. The board as a corporate body, would have a perpetual existence, tho' the term of office of each member would be limited. The directors, therefore, could have no temptation to prolong the completion of the work for the purpose of the longer remaining in government employ.—They would, on the contrary, have every motive to press the work forward with all the vigor consistent with the best economy; and as they would always have ample means at their control, and as the large number of which the board would be composed, would allow the appointment of numerous sub-committees to superintend the different sections of the work, and the various matters connected with it, we cannot conceive of any organization which would be so effective to the completion, at the earliest moment, of this great work.

Such are the general features of the plan which we submit to public consideration. We have not room, neither is it necessary that we should, at the present time, develop its details at greater length. They will naturally suggest themselves. If upon examination the plan should be found impracticable, it may render some service by turning public attention in a direction that is so; if on the other

hand, it possesses merits, we have no doubt they will receive such consideration as they deserve.

H.V.P.

Cleveland Ohio.

A vessel of about 400 tons burthen, called the Eureka, is loading in this port direct for San Francisco, having obtained permission from the British Government to pass through the St. Lawrence.

New Hampshire.

The Belknap Gazette says there is a fair prospect that ten miles more of the Montreal Railroad will be put under contract very soon. This will carry the road to Warren Village, fourteen miles from Haverhill.

Ashuelot Railroad.—We learn that at a recent meeting of the company, held at Keene, the contract for a lease of the Ashuelot Road to the Connecticut River railroad company, "on terms that shall secure seven per centum per annum for ten years on the investment of stock in the Ashuelot railroad corporation," was approved and confirmed, and the President empowered to execute all papers that the details of the arrangement may require.

This movement undoubtedly secures the construction of the road, and we may expect soon to see the lines of the upper and lower Connecticut united, and the whole brought in direct connection with this city.

In another part of our paper will be found a plan for a railway to the Pacific. We have given the subject some attention and whether we have developed anything valuable or not we leave to the public to judge. Our only object has been to promote this great measure. If it shall be found that we have done so, this will constitute all the reward we seek. If not, we shall still have the consciousness of having acted with a view to the good of this great work—even if we have not been able to aid in its construction.

To the Chamber of Commerce, New York:

Boston, September 10, 1849.

Gentlemen,—We observe that you recommend Whitney's plan for a railroad to the Pacific. We had previously understood that you were in favor of some plan which would insure the use of the road to the present generation. Will you be so kind as to explain to us how the use of the road can be obtained for the present generation by Whitney's plan?

He proposes first to hold ten miles of road, and then (by the sale of the land) to create the means of building the next ten miles. May we not safely assume that it will take him at least, one year to build the first ten miles, or more; then, one year more to sell the land; then three years more to get his pay? Thus at the end of five years he will be prepared (money in hand) to build the next ten miles.

According to this ratio of five successive years, for each successive ten miles, it will take 850 years to make 1700 miles of railroad!! If (by a stretch of imagination) it should be said that he will, in a single year, build the first ten miles, and within the same year sell the land and get his pay—even then, it will take 170 years to build 1700 miles of railroad.

An early reply would oblige

Yours, respectfully,

Wm. Ingalls,

E. H. Derby,

J. C. Dunn,

P. P. F. Degrand,

O. D. Ashley,

Committee.

In a recent number, we expressed the mortification we felt, that so distinguished a body as the New York Chamber of Commerce should give its sanction to Mr. Whitney's plan for a railroad to the Pacific, without giving any reason for such approval,

or arguments to show its practicability. The action of this body, it seems, is as unsatisfactory to others as to ourselves. It has now an opportunity, in reply to the above letter, of giving its reason for its support of Mr. Whitney's scheme, and we look for such reply with no little interest.

Railway Conventions at St. Louis and Memphis

We give below the addresses of the Committees of Invitation of the friends of these respective routes, to the people of the United States. The address of the St. Louis committee we have been compelled, for want of room, to abbreviate somewhat. We await the action of these conventions with much interest, and hope that it may advance us much nearer the commencement of this great work.

THE PEOPLE OF ST. LOUIS,

to the People of the United States.

The grand problem of ages, in regard to a Western route to Asia, is about to be solved. Recent events in the development of the great designs of a wise and good Providence, setting aside previous theories, have precipitated the result, and made it simple, practical and inevitable.

The acquisition of vast territories in the interior, and upon the western coast of the Continent, and the removal thereto of such numbers of our people, as to authorize the formation of new States within a year, render the immediate resort to the means of sure and easy intercourse, and continued connection with them, matters of overruling necessity.

The consideration of these great objects, is the purpose of the national convention to be held in the city of St. Louis, on the third Monday of October next, and to which it is the design of this address to invoke the earnest attention of our fellow citizens throughout the Union.

Reserving for another occasion a more full expression of views and facts in support of the hints we have briefly thrown out, we now, in a spirit of patriotism and fraternal kindness, embracing all sections and parties, cordially invite our fellow citizens throughout the Union, to meet us in the proposed grand national convention, for the purpose of seriously deliberating upon this great subject.

We, therefore, respectfully invite delegates from every State and Territory of the nation. Laying aside for the moment, party and private engagements, we bespeak from all parties, a day in union for the general good. We ask every district to send its representatives—that we may have them from the mountains and from the plains, from the cities and from the country, from the hills of New England, and from the Savannahs of Georgia, that they will come to us from the north and the south, from the east, and even from the west; pouring in upon us by all the numerous avenues of conveyance which converge at this point, so that the HOSPITALITY of St. Louis shall rejoice in the fullest exercise and enjoyment of its means; and that a quickening voice may go forth from the assembled mass that shall give the great measure of American progress assurance of its triumphs.

(Signed)

M. Kennet, Thomas Allen, Thomas B. Hudson, M. Tarver, Henry Kayser, A. B. Chambers, R. Phillips, John O'Fallon, Edward Walsh, John F. Darby, J. M. Field, L. V. Bogy, G. K. Budd, N. R. Cormany, John Loughborough, Chas. G. Ramsey, Joseph C. Meyer, John Withnell, George L. Lackland, J. B. Brant, Thos. D. Yeats, Sam'l. Gaty, O. D. Filly, A. Ohlhausen, V. Staley.

To the People of the United States.

Memphis, Sep. 1, 1849.

A direct Western outlet to India from America and Europe, for more than three centuries an object of great magnitude with civilized nations, is now within our means of accomplishment by constructing a central railway from the Mississippi river to the Pacific Ocean.

To aid the work, a convention of the people of the United States was called by a sister State to meet in Memphis on the 4th July, 1849. The citizens of Memphis hailed with delight this new enterprise, as characteristic of the progressive spirit of the age,

and called for by high considerations of national import. In mass meeting, they appointed the undersigned a committee, charged with the duty of addressing their fellow citizens of the United States upon this important question. In discharge of the duty assigned us, we have adverted, in a previous address, to such prominent advantages, agricultural, manufacturing, maritime, military, commercial and national, as to us seemed obvious, and the people of the whole country. North, South, East and West, were invited to take the question under consideration, and send forth their delegates to meet us in council.—The response to our solicitations, coming up from the public press of the country, from eminent statesmen, from distinguished citizens of all parts, and from every section of the union, and above all from the mass of the people in all the States, was such as to justify the assumption that the work can, must, and will be done. The ravages of the cholera in the South and West, in June last, compelled the postponement of the convention from the 4th of July to the 23rd of October next. We are happy to say that the cholera has now entirely disappeared from the South and West, and the health of the country is completely restored. We again invoke the aid of our fellow citizens. We invite every town, village and hamlet in the United States, to send forth their delegates, and in behalf of the citizens of Memphis, we tender to all who may honor us with a visit a most cordial welcome.

Henry G. Smith,	James Conquest Gross,
Lewis Shanks,	James Penn,
Levin H. Coe,	Jacob Farrington,
Wm. T. Brown,	Edwin Yergler,
F. P. Stanton,	Miles Owen,
Seth Wheathey,	George W. Smith,
Spencer Jarnagin,	F. A. Cossitt,
Robertson Topp,	Edwin Hickman,
Samuel Bond,	David Park,
E. J. Carrell,	James Young,
Leroy Pope,	T. S. Ayres,

Southern Manufactures.

The following statistics, in relation to the Vancluse company in South Carolina, are worthy of the most attentive consideration. During the year 1848 the wheel ran 283 1-2 days and consumed 367,404 lbs. of cotton, costing 6 cents, (7,388 mills per lb.,) the total of which was \$24,758 81. The amount manufactured was 71,614 pounds of yarn, worth 14 cents per lb., and 290,789 pounds, or 591,579 1/4 yards of cloth, netting 7 cents per yard. The following details exhibit the various outlays and receipts:

6,859 1-4 days picking, at 6,175 mills per lb.....	\$2,268 39
7,922 days spinning, 6,938 mills per lb.....	2,547 37
2,246 " spooling and warping, 1,406 mills per lb.....	485 98
1,450 1-4 days dressing, 2,131 mills per lb.....	630 24
569 days drawing in, 0,364 mills per lb.,	187 30
4,937 3-4 days weaving, 9,360 mills per lb.....	2,768 61
562 days trimming, &c. 1,164 mills per lb.....	344 34
1,114 days hnk'g yarn, 4,953 mills per lb.,	354 75
840, 3 4 days machinist with roller-cover and all extra work, 1,509 mills lb...	572 90
743 gallons oil,.....	908 03
Contingencies which include materials, commissioners insurance upon \$20,000.....	4,123 49
78 barrels of flour for sizing.....	323 20
Transportation on yarn and cloth.....	1,416 73
48 reams of paper.....	82 80
Interest on capital [\$50,000] 7 per cent.,	3,500 00
Net profits above all cost and interest as above.....	7,926 81

Total cost of cloth per lb., 12 cents 4,999 mills, or 6 cents 2,499 mills per yard. Total cost of yarn, 11 cents 6,322 mills per lb. Capital factory, and buildings, \$30,000; floating capital, \$20,000—\$50,000.

The above facts demonstrate how valuable manufacturing is to any country, especially to those where raw material is to be had without the expense of far transportation. The cost of the yarn to the consumer was \$10,026 10, and the cotton cloth \$11,410 53—making an aggregate of \$51,436 68; which sum, minus the cost of the raw material, leaves a balance of \$26,676 82, to reimburse the cost of labor interest on investments, profits, &c. The section of

the country, therefore, in which is the Vancluse company, had, during the year, been enriched by \$26,677 82.

Scarcely a factory in the whole north has worked to such advantage, on account of the fact that at least 20 per cent. is added to the cost of the raw material by the transportation thither, and that labor is more expensive. The lower the price of cotton, the greater becomes this per centum of charges, freight rarely or never varying. The same company will here serve us as a further illustration. In 1848 the cost of cotton at Augusta was 6710 cents per lb., amounting to \$23,754, to which, if we add 20 per cent. for transportation, we have an aggregate of \$29,709; adding again ten per cent. for wastage, we have \$32,679 as the cost of the raw material to any northern factory. This cost, after deducting the freight of the articles sent south to pay for the raw material, may be estimated at 15 per cent., making the total yet higher by \$1,990. The total cost would then be \$30,699—evidently \$4,941 more than it cost at Vancluse. An appreciation of these immense advantages is what is rapidly converting Georgia into a manufacturing State, and at the same time improving her agriculture by supplying a home market. The data made use of above were drawn from the American Agriculturist.—Washington Republic.

Relaxations in Science.

My friend Alfred W. Craven, Esq., Chief Engineer, having invited me to accompany the Common Council of New York and the Commissioners of the Croton Aquaduct on their yearly inspection of the Croton works, the visit leads me to submit to the readers of the Journal the following remarks on the Croton waters. While thanking the Common Council for their hospitality, I have at the same time great pleasure in acknowledging my obligations to the sound practical experience and thorough scientific views by which my worthy "brother of the bridge," Mr. Craven, has directed and sustained my curiosity in the very interesting subject of out examination.

The Croton weir or dam, crossing the river in a straight line from bank to bank, forms the lower border of the Croton Lake. This spot is the scene of the following strange legend told to Mr. Craven, word for word as it stands here, by one of the party to 'his year's examination of the aquaduct: During the examination of 1841—, the good cheer of the Common Council had on the first evening sent the whole party of inspection very comfortable to bed. The Engineer being under the influence of sleep-walking or some other influence leading to the same result, left his room in the middle of the night; and in order to enjoy more fully the romance of the silent moon, rowed out upon the lake. After a while he rested on his oars, the boat drifting under the deep shadows of an over-hanging grove. Listless he sat at first;—but suddenly his whole sense seemed drawn towards a particular point on the moonlit water; and as he continued to gaze, the blood ran thick and heavy to his heart. But see! What is that cloud-like form rising from the lake? It walks—its foot touches the water as softly as a snow flake. Strange sight! It seems a cloak of mist wrapped like a winding sheet round a venerable man. Tall and erect in his form. His locks stream back from his temples; and falling over his shoulders, appear white as the wreathing foam. A coronet like the rainbow in colors and brightness, rises above his forehead—a forehead so impenetrably deep, and calm and bright. His eyes are beaming soft and brilliant as stars reflected in water. His mantle surpasses the blondest gauze:—it is white, thin, impalpable as the morning mist. He stands, the bright moonlight thrown back in all its refulgence from his face. He speaks: the dark grove, the silent hills, the placid moon itself takes up the sound;

and tho' 'still, small' whispers, yet each word loud as a water drop in a cave sit the echoes of the dreamer's heart, ringing:

"Who art thou, child of Earth?"

"Spirit, I am an humble student of the will of Nature."

"Then welcome—welcome to our domain."

He moved towards the dreamer; and as he passed into the shadow of the wood his brow, his cheeks, his eyes, his very lips blackened.

"Who art thou, spirit?"

"Croton, my friend, son of Oxygen and Hydrogen. I was stolen from the country where my father rules a boundless domain, by that high and brilliant potentate Sol. He placed me under the care of a tribe of Nubeans, those gypsies of the air, who, wandering on their devious way, have been arrested by the Peaks, those time honored wardens of the ancient Hills, by whose kindness I have been brought to this place, where I now rule over a kingdom tributary to my father."

"Most excellent Croton! May your honest face sparkle for many a day to come at the festive board of New Yorkers. I congratulate you, benevolent Prince, on your 'Holy alliance' with my fellow men. The intimate connection of your domain with that of our noble city must exert such a marked influence on the constitution of New York that I must pray your indulgence for inquiring into your more prominent laws. Tell me, benevolent Patriarch, whether your government is Monarchical or-Republican?"

"Monarchical, child. The grades of society in my realm are innumerable—the upper classes pressing as among men on those next below, and so on until the lowest class, generally grovelling absolutely in dirt or mud, becomes loaded with the accumulated burdens of all above it. A particle is the name given in our language to an individual: each of these is surrounded with certain moral rights, within which no power on earth can drive him—to speak figuratively, he is absolutely incompressible. The national character in this respect has been exhibited very strikingly in the case of a certain crowd of particles confined within a jar of brass, and though charged with a great force, the honest fellows rather than yield a pin's point submitted to be forced through the very pores of the metal. So watchful is a particle or a community of particles of its moral rights, that when a force is brought down on it at one point, taking the alarm generally, it puts forth an exertion equal to the force; and does so at all points of attack. Mathematicians describing our character would call this equality of resistances at all points of a particle 'Quaquaversas pressure.'"

Pray, most excellent Croton, is there among your people any such law as that which we call the 'Hydrostatic Paradox'?

It is this: on state occasions our throne is elevated far above the general community, and is connected with a thread of members of the upper classes. This elevated body of nobility is sustained of course by the lower classes immediately under them; and these in order to maintain their social existence put forth an upward resistance equal to this attempt to crush them: and apprehending a like assault on all sides, make the same exertion of defence backwards and forwards and downwards. Their immediate neighbors are excited by this exhibition of force; and sticking for their rights, stand defensive on every hand with a force equal to the trespass on them. An illustration of the Quaquaversas law of which this Hydrostatic Paradox is but a sub-division; is seen in the destruction of the earthen dam

that had been constructed yonder. Indignant at the outrage put upon the man whose ability brought about my connection with your city, a man who, after lavishing the fruitful resources of his intellect and acquirements in perfecting the conditions of a treaty so difficult and delicate, is put aside without reward, without honor.—Indignant, I say, at the ill-treatment of one who knew me well, Major Douglass, a gentleman and scholar, I ordered a party of particles to effect a lodgment in that embankment. They did so—the lowest particle bearing all the burden of the grades above him, threw out against the dam the same amount of resistance as that by which he maintained himself under the burden pressing on him from above. The dam was unequal to the force—it gave way to my sturdy particles, and Major Douglass was in part avenged.

You are indeed a constant friend.—May I ask you, most lucid Croton, how you dispose of your surplus population—at what rate you transport them to lands beyond yonder weir?

Our legislators I confess are at fault to lay down a general law to conform exactly in this case with the social conditions of my subjects. To give you the best approximation to the truths, I must convey my meaning in a language you understand:—the algebraic formula generally, for, as you call it the discharge over weirs is this:

$$Q = 3.13 m b h \sqrt{2gh}$$

where g is the height, a heavy body falls through in a second of time, (490 meters, or 1610 British feet), h , the height of the general level of the lake above the water-board, or lip of the weir; Q , the quantity discharged, as you would express it; and in a co-efficient to be found by experiment. This co-efficient is estimated differently by different parties; but in truth is different for every variation in the head of the lake, and the width of the weir. D'Aubisson's experiments are very near the truth, and will give you a good approximation generally to the manner in which I dispose of my surplus population: For weirs, the full width of my 'channel' (as you term it), m may be taken at 0.665; but when only a third of the width, he gives m the mean value 0.60. These dimensions imply the use of that measure which the French call the meter; 9.81 of which are equal to 32.22 British feet. Dr. Robinson, who knows a good deal of our peculiarities as a people, has reduced the formula of D'Benat, which is very near the truth, to the following expression for English feet:

$$D = 11.4172, l H^{\frac{3}{2}}$$

D being the quantity of water discharged in a second of time; l the length of the waste-board; and H the depth of the waste-board below the surface of the water: Smeaton, well as I recollect, and I knew him at the Eddystone Lighthouse, when a wild youth I sported on the green fields of my father—generalises Dr. Robinson's formula in this way: *Eleven and a half times the square root of the depth cubed multiplied by the length of the waste board, is the quantity discharged per second in English inches.* I speak according to your ideas of my kingdom, though of course they seem to me exceedingly ludicrous.

Thank you, most delightful Croton.—May I still trespass on your kindness by enquiring the conditions under which you allow your subjects to pass through the culvert or waste gate under this weir?

I shall be most happy to give you any information in my power.—To express myself in terms to suit your understanding, I must say generally, the discharge of any two different apertures in a weir are to each other in the compound ratio of the areas

of the apertures, and the square roots of the height of the water above them. The experiments of Bossuet, Mitchelloti, Smeaton, etc., show the following conditions: that the quantities passing in equal times through different apertures (the altitude of the water being the same for each) are to each other nearly as the areas of the apertures; and that the quantities passing in equal times through the same orifice under different heads of water, are to each other as the square root of the respective heads of water above the centre of the orifice. Those experiments show also that friction has a considerable influence on discharge; that on this account the smallest orifices discharge proportionably less than large ones of even the same figure, under the same height of water; and that, for the same reason, among orifices of equal area under the same height of water, the greatest quantity is discharged by that which has the smallest perimeter. But to give you a more particular view of the conditions of the case:—the velocity with which the water escapes multiplied into the area of the orifice would appear to be the amount of discharge; but, owing to the impatient temperament of particles, each moving towards the aperture in anxiety to anticipate his neighbor, such a rush takes place at the side of the aperture that like a body of your fellow-men attempting to rush simultaneously into a theatre the moment the doors are opened, a good deal less passes through than the doors in the case of men, and the aperture in the case of my people, can admit. This rush in the instance of particles is vena since the days of Sir Isaac Newton, as the 'vena contracta' or contraction of the fluid veins. Now this and the question of velocity are the two considerations involved in a definite reply to your inquiry; and as I cannot just now recollect off-hand the particulars of this case, I must put you off for the present with the foregoing general remarks. I may, however, hint the likelihood of your being informed fully on the question in some of the forthcoming numbers of the American Railroad Journal—a paper to which I, as all intelligences should be, am a regular subscriber.

Here the phantom waved his hand in friendly adieu to the dreamer. Slowly he sank into the water, and at last, seeming like a bubble glittering in the moonlight, floated towards the edge of the weir, where breaking into airy sparkles, he disappeared for ever. The strangest feature in the whole story is that the dreamer being in the following morning found in his room, he felt a certain uneasiness in his stomach, and though seemingly stupefied by the overnight's rencounter with the king of liquids, he could tell the particulars as clearly and succinctly as they are told here.

M.B.H.

ALBANY AND BUFFALO RAILROADS.—

Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2 1/2 a.m., 12 1/2 m., 3 1/2 p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 1/2, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
Proposals will also be received until the 15th of Oct. next for the construction of the Railroad on the Eastern side of the Mountain, about eight and a half miles. It comprises much heavy work and a Tunnel about 720 feet long.

C. CROZET,
Engineer Blue Ridge Railroad.
Brooksville, July 26, 1849.

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

Plumbago, or Black Lead.

BLACK LEAD IN ITS CRUDE STATE, AND Black Lead Paints, prepared for various purposes. This paint is peculiarly adapted for the covering of all kinds of iron railing, or iron work wherever exposed; such as railroad bars, anchors, bolts for vessels, etc.—It makes the most durable paint to protect woodwork from moisture, and the indelible nature of the body of it peculiarly fits it for covering the inside of depots, roofs of buildings, and all wood work exposed to fire.

The mine from which this article is taken is near Raleigh N. C. It has been examined by many of the most scientific men in this country, who all concur in pronouncing it of the best quality. In the fourth vol. of the American Journal of science, Professor Silliman speaks of it in the following manner. "The Plumbago from North Carolina is of a very fine quality and appears well adapted for pot & crayons." Professor Dewy speaks of it "as the finest he ever saw." Professor Olmstead, now of Yale College in his geological report of the State of North Carolina, Page 5 says.—"Not long since I received a letter from a gentleman in Vermont who contemplated setting up the manufacture of Black Lead Pots or Crucibles, requesting some particulars respecting this Plumbago, having been informed on the highest authority, that it was the best that could be procured within the United States."

It is a very fine article and superior for Pencils also for Crucibles, Pots etc., when the composition of silicious minerals is properly made to suit it, and may be had in any reasonable quantities of the subscriber on liberal terms at Raleigh North Carolina or at James Hol-dene 55 West St. New York.

Sep., 7th 1849.

Richard Smith,

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The angle rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 25th, 1846.

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Engine and Car Works,

PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

Illustrated Scientific Works.

LEA AND BLANCHARD, Philadelphia, publish the following important works on various branches of Practical Science. They will be found exceedingly low in price, while their mechanical and typographical execution are of the best kind.

I.

Principles of mechanics applied to machinery and engineering by Julius Weisbach. Translated by Professor Gordon of Glasgow, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 872 illustrations on wood.

From Charles H. Haswell, Esq., Engineer in Chief, U. S. N.

The design of the author in supplying the instructor with a guide for teaching, and the student with an auxiliary for the acquirement of the science of mechanics, has, in my opinion, been attained in a most successful manner. The illustrations, in the fullness of their construction, and in typographical execution, are without a parallel. It will afford me much pleasure to recommend its use by the members of the profession with which I am connected.

This work is one of the most interesting to mathematicians than has been laid before us for some time; and we may safely term it a scientific gem.—*The Builder.*

The most valuable contribution to practical science that has yet appeared in this country.—*Athenæum.*

Unequaled by anything of the kind yet produced in this country—the most standard book on mechanics, machinery and engineering now extant.—*N. Y. Commercial.*

In every way worthy of being recommended to our readers.—*Franklin Institute Journal.*

What the "Mechanique Celeste" is to the astronomer, a treasury of principles, facts, and formulæ on which he may draw on almost any and every occasion,

that can be conceived to arise in the field either of demonstration or operation.—*Methodist Quarterly Review.*

II.

Technology, or chemistry applied to the arts and to manufactures. By D. F. Knapp, Translated by Drs. Ronalds and Richardson, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 460 illustrations on wood.

One of the best works of moderate times.—*New York Commercial.*

We think it will prove the most popular, as it is decidedly the best of the series. Written by one who has for many years studied both theoretically and practically the progress which he describes. The descriptions are precise, and conveyed in a simple unpretending style so that they are easily understood, while they are sufficiently full in detail, to include within them everything necessary to the entire comprehension of the operations. The work is also carefully brought down to include the most recent improvements introduced upon the continent of Europe, and thus gives us full descriptions of processes to which reference is frequently made in other works, while many of them are we believe, now for the first time, presented in a complete state to the English reader.—*Franklin Institute Journal.*

In addition to the valuable scientific matter contained in the original work, very extensive American additions have been made to it by the editor, which are exceedingly valuable, and of much interest to the general reader. The publishers have spared no pains in bringing out a work of superior mechanical execution and rare excellence, with numerous skilfully engraved cuts, designed to illustrate the various subjects treated in this work. We feel confident that, as a truly useful publication, it will be eagerly sought after and highly appreciated.—*N. Y. Farmer and Mechanic.*

III.

Principles of Physics and Meteorology, by Professor J. Muller, Edited with additions by R. Eglsfeld Grifith. In one large octavo volume, with 550 wood engravings and two colored plates.

This is a book of no ordinary or ephemeral value.—It is one of a series, now republishing in London, on the different branches of science, which from its thorough character and extended range, is much needed in this country. Its design is to render more easily accessible an extensive knowledge of the general principles of physics and meteorology; and the distinguished author has certainly realized the design to a wonderful extent. The subject treated upon are very numerous—statics, hydrostatics, dynamics, hydrodynamics, pneumatics, the laws of the motions of waves in general, sound, the theory of musical notes, the voice and hearing, geometrical and physical optics, magnetism, electricity and galvanism, in all their subdivisions, heat and meteorology. The size is nevertheless convenient—one handsome octavo volume, of six hundred pages—in clear, bold type, and profusely illustrated. In the execution of the illustrations we have rarely seen any thing equal to this American edition.—*N. Y. Commercial.*

IV.

Practical Pharmacy; comprising the arrangements, apparatus, and manipulations of the Pharmaceutical Shop and Laboratory. By Francis Mohr, Ph. D., and Theophilus Redwood. Edited with alterations and additions by W. Proctor, Jr. One very handsome octavo volume, with 506 engravings on wood.

We had scarcely finished a glance at the beautiful London edition of Mohr and Redwood's pharmacy, before Professor Proctor's improved edition of this fine technical treatise, was laid on our table by Messrs. Lea and Blanchard. This work is one which will at once find its place in every laboratory and pharmaceutical shop, and is well calculated to recommend new and improved methods of manipulation to both chemists and pharmacists. In the absence of highly appointed laboratories and of pharmaceutical instruction which is so general in this country, such works as the present are particularly valuable. The beautiful and abundant wood cuts which adorn almost every page of the book, enter the descriptions of apparatus perfectly plain, and its reconstruction easy even by the tyro. Professor Proctor has long been known to pharmaceutical readers in this country, as the author of numerous and important researches in the *Materia Medica*, and his additions to the present edition of Mohr and Redwood are frequent and valuable.

The American Journal of Science and Arts.

V.

The Young Millwright and Millers Guide; Illustrated by Twenty Eight Descriptive Plates, by Oliver Evans. Twelfth Edition, with additions and corrections, by Thomas P. Jones, with a description of an Improved Merchant Flour Mill, with Engravings, by C. and O. Evans. In one volume 8vo., with 110 figures on twenty eight plates.

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.
PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company. Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Straghan, the Resident Engineer of the Western Division.

By order of the Board of Directors.
WM. ROBINSON, Jr., President.
Pittsburg, August 11, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Pennsylvania Railroad.

PROPOSALS will be received at Johnstown, Cambria county, Pa., between the 1st and 12th of October next, for the Graduation and Masonry of that portion of the Western Division of the Pennsylvania Railroad east of Section No. 54, opposite Blairsville—a distance of 26 miles—embracing a considerable amount of heavy excavation and embankment.

Plans and specifications of the work may be seen at the office, in Johnstown, within the periods above mentioned.

For further information apply to Edward Miller, Esq., Engineer of the Western Division, Summit P. O., Cambria county, J. EDGAR THOMSON, Chief Engineer and General Superintendent, Engineer Department P. R. R. Co., Philadelphia, Sept. 6, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, au7f No. 74 Broadway, New York.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburg Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, N. Y.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac K.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Bulder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

BUSINESS CARDS.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1849. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN.
41 Broad street.
March 29, 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factry prices, of Erastus Corning & Co Albany; Merrill & Co., New York; E. Pratt & Br. 1st, Baltimore Md

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
98 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna River; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Ameri-
 can iron, at their works at Jersey City, N.J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 23, 1849.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DERS AND CARS.—The subscriber is engaged in
 manufacturing spring steel from 1½ to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and where-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared to
 execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crano do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, ½ to 4 inch by ½ to 1 inch thick.
 Do do Rounds and Squares, ½ to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half-Rounds, ½ to 1 in. Ovals & Half-Ovals ½ to 1½ in.
 Bands, 1½ to 4 inch. Hoops, ½ to 2 inch.
 Trunk Hoops, ½ to 1½ in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL

The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by **WM. JESSOP & SONS,**
 91 John street, New York.
 Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

To the Proprietors of Rolling
Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Fur-
 nace and Machine Shop, Albany—are extensiv-
 ly engaged in the manufacture of Machinery and fix-
 tures for Iron, and Copper Rolling Mills, and Iron
 Works. Having paid particular attention to the ma-
 nufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*,
 they feel confident that they can execute orders for
 such castings in a satisfactory manner. And to give
 assurance of this, they beg leave to refer to the follow-
 ing named persons, proprietors and managers of some
 of the most extensive rolling mills in the country, viz:
 Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt,
 J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B.
 Cannon, Hawkins & Atwater, etc., etc.
FRANKLIN TOWNSEND & CO.
 Albany, August 18, 1849.

MANUFACTURE OF PATENT WIRE ROPE
 and Cables for Inclined Planes, Standing Ship
 Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These *Ropes* are now in successful operation on the
 planes of the Portage railroad in Pennsylvania, on the
 Public Slips, on Ferries, and in Mines. The first rope
 put upon Plane No. 3, Portage railroad, has now run
 four seasons, and is still in good condition.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. pe-
 lineal yard, made by the best English manufac-
 turers, and under our own specification and inspection.
 In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
 68 Broad street.
 New York, June 1, 1849.
 The above will favorably compare with any
 other rails.

American Pig, Bloom and
Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hillis* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *Agents*
 for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Brcm,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

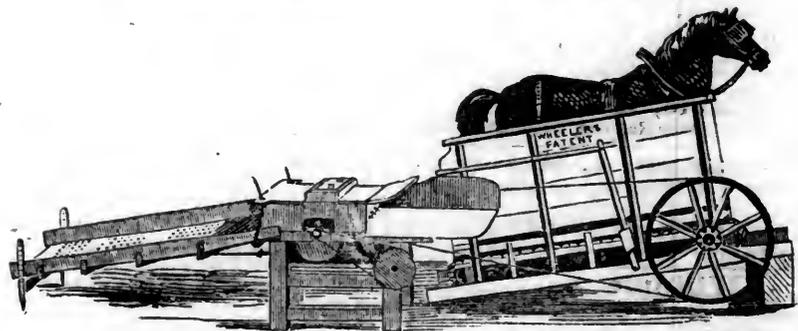
American and Foreign Iron.
FOR SALE,

- 300 Tons A 1, Iron Dale Foundry Iron.
 - 100 " 1, " " "
 - 100 " 2, " " "
 - 100 " " Forge " "
 - 400 " Wilkesbarre " "
 - 100 " "Roaring Run" Foundry Iron.
 - 300 " Fort " "
 - 50 " Catoctin " "
 - 250 " Chikiswalungo " "
 - 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 - 75 " "Columbia" refined boiler blooms.
 - 30 " 1 x ½ Slit iron.
 - 50 " Best Penna. boiler iron.
 - 50 " "Puddled" " "
 - 50 " Bagnall & Sons refined bar iron.
 - 50 " Common bar iron.
- Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 64 South street
 New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick
 Hudson, from London, made by Billingsley, Mial
 & Co., and superior to anything of the kind manufac-
 tured in England. For sale by **G. T. SNOW,**
 109 Water Street, New York.

Railroad Horse Power and Saw Mill.



The above cut represents the most simply constructed Endless Railway Power in use. As shown it is at-
 tached to a threshing machine, with which it is mos. extensively used; but for sawing wood at railroad sta-
 tions it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single
 power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing
 eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12
 to 20 cords of four foot wood per day. They have been used several years on several roads in New England,
 and for manufacturing establishments more than three thousand of these powers are in use, and without ex-
 ception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed
 being obtained with simple rack and plinion, without intermediate gearing. They are warranted to give satis-
 faction as above described, or may be returned at my expense, and the purchase money refunded.

September 6, 1849.

HORACE L. EMERY,
 Nos. 469 & 371 Broadway, Albany, N. Y.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,

cor. Steuben and Water sts. Albany.

August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, L. CHAMBERLAIN, Sec'y, at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY, Warehouse 23 Courtlandt street. New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS, Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

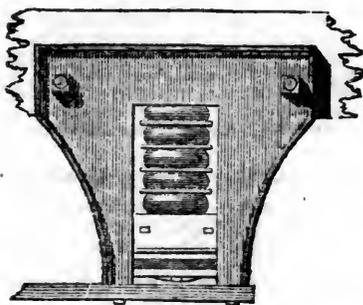
HENRY THOMPSON & SON, No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been re-

ceived from the said agent. Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston. May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE, 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

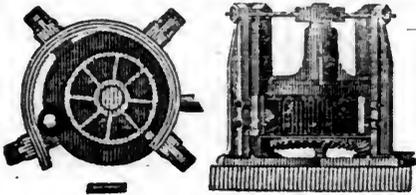
4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Pottsville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of slinger's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of binding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.

Kensington, Philadelphia Co., }
March 12, 1843. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

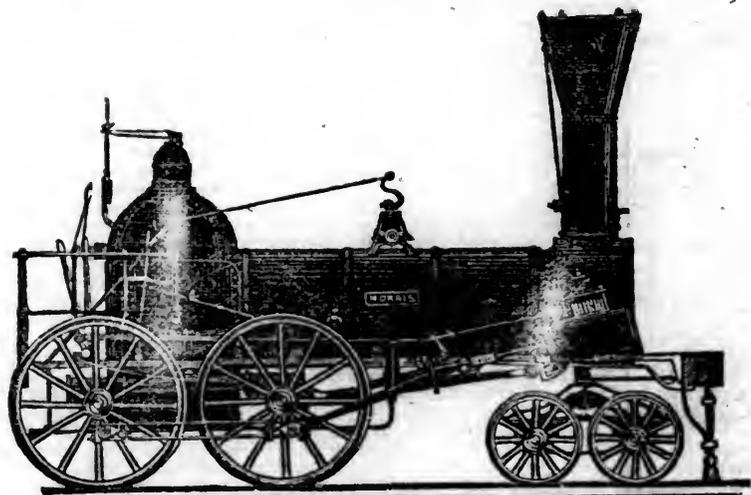
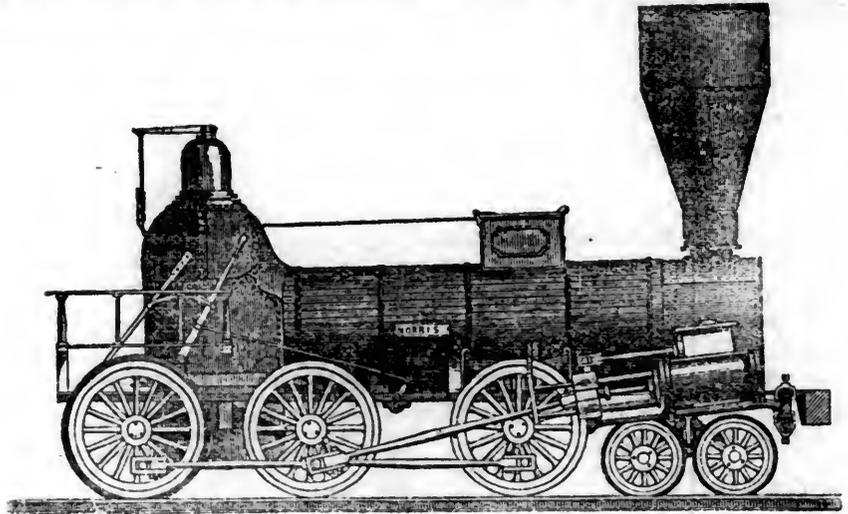
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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 SECOND QUARTO SERIES, VOL. V., No. 40] SATURDAY, OCTOBER 6, 1849. [WHOLE No. 472 VOL. XLII

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, October 6, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 609.

NEW YORK

Adirondac Iron Works.—In the midst of the Adirondac group of mountains, about fifty miles west from Lake Champlain, are found many beds of magnetic iron ore of greater extent than in any other part of this northern region. The rock formation which contains them, is one of unusual character, met with no where else, to my knowledge, in the United States. But here, in the heart of the granitic formation, it is spread out over an extensive district, forming the highest mountains of this Alpine region. In the New York State geological reports it has received the name of *Hypersthene rock*. It is a mixture of the mineral hypersthene with feldspar, this latter mineral being frequently in the larger proportion, and of the opalescent variety, called labradorite. The rock is strewn over the country in boulders of all sizes, of spotted light bluish and greyish color, smooth and extremely hard. Near the ledges, as in the village of Adirondac, the loose masses fallen from the hills are nearly as large as the houses;

their shape is irregular, and they have no grain, by which they might be easily worked. In the ledge the rock has no regular parting seams. It is, therefore, of little value for any practical purpose, except to use in such shapes, as it happens to come, for building walls. No rock can be more durable.—The western edge of its formation is only about three miles from Adirondac. There it meets a red porphyritic granite; in which, close to the junction of the two formations, is another huge deposit of magnetic ore. Still farther west, on the borders of Newcomb Lake, the granite contains large beds of limestone, some of it of very pure character, and some of it highly siliceous—the latter variety well fitted to flux magnetic ores, which generally contain little silica.

In going from the lake at Crown Point to Adirondac, the route is for the first twenty-seven miles through the townships of Crown Point and Schroon into Newcomb, over rough roads often extremely muddy, and a country only interesting for its resources in iron ores and its mountain scenery.—Newcomb is a township full of small lakes. On the outlet of one of these called Lake Sandford, which is about five miles long, a dam has been built by the Adirondac Iron company, by which the water is thrown back through the lake, and beyond, in all eleven miles, making in the summer season good navigation for boats to within a mile of the furnace. This dam was to give power for saw mills and for rolling mills or forges, or any other works it might be deemed advisable to establish. This place is called Tahawus. Passing from it up into the lake, the scenery rapidly becomes more grand, and the highest mountains in the State are in full view not far off towards the northeast. On the shores of this lake are some of the largest beds of ore. Half a mile up its inlet the stream becomes too rapid for farther navigation, and a good road a mile long completes the journey to the village.—Above this, about half a mile is another lake called Lake Henderson, similar to that below. This is the principal reservoir and source of the water, which furnishes the power for the works.

One of the principal beds of ore is that represented on the east side of Lake Sandford, and called the *Sandford ore*. It has been critically examined and measured by Professor E. Emmons, and his description in detail may be seen in the New York State geological reports. Some shallow excavations were made to uncover the bed, where it was hidden

beneath the soil; and, without arriving at its actual walls, a triangular area of 514 feet in width by 1067 feet on a north and south course was proved to be occupied by ore. North and south of this area the vein pursues its course beneath tabular masses of the hypersthene rock; and on the line of it are other outcrops of the ore, which seem to indicate its continuation for two and a half miles. Whether the vein will prove to be as extensive or not is of little consequence. The quantity exposed to view near the lake is more than can be consumed for centuries. This is within an eighth of a mile of the lake, on elevated ground, which descends by a regular grade to the water, affording an easy road and natural drainage. The ore delivered into boats is taken to the head of navigation, and then carted to the furnace, a distance altogether of two miles and fifty three rods. A new furnace now in progress of construction is more conveniently situated for receiving this ore directly from the boats. In the bed much of the ore appears to be a pure mixture of the two oxides of iron free from gangue. It proves, however, on analysis to be more siliceous than the ordinary magnetic oxides of iron. The minerals associated with it are feldspar, mica, hornblende, hypersthene, garnet and a small portion of sulphuret of iron. Some of these prevail over the ore in parts of the bed; but Professor Emmons estimates one portion, 300 feet wide, to be unmixed ore. Of the peculiar character and composition of this ore I shall speak more fully in describing its working in the blast furnace and bloomery.

Other beds of iron ore underlie the village, and crop out around the furnace itself. One of these, called the *Mill Pond*, or *course mined ore*, is opened and worked on the bank of the stream, a few rods above the works. Of its extent no estimate can be given any more than one could estimate in a district of granites, gneiss, and porphyries the relative proportion of each of these rocks, when all were hidden here and there beneath the soil. It is enough to know that the ore can be worked as it is, like a granite quarry, and no walls be found to limit the bed. If they seem sometimes to be met with, they prove to be but interposed masses of hypersthene rock, and new quarries of ore are opened beyond them. The quantity of ore is so great that that within 40 feet of the surface and half a mile of the furnace may be considered almost inexhaustible. The ore of this bed differs from the Sandford in appearance it not being of so granular a texture, and not separating into

crystalline grains like shot; yet it is distinguished by the name of the *coarse grained ore*; for it is not of homogeneous structure, but consists of particles of different lustre (not granular) firmly united in one mass. These have been supposed from some experiments of the late David Henderson Esq., to be the per-oxide and protoxide of iron, thus seen distinct from each other. The color of the ore is jet black—not generally lustrous; but a portion of the bed is made up of ore, which breaks into rhomboidal sheets like slates, whose face is highly glistening. In the ore are often found large rude crystals of hypersthene of the form of rhomboidal prisms with perfect cleavage obliquely across the prism, and with faces most delicately striated. A mineral resembling serpentine occurs with the ore, and between it and the hypersthene wall rock in a thin layer.—It appears to be an undescribed combination of silica, iron, magnesia and water of the chlorite family, the magnesia replacing per oxide of iron. I have analysed it with care, and found its composition to be as follows:—

Silica,.....	31,11
Magnesia,.....	0,66
Water,.....	14,93
Prot. oxide of iron.....	36,85
Alumina,.....	15,88
Lime,.....	0,40
	99,83

Carbonate of lime occurs in small quantity with this ore, incrusting it with their layers; and through portions of its sulphuret of iron may occasionally be detected sparingly diffused.

A third bed of ore is opened in the ridge of hypersthene rock east of the stream at an elevation overlooking the village, and not more than an eighth of a mile from the furnace. This is called the *fine grained ore*, being of finer texture and more granular than the last described. It resembles somewhat the Sandford ore and the line of bearing of the vein southward is towards the Sandford mine, Professor Emons considers its width about 70 feet, and that it has been traced in length 5742 feet. It is partially intermixed with rock, but where it is quarried a large body of unmixed ore is exposed to view. Its associated minerals are similar to those at the other mines, calcareous spar in thin layers incrusting the fragments, and a little sulphuret of iron being dispersed through it.

It cannot be important to more than simply refer to the several other localities of ore in the hypersthene rock of this vicinity, any one of which seems to possess inexhaustible supplies; and all of which are found to produce ores of the same general character and action in the furnace.

The bed, however, before alluded to, in the granitic rock four miles west of Lake Sandford, called the *Cheney ore bed*, is worthy of more particular notice. It is exposed in a break or gap in the hill of red granite, on the east side of which is exposed the hypersthene rock. On one side this gap is bounded by a wall of ore twenty or thirty feet in height; its thickness is concealed by the fallen debris of ore, rock and soil; but I should judge that at least a width of the bed of twenty feet might be relied upon. The appearance of the ore is somewhat like that of the fine grained ore, rather close and compact in its structure; but in its chemical properties I find it to differ from all the ores of the hypersthene rocks in giving a glassy cinder in the crucible with earthy fluxes, which I have not succeeded in obtaining in a large number of experiments with any of these. For this reason I judge it to be well

worthy of more careful and thorough trials in the blast furnace, to remedy if possible the difficulties attendant upon the reduction of the Adirondac ores. This subject will be treated of more fully in the succeeding number of the Journal. The Cheney ore is a hard ore to mine in consequence of its close texture; and according to the general impression that an ore hard to mine will be hard to work in the furnace, it may not prove valuable. But no injurious minerals are seen to accompany it, and I have not detected any sulphur in it. H

The Coal Mines of Eastern Virginia.

While travelling through the southern part of Virginia a short time since, I took occasion to visit the coal pits of the Clover Hill Company. These pits are situated in Chesterfield county, and are distant by railroad 28 miles from Petersburg, and about 30 from Richmond.

There is also a railroad communication with tide water upon the Appomattox river, by a branch road diverging from the Richmond and Petersburg road, 8 miles from the latter place, and running to Port Walthall, 2½ miles. The Clover Hill Company constructed their road, 18 miles long, at a cost of \$100,000. It diverges also from the Roanoke and Petersburg railroad, 10 miles from the latter place, and 13 from the former, and runs nearly west to the Clover Hill property. By these roads the pits have direct railroad communication with the city of Richmond, in a distance of 30 miles, with the city of Petersburg in a distance of 28 miles, and with the Appomattox river at tide water, in a distance of 22½ miles.

At Port Walthall, the new terminus on the Appomattox, the company have constructed suitable wharves, side tracks, and coal yards, and large vessels can with ease take in their loads at this place for any port in the United States.

The presence of coal at Clover Hill was accidentally discovered in 1840, by J. H. Cox, Esq., the proprietor of the estate, in sinking a small drain. The outcrop was struck by the workmen, and this led Mr. Cox to examine the quality and probable amount of the deposit.

These examinations led to the sinking of several pits, and the workings are now very extensive.—The coal is bituminous, and equal in quality to the best Liverpool. There are at present five pits in active operation, and the supply last year was 1,500,000 bushels.

Mr. Cox, the President of the Clover Hill Co., and former proprietor of the mine, having disposed of his individual interest to the company, has now the general superintendence of its affairs.

From the great angle, 40 degrees, at which the coal dips, it requires extensive and deep shafts and planes to reach it. I have entered and examined 2 only of the workings, one of which, the "Beaver pits," is entered by means of an inclined plane, which enters the earth at an angle of 40°, and runs at this angle for a distance of 620 feet; it then strikes a level, where a divergence takes place for a short distance, and another plane descends at the same angle for 3 or 400 feet more.

The descent from the top of the first plane is accomplished by means of steam power. But the second one is done by mule or horse power. These pits have been worked to a great extent and I should judge from observations, that the galleries extend for a distance of 5 or 6 miles. The coal is found here in a vein of from 8 to 15 feet in thickness, and is very easily worked. The daily supply from these pits is 3,000 bushels.

There is another pit 150 feet deep, a short distance above the Beaver pits, owned and worked by two gentlemen, these I did not enter, but understood that the supply is 1000 bushels daily: They are now engaged in constructing a plane, and expect shortly to be able to double that amount.

The old Clover Hill pits are also about 150 feet deep and have been the longest worked of any upon the estate. They are now busily engaged in "robbing" (as it is called) these pits, making it somewhat dangerous for visitors, and I did not venture down.

The results of the 'robbing' process are distinctly visible upon the surface; in the shape of various immense holes caused by 'robbing' out the coal supports left in the first excavations. As soon as these supports are robbed out, the superincumbent earth falls in, leaving as a natural result a number of large holes in the surface. In one place the whole surface for a large area has settled some 4 or 5 feet. The supply at these pits is daily about 2000 bushels.

The company having exhausted partially the old workings, commenced in May, 1848, the sinking of a pair of new shafts, which were completed in July, 1849. These shafts were sunk 450 feet perpendicular before coal in sufficient quantity was found.

The shafts are round, about 8 feet in diameter, and for some 30 feet from the surface are bricked up. At this distance down, the sand rock of this country was struck, and with two or three breaks was followed to the bottom. These breaks are also bricked up. Mr. Cox accompanied me in a trip down these shafts, and I was much gratified with the results of it.

We placed ourselves in the bricket, and the signal being given—down we went. The sensation of descending this great distance, and at a rapid uniform speed, is very peculiar and indistinguishable; (it can only be compared to the sensation of a person who is dreaming of falling from some great elevation.) We were soon out of the reach of daylight, and our miners' lamps showed us the sides of the shaft, smooth and round, flying by us, at the rate that would astonish a locomotive. Upon reaching the bottom, however, I was well repaid for my trip, for we were in the most beautiful vein of coal I ever saw. This vein is fully 20 feet thick, and of a superior quality. The roof and floor of the vein are as smooth and polished as if they had been planed. The coal here is in fact almost inexhaustible, and these shafts will answer for 20 years or more. Every thing connected with the new works looks as if it was intended for use. The workings below are already laid out for extensive use. The present supply is over 1000 bushels daily; but it will soon be doubled, as the excavations increase in extent. After I had looked to my satisfaction, we stepped into the bucket, the signal was given, and ere I had time to think, we were once more up top of the ground. Upon looking for the power that brought us thus suddenly from the bowels of the earth, I found a new 40 horse power engine, of the manufacture of A. & W. Denmead & Son, of Baltimore, that works as truly and nicely as a lever watch; and I was almost tempted, from the beauty of the machinery and the apparent strength of the ropes and gearing, to step into the bucket and try the trip again. The coal from these workings weighs about 74 pounds to the bushel, and can now be delivered at tide water for \$3 to \$320 per ton of 30 bushels. The railroad charge is at present \$1 05 to \$1 10 per ton freight for 22½ miles. This charge I should suppose very high, and it will without doubt soon be reduced, when this coal can be furnished at much less

than the present prices. The present daily supply from all the pits is about 6000 bushels. This amount can with the present conveniences be doubled. There are 5 engines of from 30 to 40 horse power, each busily employed, and the number engaged in and around the mines will not vary far from 500. These mines possess an advantage in point of distance from tide water, that no other mines in this country can possess; and I have no doubt but that coal can be furnished and of a superior quality, from these pits cheaper than from any other works in the country. R

For the American Railroad Journal.
Ohio Railroads.

Those who have not carefully explored the Mississippi Valley, have a very imperfect conception of the resources of the West, which are already in rapid process of development. Ohio, the most easterly State in the valley, with a population of two millions of hardy, enterprising and industrious people, is struggling to possess those facilities which will connect her with the commerce of the world.—By canal navigation the Ohio river is now accessible from the interior at five different points, and Lake Erie at two. The two trunk lines of canal cross the State from north to south.

Individual enterprise is undertaking the work of facilitating trade and travel to and from and thro' the State by means of railways. The first railroad completed across the State is from Cincinnati to Sandusky City, a distance of 220 miles. This thoroughfare is formed by connecting the Mad river and Lake Erie railroad, with the Little Miami and Springfield railroad. The Sandusky Bay being the only natural harbor on the southern shore of Lake Erie is a very favorable terminus for this road, and the one next mentioned. The bay is formed by two peninsulas extending from the mainland, whose terminal points approach within three-fourths of a mile of each other, and form a perfect breakwater, for the water sheet within their embrace. It is about 12 miles long, with an average breadth of three miles. Within, its water is deep enough for any vessels which navigate our lakes. The road from the lake into the harbor, owing to the existence of a sandbar, is intricate or crooked. This bar can be removed at a trifling expense, and will be before the present season closes. The General Government has never expended one cent towards making or improving a harbor at this place. \$15,000 was appropriated to "preserve" it, at a time when the lake was making a breach through the peninsula.

The City of Sandusky has provided a dredging machine, with which to straighten the road into the harbor. But for the fearful visitation of the cholera with which this place was afflicted, during the past summer this work would have been effected ere now.

It rather surprising, that this, being the only national harbor on the southern shore of Lake Erie, has been so wholly neglected by the Government. Take for instance the neighboring port of Cleveland. There to create a harbor, or in the language of the appropriations "for the improvement of the harbor of Cuyahoga," there have been appropriated from time to time \$149,413 15. With this sum a safe harbor has been formed, when once entered, but when most needed it is most difficult to make because of the narrow channel between the piers.—The plan of extending piers out into the lake, without reference to the river is now being adopted, which adds greatly to the facilities of steamboat business in mild weather. During the late war with Great Britain, Com. Perry made Sandusky Bay his

head quarters, and the Navy Department have found no other place within our wide territory suitable for a naval depot. Should Canada not be annexed the day may come when it will be required for that purpose.

The next railroad is the Mansfield and Sandusky City railroad. It is 56 miles long, and commenced working in 1846. Under the charter of the Columbus and Lake Erie railroad company, it will be extended sixty miles further south to Newark. All the earthwork of this extension is now finished, the superstructure is being laid down, and the iron provided. The company expects to have a portion of it in operation this winter and the whole completed early next spring. It is designed to continue this thoroughfare to the Ohio river at Portsmouth, by way of Lancaster, Circleville and Chillicothe.

No road in this State will embrace so many of the leading interests as this. The wheat, corn, grazing and mineral regions will be embraced in it.—Its whole length will be about 220 miles. The country is already populous, productive and wealthy. The surveys have been commenced under the charter of the Scioto and Hocking valley railroad company.

From Xenia to Columbus, 57 miles, a railway is now being constructed, which the company hope to have in operation during the coming winter or early in the spring. As this road connects at Xenia with the Little Miami railroad a continuous track of iron rails will extend from the capital of the State to the Queen City of the west, a distance of about 120 miles. This road is on the line of great east and west inland travel, and as it will be extended east, under the Central Ohio railroad co's. charter to connect with the Baltimore & Ohio road, it is second to none in importance. This latter company is now locating its road between Zanesville, one of the first manufacturing towns in the State, through Newark to Columbus a distance of some 55 miles, and it is hoped the road will be completed in two years from next spring, between these places; and in progress to the Ohio river within the next twelvemonth.

The Pennsylvania and Ohio railroad is already under contract extending from Pittsburg to Mansfield.

From Cleveland, the most beautiful city on Lake Erie, a road 134 miles in length is now in progress to Columbus. The President in his report promises to have 35 miles completed "by the setting in of winter," and under his energetic supervision we may look for a speedy completion of the whole line.

A road is also in progress from Cleveland to Pittsburg. Very enterprising and worthy men are conducting this enterprise and there is no doubt of its early consummation.

From Dayton, one of our most flourishing inland towns, to Cincinnati, *via* Hamilton, a road is rapidly progressing, which it is expected will be in operation during the next year. Another from Springfield to Dayton is now nearly ready for the iron rails, to be extended by another company now vigorously in action to Richmond Indiana.

It will be seen from all this, that we have completed and in operation in this State 276 miles of railroad, and will have by next spring 212 miles more, and will have within the next three years, 690 miles in addition, in all about 1200 miles.

It is difficult to imagine, much more so to estimate the commercial revolution which the completion of these enterprises will produce. The great west with all her resources and productions will be opened to

the world. Eastern arithmetic has no rule by which to compute the extent of trade from this source.—The experiment of the past furnishes no data by which to estimate it, because by existing facilities freight moves so slowly as to preclude the transmission of innumerable articles, the produce of the garden, the dairy and the farm, from the west to the markets of the east. But complete these railroads in a good and substantial manner and Cincinnati and New York will be only 36 hours asunder.—Let us estimate, from Cincinnati or Portsmouth to Sandusky 220 miles, 8 hours. Sandusky to Buffalo 250 miles, 9 hours. Buffalo to Albany 325 miles in 12 hours. Albany to New York, 170 miles in 5 hours; 945 miles in 34 hours, at the mean rate of 29¼ miles an hour, consequently we have two hours to spare in making this whole distance in 36 hours. Increase the speed to 35 miles an hour and the whole distance will be run in 27 hours. Or from Central Ohio, say Columbus Newark, Zanesville or Springfield in three hours less.

A population so large and increasing so rapidly in a country so productive, cannot fail to sustain and sustain well, all the railroads now in progress in that great State. Not only its exports, but its imports will be immense and as time advances must increase.

In her soil, Ohio has a source of wealth more enduring, more certain and more productive than the mines of California.

Railroads in Indiana.

We extract the following from the Volunteer, published at Shelbyville, Indiana, for the purpose of presenting a connected view of the railroads in that State, completed and in progress. After speaking of the Wabash and Erie Canal, the article goes on to say—

We have the Madison and Indianapolis railroad completed and in full and successful business, commencing at Madison on the Ohio an hundred miles below Cincinnati, and passing through Vernon, Columbus, Edinburgh and Franklin to Indianapolis—a distance of eighty-six miles. The stock of this road is very valuable and yields an enormous dividend on its capital. It centres at the capital of the State, and will consequently be in connection with four other independent railroads now in forward state of construction, viz:

1st. The Terre-Haute and Indianapolis railroad commencing at Terre-Haute on the Wabash river and Erie Canal, which is a direct line between Indianapolis and St. Louis, and running through Greencastle and an agricultural country for distance of 74 miles to Indianapolis.

2d. The Lafayette and Indianapolis railroad, commencing at Lafayette, on the Wabash river and Erie canal, and extending to a southeastern direction to Indianapolis—a distance of 70 miles.

3d. The Indianapolis and Peru railroad, commencing at Indianapolis and running through Noblesville to Peru, on the Wabash river and Erie Canal—a distance of 70 miles in a northeast direction from Indianapolis.

4th. The Indianapolis and Bellefontaine railroad, commencing at Indianapolis, and extending in a northeastern direction through Pendleton, Andersontown, Muncietown and Winchester to the east line dividing the States of Indiana and Ohio—a distance of 80 miles—where it connects with the railroad in a direct line to Bellefontaine in Ohio—thus connecting at Bellefontaine with the Cincinnati and Sandusky railroad, and with the railroad which will soon be constructed between Bellefontaine and Pittsburg.

This last road, it is apparent, will give the most direct connection of any with the capitol and heart of Indiana where all these roads centre, and all the eastern cities.

In addition to the foregoing, there is now completed and in operation a railroad from Edinburgh on the Madison and Indianapolis road to Shelbyville—a distance of 16 miles.

There is also a railroad located, of which thirty miles are graded, from Jeffersonville on the Ohio river opposite Louisville, to Columbus, Indiana, situated forty miles south of Indianapolis on the Madison railroad.

Then again there is a railroad now located and partly under contract from Lawrenceburgh to Greensburgh, from which latter point it is to be extended to Edinburgh to intersect the Madison and Indianapolis road and thence on to Martinsville to penetrate the inexhaustible coal region of White River, or to Shelbyville there to intersect the Edinburgh the Knightstown, and the Nashville railroads, all of which centre at Indianapolis. And in this connection I must not forget particularly to mention that there is a railroad from Shelbyville to Knightstown twenty six miles in length, the superstructure of which is now being laid, the iron obtained, and ten miles of which the cars will run the present year.—This road meets at Shelbyville the Nashville railroad, which runs from Shelbyville nearly in the direction of Cincinnati to Rushville, eighteen miles in length, of which the grading is done, the superstructure partly laid, the iron purchased, and on part of which the cars will run the present year.

All the roads above mentioned, which are not completed, are in a rapid state of construction by solvent companies, and when completed, it will be seen that the Lawrenceburgh; the Madison and Indianapolis; the Jeffersonville; the Terre Haute and Indianapolis; the Lafayette and Indianapolis, the Peru and Indianapolis, Bellefontaine and Indianapolis; the Edinburgh and Shelbyville, the Knightstown and Shelbyville, the Nashville and Shelbyville railroads, will all intersect each other at Indianapolis—or in other words all those points will be connected by railroad.

These roads will probably all be completed within from one to three years; where most of the business towns and the richest regions of agriculture in the State of Indiana will have a direct railroad communication with Indianapolis and with each other and by way of the Bellefontaine road with all the eastern railroads and cities.

The Mystery of the Traffic Table.

The traffic table is the touchstone of railways: it is to railways what the flapper was to the Lapuan philosophers. It awakens speculators from their reveries, tests the merits of engineering experiments and determines the question of questions as applied to each railway—does it pay? The time will come when the traffic table will be scanned even more intently than the share list. The latter will take its tone from the former—indeed it does to a certain extent already; only the working of the traffic receipts not being much attended to, or understood, many shareholders learn for the first time from their report whether the railway is progressing or receding. Such being the case, it becomes most important that the traffic table, and its bearing on the expenses of construction, should be clearly understood. I confess myself to be in want of information, and when I state my difficulty I trust I shall meet with some intelligent reader who will enlighten me. I shall compare the expense of construction and weekly receipt, and inquire what is and what ought to be the connection between them. In order that my selection may not appear to be invidious, I shall take the first English railway on your list, viz., the Birkenhead, Lancashire and Cheshire. This railway confesses to an expenditure of £1,088,804. To pay 5 per cent. on this sum would require £54,440.—Now what is one week's receipts? £797. Multiply this 52 times, and we have as the result £41,444.—Of course I am aware of the objection against taking a single week as a specimen; it may be a very bad week; but it may also be a very good one. This £11,444 is however the average which we assume of the receipts: we have now to inquire what reduction it undergoes before a dividend can be paid. Working expenses average from 40 to 50 per cent: let us take 40 per cent., which amounts to £16,576. If we deduct this from the before mentioned £41,444 the result is unfortunate—it dwindles down to £24,868. This is an unfavorable contrast with £54,448; which appears to be necessary, as we have seen, to pay 5 per cent. on the concern. The point I particularly wish to ascertain is, whether these figures decide the point; because if they do, I confess that the sources from which railway dividends

are paid must be regarded as mysterious. I have not had time to apply these very simple rules to other railways; but I should like to know if my mode of arriving at the truth is correct; and if not, why not?—*Railway Chronicle.*

Vermont.

The Directors of the Rutland and Burlington Railroad are pushing that important work rapidly on to its completion. The track-laying is progressing rapidly between Brandon and Middlebury. Two gangs are employed upon this part of the work; one laying the track southward from Middlebury, the other northward from Mack's Bridge. The two have completed some six or seven miles of the track.—The Bridges are advancing under the energetic auspices of Mr. Blake. The cars were received at Middlebury on Saturday week with great enthusiasm; and we see no reason why the inhabitants of Brandon may not be collected to hail their advent during the course of the present month or early in the next.

It is necessary, however, to bear in mind that the washing of the fall rains, and the necessary defects of the sub grade, will render the regular running of the passenger cars liable to some detention after the track is laid.—*Union Whig.*

A contract was closed on the 18th inst., for grading the Vermont and Canada Railroad, from Essex to St. Albans village. Mr. Balch, who has been a large contractor on the Northern and the Vermont Central Roads, has taken the contract and the work is to commence forthwith.

We learn that a number of responsible gentlemen are passing over the line of the road between this village and Rouse's Point to-day, (Wednesday) with a view to taking a contract for grading the same. The whole line is to be put under contract as soon as convenient, and finished as speedily as ready funds and energetic contractors can carry it through.—*Messenger.*

Vermont Central Railroad. We understand that the Directors of the Company purchased some 70 acres of land at Essex to-day, for the purposes of Station Buildings, grounds, &c., at the junction of the road with the Vermont and Canada,—and on highly favorable terms.—*Daily Free Press.*

Illinois.

We Copy from the St. Louis Republican the following in relation to the business of the Illinois and Michigan Canal:

"The great thoroughfare East, is now by the way of the Illinois and Michigan Canal and the lakes.—Large numbers of passengers are daily arriving and departing by the route, in preference, from the low stage of water, to a five or six weeks trip by the Ohio. The importations and exports too, are increasing rapidly by the former route, and within the past week or ten days, it is computed that over 1,000 tons of dry goods, hardware, teas, hats, boots, shoes, &c., have arrived in this city, direct from the eastern cities, via Buffalo Chicago, and the exports of sugar, furs, robes, wool, and domestic liquors, syrups, refined sugars, molasses, &c., are astonishingly on the increase."

Virginia.

Richmond and Danville Road.—It gives us great pleasure to announce to our readers, the complete success of Col. Townes, in raising the sum required to put under contract the last section of the Richmond and Danville Railroad.—*Danville Register.*

Louisa Railroad.—The gross receipts of the Louisa Railroad Company for the last twelve months, from the 1st of July, 1848, to 1st of July 1849, were \$71,626.09; being \$14,799.39 more than the receipts of the previous year, or an increase of nearly 23 per cent. The balance on hand on the 1st July, was \$15,626.57. A considerable portion of the receipts was expended in enlarging the stock of motive power, rendered necessary by the increased business of the road. If the expenditures made for this purpose be deducted, the balance on hand will be equal to about 8 per cent on the capital in operation during the year.

Wisconsin.

Madison and Beloit Railroad.—The engineer commenced surveying the route for this road on the 27th

ult. We learn from the *Janesville (Wis) Gazette*, of the 30th, that he proposes to run three lines, and then select the best of the three. It is expected that stock will be taken sufficient to commence making preparations for the road as soon as the busy season is over. The Chicago road will be completed as far as St. Charles, within sixty miles of Janesville, next month. By another fall it will reach Rock river. Active efforts should be made to meet it from Janesville at that time.—*St Louis Era.*

Alabama.

Selma and Tennessee Railroad.—The convention, proposed to be held at Shelby Springs, Alabama, convened at that place on the 27th ult. Nine counties were represented, viz: Marshall, Benton, Talladega, Coosa, Autauga, Shelby, Bibb, Dallas, and Mobile. The number in attendance was larger than expected. They seemed determined to make a united and earnest effort to accomplish the connection of the Tennessee river with the waters of Mobile Bay. The convention was in session two days, and adjourned to meet at Talladega on the 4th Monday of this month, previously to which the commissioners of the Alabama railroad company, incorporated at the last session of the legislature, were requested to open books of subscription pursuant to the act of incorporation.

Michigan.

Michigan Central Railroad.—The Laporte (Ind) Whig of the 8th says:—We understand that an arrangement has been effected by this company with the commissioners of the Western division of the Buffalo and Mississippi Railroad Company, by which the right of way has been obtained to extend the Central road from New Buffalo to Michigan City, and the road is to be completed to the latter point in one year, from this fall.

The magnitude of the immense Wire Bridge now in the progress of construction over the Ohio river at Wheeling, will be understood from the following description of it, the items of which are derived from the report of the engineer, Mr. Charles Ellet, Jr.:

The span of the bridge is 1,010 feet from centre to centre of the supporting towers, being 152 feet longer than the celebrated Freibourg bridge, which is the greatest span heretofore constructed. The height of the flooring, at its greatest elevation, is 97 feet above the low water level of the Ohio, giving an elevation of 52 feet above the great flood of 1833, and 58 feet above any other known rise of the stream; a stage of water, by the way, that is so seldom attained, and when attained is never navigated in consequence of the overflow of the banks, the submerging of the bottoms, and the general sweeping off of wood piles, etc., so that all references to and comparisons with it are matters rather of curiosity than of practical utility. On a rise of twenty feet above low water there will be an elevation of 77 feet from the surface of the water to the floor of the bridge.

The summit of the eastern tower is 153½ feet above low water, and 60 feet above the abutment by which it is supported. The flooring is 24 feet wide, with two foot ways, each 3½ feet, and an intermediate carriage way 17 feet wide. The flooring is supported by 12 cables of iron wire, 4 inches in diameter; and 1,380 feet long. These cables rest on iron rollers, placed on the summit of the towers, the movements of which will relieve the towers of the strain which would be occasioned by the contraction and elongation of the wires, consequent on variations of temperature, or the transitory loads that may pass over. The cables are anchored into the heavy masonry of the wing walls at each end of the bridge. The length of the wood work which rests on the cables is 960 feet; its weight 546 pounds per lineal foot or 524,160 pounds, or 262 tons in the whole. Each cable is composed of 550 stands of No. 10 wire.—The weight of each lineal foot of the 12 cables, composed of 6,600 strands, is 330 pounds, making, with the weight of timber, bolts, casting, suspenders, etc., 920 pounds per lineal foot, or 441 tons as the permanent weight of the bridge itself. Now, independent of this, its own weight, the bridge is constructed to support the greatest transitory weight that is ever likely to be, or I may say, can possibly be brought upon it. A column of 16 of the six-horse wagons used on the National road would fill the length of the span from one abutment to the other. The flooring is wide enough to receive two such columns,

and therefore capable of containing 32 such teams at a time; and assuming the average weight of each horse at 700 pounds, and of each loaded wagon at 12,000 pounds, and allowing 500 men of the average weight of 150 pounds each, at the same time, we have an aggregate of 593,400 pounds, or 297 tons as a test of any transitory weight ever likely to be brought upon it. This is about equal to the weight of 700 cattle, or 4,000 men. Now the aggregate strength of the 6,600 strands of wire composing the 12 cables, at 1,500 pounds tension for each, (and this is ascertained by a machine for the purpose,) is 9,900,000 pounds, or 4,950 tons. In the ordinary state of the bridge, therefore, they will be capable of supporting five times the tension which actually has place, and when the platform is covered with 32 loaded teams they will be capable of resisting three times the tension produced by the weight of the bridge itself, and three times the additional tension produced by the load upon the flooring. Thus it would seem that the strength of the cables is more than sufficient for all practical purposes: and all other parts of the structure are in the same proportions.

It is confidently expected, no untoward event occurring in the meantime, that the bridge will be ready for service by the first of November next. Then may Wheeling be proud of her great achievement; then will she have distinguished herself as having erected one of the noblest, and one of the most useful works of the age.

**South Carolina.
Greenville Railroad.**

The Keowee Courier of the 23d says:—"We were much pleased during a recent visit to the village of Greenville to learn that an union of the friends of the Columbia and Greenville railroad had been effected, and that Greenville was to unite with the road at Brown's. There would seem to be no doubt, but that the road will now be carried to that place, as \$150,000, out of 169,500, which is the highest estimate of the cost of this branch has been subscribed. The friends of the enterprise do not desire to stop at the cost of the road but to carry at least \$200,000 into the Company. This will benefit them, inasmuch as it will give an additional impetus to the work, by giving so much additional stock to the company. There can be no doubt that with Greenville for one of the upper termini for this road that the stock will be more profitable."

East Tennessee and Georgia Railroad

The Knoxville Register says, we learn from a gentleman just from that portion of the country, that there are about five hundred hands at work on the East Tennessee and Georgia railroad between the Hiwassee river and Dalton, and that they are pushing the work along rapidly.

Norfolk Ry. R.—Mr. Ivah Crocker does decline the Presidency of the Norfolk County Railroad, and other gentlemen mentioned as candidates in his stead. A meeting of the stockholders is to be held October 2d, for the purpose of choosing a presiding director.

North Carolina.

Major W. W. Vass of this city, says the Raleigh Register, has been promoted to the Presidency of the Raleigh and Gaston Railroad, vice Col. R. O. Britton resigned; and Chas. J. Williams, Esq., has been appointed Treasurer to succeed Major Vass.

Railroad Travel.

The Lewiston Falls Journal says that the whole number of passengers on the Androscoggin and Kennebec Railroad, during the month of August, was 3733, being upon the average nearly 150 per day.

The Farmer states that the passengers on the Kennebec and Portland road for the same month, as appears by the books, were 9950, divided as follows: Through tickets up, 2010; through tickets down, 1060; way tickets between Bath and North Yarmouth, 6880.

The Androscoggin and Kennebec road will soon be completed to Waterville, when it will receive a large accession of travel.

Ohio.

Mansfield and Newark Railroad.

We are gratified to learn that a letter has been received at Sandusky, from Mr. Higgins, who is now in Europe negotiating for the iron wanted by the company, announcing that he has succeeded in buying 8,000 tons of heavy T rail—enough to iron the road from Newark to Mansfield, and relay a portion of the old track beyond Mansfield. The weight of the iron is 106 tons to the mile, or about 60 lbs to the yard. 3,000 tons, or nearly one-half the purchase, has already arrived at New York.—"So," says the Herald, "our road north will now be completed without delay."

While we congratulate our Newark friends on this happy termination of the difficulties they have encountered in the completion of this work, we must be permitted to remind them that now there will remain to the citizens of Licking no plausible excuse for denying an adequate public and private subscription to the Central road. Indeed, we think that that result, with suitable exertions on the part of friends in that county, need no longer be apprehended. We think that the very excellent and unanswerable "Address to the Voters of Licking County," from the pens of Messrs. Sullivan and Hosmer, which appeared in the Newark papers of last week, cannot but exercise also a most favorable influence upon the public mind.—Zanesville Courier.

Central Ohio Railroad.—Engineer.—We learn that the committee of directors have determined to confer this important post upon Mr. Preble Wormeley, the gentleman to whom reference has been heretofore made. He is highly qualified to discharge the duties of his responsible station with satisfaction to the Company and to the public.—Zanesville Courier.

W. L. Mitchell, Chief Engineer of the Georgia State Road, was in town yesterday. The Colonel informed us that he had come all along the line of the road from Dalton, and was enabled to report that all the work was done, ready for the iron, within two miles of town, with the exception of the bridgers and a few small gaps, which latter would only require two or three days to complete. The bridge builders are finishing their work rapidly, and in superior style. On the unfinished parts of the they can complete about a half mile of the superstructure per week, which will enable them to have it all done in a few weeks. Then, as soon as the bridges are done, the cars will roll into Chatanooga. They will run the cars up to Ringgold for the first time to-morrow, but will not, we are informed, made regular trips up there until the whole is completed. We will set the first of December for the completion of the whole road, with the exception of the tunnel.—Chattanooga Gaz., 21st inst.

Cotton Crop of Alabama.

A writer in the Mobile Advertiser makes an estimate of the whole of the cotton crop produced in Alabama for the year ending on the 1st inst., 612,922 bales averaging 509½ pounds each, or 312,240,015 pound. This is made as follows:

Weight of 518,706 bales at Mobile, lb.	264,843,253
" North Alabama, sent to Memphis and New Orleans.....	49,170,224
" Sent down the Chattahoochie.	33,125,624
" Consumed in factories, etc.....	6,370,313
	353,010,015
From which deduct Mississippi cotton, sent to Mobile—80,000.....	40,770,015

Total product of Alabama..... 321,240,015
Or 612,922 bales, at 509½ pounds per bale, or 892,117 bales, at 330 pounds per bale; the value of which, 6½ cents per pound all around is \$13,515,063 47.

More Iron Ore.

A new and extensive bed of iron ore, of very superior quality, has been discovered on the land of Messrs. C. W. & J. H. Little, in Jefferson county, on the south side of the Shenandoah river. It is believed that a large portion of the mountain is an iron deposit. The ore already taken from this mine yields about 75 per cent, of pure metal. Who, overlooking such a treasure, would care for California?—Winchester Republican.

Lake Superior Iron.

Copper is not the only valuable product of the Lake Superior country. Another product is found there of great value, perhaps more so than the copper to our state, if they are worked, and the product manufactured within our own state.

Iron ore, yielding 70 per cent of pure iron, is found to be inexhaustible at Carp River. The ore lies on the surface in hills or boulders.

Waterman A. Fisher and six other capitalists from Massachusetts, have already commenced operations for getting out the ore, by putting up machinery, trip-hammers, etc., and will be prepared by the first of June next to contract for the delivery, at any point required for manufacture, from 1,000 to 10,000 tons of iron hammered into what manufacturers call "blooms," or lumps of wrought iron, weighing from one hundred to two hundred pounds.—Detroit Free Press.

Our Western Railroad.

If the present prolonged state of low water does not prove to our citizens the stern necessity of a Western railroad to preserve the business and prosperity of this city, then we shall despair of them in all future time.

We have now had some months of extremely low water, and what is the consequence—almost an entire stagnation of business, while all around us the hum of prosperity and active trade shows that we are alone in our unwonted and disagreeable idleness.

In St. Louis, business is extremely brisk; her merchants are worked night and day, and their stocks are nearly exhausted. In Nashville, business is very fine, especially in dry goods. Cincinnati is doing well, as she has communication with the interior by railroads. All our eastern cities are doing a good and profitable business.

In Pittsburg we hear one universal complaint of dullness, while every eye is turned to watch the clouds, and the continual inquiry is heard, when shall we have rain? Our manufacturers have immense stocks on hands waiting for the purchasers who do not come, because the avenues of access are cut off, and heavy freight cannot be shipped. The shelves of our wholesale dry goods jobbers are groaning with goods, at extremely low prices, but the ready salesman hangs about listless and idle.—Our grocery, hardware, and drug dealers and numerous others, in every variety of trade, have hardly any thing to do but to sigh for rain!

How long is Pittsburg to remain in this dependent condition? A trade which is liable to such periodical interruptions can never be prosperous and certain. Country dealers will not establish their connections with a city which is liable to such inconveniences. Without certain and ample means of access, at all seasons, Pittsburg must consent to take a very secondary rate in the list of Western cities.

Suppose we had now our Western road in operation to Wooster and Mansfield, what a contrast would our streets present. Every manufacturer, merchant, jobber, and mechanic, would be busy.—Our dull streets would swarm with active life. Our languishing exchange would show a large congregation of smiling and bustling business men. We should find that we were not wholly dependent upon our rivers; but that our artificial streams, which no weather could effect, supplied to us all, or nearly all, that the natural stream lacked.

We venture the assertion—that Pittsburg has lost more by the cholera on the rivers, and the subsequent low waters this season, than would have built the railroad to the State line.

If the manufacturers, the capitalists, the real estate owners, of this city, possess the sagacity for which they have the reputation, where their interest is concerned, they will take hold of this Western road, and have it finished as fast as money can construct it. They will not consent to wait for the slow moving of the negotiation of Bonds, but by a liberal and universal subscription of stock, they will say to the Directors—*here is the money—let the road be finished by the Spring of 1851!*

Pittsburg has subscribed nothing, comparative with her means, as yet. She has subscribed more for this great object, than the county of Jefferson, in

Ohio, has for a like object, and they say they intend to run their subscription up to half a million.

We would beg leave to suggest to our business men, who daily assemble at the exchange rooms to mourn over the continued low water and the dull times, to take this subject under serious consideration, and see if some thing cannot be done to expedite the speedy construction of the Ohio and Pennsylvania railroad.

We are aware that the directors on the road are doing all that men can, and we have not the least doubt that the road will finally be built. But, hampered of money, the progress of the road will be necessarily slow. Is Pittsburgh willing to await this slow progress? She has undertaken this road—she has got to build it, and why not do it at once, as every day's delay is to her a positive injury.—*Pittsburgh Gazette*.

Railroad to the Pacific.

We cheerfully give place to the following note, and to the plan proposed by Mr Degrand, for a railway to the Pacific. Our want of room may compel us to omit the appendix for a future number.

This plan, emanating from a city more distinguished than any other in the Union for the extent and excellence of its railways, and sanctioned by men who, from their experience and successful management in railway affairs, are properly regarded as authority in such matters, is certainly entitled to great consideration, and we feel that we are aiding this great work in giving their views to the public. Our aim has been to promote a full and free discussion of the subject, and we shall always be happy to lay before our readers anything that may lead to the adoption of the best plan for carrying out this great work.

To the Editor of the American Railroad Journal.
Boston, October 1, 1849.

Dear Sir:—With a view to enable your readers to form a deliberate judgment on the merits of the Boston Plan, would it not be well to publish, in your valuable Journal, the address and appendix, contained in the pamphlet sent you by this mail? You will observe by the proceedings, contained in this pamphlet, that at a public meeting, held in Boston April 19, 1849, the friends of a railroad to California have unanimously voted "That they deem this the only plan, as yet proposed, which can secure, promptly and certainly, and by a single act of legislation, the construction of a railroad to California, in the shortest time allowed, by its physical resources."

In regard to the suggestion, that it would be best to have a much larger amount of private capital paid in, by the company, we beg leave to remark that thus locking up a large amount of private means would of course obstruct it from the channels of active business, producing great distress and embarrassment, at the very time when new channels of business task, to the utmost, the cash resources of active men. Now we remind you that the amount of private means, invested in the Baltimore and Ohio railroad, came very near running that city—even though it was applied to a project, calculated to be highly beneficial in the end, to the prosperity of Baltimore?

A very large accession of active capital is needed to meet the new channels of business created by the acquisition of California. It is needed to build the railroads which will be converging from the different points of the Union, to the starting point on the Mississippi, of the San Francisco. Much of this new capital will, by the Boston Plan, be imported from abroad.

Yours, respectfully,
Wm. Ingalls,
E. H. Derby,
Robt. F. Fisk,
P. P. F. Degrand,
O. D. Ashley,

Committee,

Railroad to San Francisco.

At a meeting of the friends of a railroad to California, convened by public notice in the newspapers, at the United States Hotel, on the evening of the 19th of April, 1849,

DR. WILLIAM INGALLS, was chosen Chairman.
Thomas R. Sewall, Secretary.

P. P. F. Degrand, after a few preliminary remarks, read "An Address to the People of the United States," setting forth the plan which he proposes, for the purpose of effecting the object in view.

Robert F. Fisk, after some pertinent and interesting remarks, proposed the following resolves:

Resolved, That this meeting approve the address presented by P. P. F. Degrand, and the plan therein set forth, for a railroad from St. Louis to San Francisco, deeming it the only plan, as yet proposed, which can secure, promptly and certainly, and by a single act of legislation, the construction of a railroad to California, in the shortest time allowed, by its physical obstacles.

Resolved, That a committee of seven be appointed to transmit this plan to the President of the United States, and to request him, (if he approve it,) to recommend its adoption to Congress.

Voted, That the following gentlemen constitute this committee:

William Ingalls,
E. H. Derby, P. P. F. Degrand,
James C. Dunn, Robt. F. Fisk,
S. S. Littlehale, O. D. Ashley.

ADDRESS:

To the People of the United States.

Railroad from St. Louis to San Francisco.

FELLOW CITIZENS:

I propose that a company (composed of men, in whose integrity and steadiness of purpose, confidence can be reposed, by the nation, be chartered by Congress, to construct a railroad from St. Louis to San Francisco, with a capital of 100 millions of dollars, and that this company (after having paid in \$2,000,000,) shall have the right to borrow United States 6 per cent. stock to such an amount, (not exceeding \$98,000,000) as may be sufficient to finish the road and carry it into full operation, with a double track.

I propose that Congress give to this company, a strip of the Public Lands, 10 miles wide, on the north side of the road, and the land for the bed of the road, and for depots, and the right to take, from the public lands, wood, gravel, stone, iron, and other materials necessary to construct the road.

The adoption of this plan will secure the completion of the road, in as brief a space of time as may be permitted, by its physical obstacles:—and will secure this by a single act of Congress, free from the chance of future freaks of Legislation. This is the distinguishing feature of my plan—and it is free from the objection of absorbing the private resources of active men;—and free from the risk of halting, in this great work, at every step, for want of tangible means.

I propose that, immediately after the surveys are made, the company proceed to construct this railroad on the whole route, going to work, at once, on as many different parts as practicable; and building at difficult points, temporary railroads, to be used while the permanent railroad is constructing; and actually bringing into use the various portions of the road, as fast as completed.

The company being thus in possession of tangible means, and acting under a sense of the imperative necessity of giving to the public the facilities of railroad travelling as fast as practicable, will very soon reduce to a moderate distance, the inconveniences of a land journey to California, and will secure the completion of the entire line, in the briefest period practicable,—and in the interim, the mail stage and the traveller, by the land route, by following, as near as convenient, the track marked out for the railroad, will avail themselves more and more, every day, of the comfort and protection, naturally incident to the incipient stages of civilization, which accumulate on the line of a railroad, from the very moment it is begun, to the day of its completion.

I propose that, while the road is constructing, a line of Telegraph be established, as far and as fast as

practicable, to transmit intelligence for the purposes of the road, and for the government, and for the public generally.

I propose that no stimulus, stronger than cold water, be allowed to be used, by the officers and men, employed by the road, or by the contractors. This rule has been found of inestimable value, in building and carrying on the New England railroads, in the construction of the Boston water works, and in the navigation of New England vessels.

I propose that, at points of any difficulty, two separate sets of men (relieving each other,) be employed, to secure the continuation of the work, night and day, and that, at the most difficult points, three separate parties of men (working, each of them 8 hours a day,) be employed, to secure continual work, without interruption, either by meal-times or by night, employing, in all cases, as many men, as can work to advantage, and having all sorts of work going on at the same time, for the purposes of the road, both on the route of the road, and elsewhere; so that there may be no delay, which can be avoided. This course was pursued, in bringing the waters of Cohasset Lake, into Boston, from a distance of 20 miles, through two summits and great physical obstacles:—and in the unprecedentedly short space of 2 years and 2 months, from the day the 1st spade struck the ground, to begin the work; the city and its citizens found themselves, in the full use of the water, flowing through a work, calculated to endure for ages.

The importance, in a pecuniary point of view, of using the road, at an early day, is shown by appendix B, by which it will be perceived, that the extra expense of travelling, between the United States and California, is estimated at \$67,750,000 a year, over and above what it will be after the railroad is in use.

The arguments, in favor of the plan, are fully elucidated in the appendix. By moving for this plan, the friends of the measure will, by one single effort, viz., "the passing of the act," secure the completion of the road, in the shortest possible time; whereas, if the adopt any plan, which relies on funds created by the sale of the land; or on a large amount of funds from private individuals; or on funds to be, from time to time, appropriated by Congress,—they will impose upon themselves the never ceasing labor of Sisyphus, and by the delay waste enormous sums for the nation.

To secure the loan of the United States Stock, made to the company, and to secure the carrying forward, in good faith, of the contract made with the company, the United States may, if they desire it, take a mortgage of the road, and its appurtenances; take $\frac{1}{2}$ of the stock; and appoint $\frac{1}{2}$ of the directors, following the precedent so successfully practised, by the State of Massachusetts, in the case of the Boston and Albany road, (commonly called the Western railroad,) in which case, as in the contemplated charter, the railroad company do provide punctually for the payment of the interest on the public funds loaned to them, and also are to provide, and are providing, by a sinking fund, (and occasionally by extinguishment by purchase,) for the payment, at maturity, of the principal of the public loan.

The \$98,000,000 of the United States 6 per cent. stock loaned to the company, being Coupon stock, payable, in London, will, (as have the Massachusetts Sterling 5's, in the case of the Western road,) furnish, at any time of need, exchange on England, to be sent there, in lieu of our specie, and operate as additional capital, to be used by the citizens of the United States.

The \$98,000,000 of the United States stock, loaned to the company (being made payable at the rate of \$2,000,000 per annum, after 50 years,) will be paid off, by the company, with perfect ease, either by actual profits, or by the creation of new stock, to represent the amount paid off.

The other distinguishing feature of my plan is the creation, by a single act of legislation, of one hundred millions of dollars of American labor, by ordering, in the very charter, that the materials used in the construction of the road shall be exclusively of domestic origin. These one hundred millions of tangible money will naturally, directly or indirectly, be distributed to pay for the labor, the manufactures and the agricultural products of every State in the Union, and will set the whole industry of the whole country in motion.

The moment this railroad is made, it will be the great thoroughfare for the mail and for passengers, from Europe to the Pacific and to India. The saving of interest (by the saving of time) and the saving of insurance, for gold and silver and for valuable goods, will secure to the nation a great profit and a vast trade.

Whether we consider this railroad as an indissoluble bond of union between greatly distant parts of our widely extended empire; or as a means of averting European wars and wars with the Indian tribes; or as a means of transporting the mail and communicating telegraph intelligence; or as a measure of internal commerce, so vast, so varied, as to defy all precedent; or as a measure for national glory, obtained without waste of blood or treasure, by constructing and completing, in a brief space of time, the great work of the age,—we are irresistibly led to the conclusion, that national glory and national interest alike dictate the adoption, at the earliest day, of a measure calculated to obtain, for the present generation, the honor, which posterity will award to those who secure, for all future ages and by this single act of legislation, the immeasurable benefits flowing from the existence of this great work,

P. P. F. DEGRAND.

APPENDIX TO THE ADDRESS.

Railroad to San Francisco.

Remarks by P. P. F. Degrand, at Cohasset, at the opening of the South Shore railroad Jan. 1, 1849.

If we take into view the actual wealth created by the existence of a railroad, it will be found that the actual cost of a railroad is (as to the whole community) less than nothing. Take, for instance, the south shore railroad. The actual rise of land on its borders, caused by the existence of a railroad cannot be valued, on an average, at less than \$50 an acre, for a strip, two miles wide, on each side of the railroad. A square mile contains six hundred and forty acres; which gives two thousand five hundred and sixty acres for every mile of the road, taking a strip two miles wide on each side of it.

The rise of \$50 per acre on 2560 acres, gives an additional value to the land of \$128,000 for every mile of the road. Each mile of the road, therefore, creates wealth to the amount of.....\$128,000 While the road only costs, per mile..... 28,000

Whence it necessarily follows that it costs, in fact,.....\$100,000 per mile less than nothing.

Is not the case demonstrated beyond all doubt and cavil? Will not, in fact, the land very soon rise, in some places, twenty cents per square foot, which makes \$8,800 per acre.

This rise of the land, and of other property, real and personal, right and left of a railroad, accounts for the facility with which thousands of millions have, within the last twenty years, become tangible and have been spontaneously appropriated to make railroads of vast extent in all parts of the world.—The existence of a railroad not only creates the wealth which repays its own cost, but it also creates the means wherewith to build the next railroad.

This vast creation of wealth, by the existence of a railroad, will easily produce the cost of the railroad line in continuation of the South Shore railroad, (via Boston,) to St. Louis, in Missouri, or to some other point in the west, and thence to San Francisco, the centre of the gold region, and the future centre of the trade of the Pacific, and of India. Private enterprise, aided by donations, from Congress, of alternate sections of land, will do much to carry this line to St. Louis, in Missouri. But, farther on, the national arm should, in its might, push unhesitatingly the great work to completion in the shortest possible time. It should do it by the mighty lever of the public credit, thus leaving private resources to fill up the manifold channels of employment opened by our late vast accession to our already vast empire.

From St. Louis, in Missouri, to San Francisco, the distance is 1600 miles. At \$66,666 per mile, fully equipped, the railroad will cost \$100,000,000. Let a charter with this capital be granted by Congress, to a company, in which individuals take the stock and furnish \$2,000,000 of the capital, obtaining from the United States the loan of United States stock for the balance. Let this company be bound

to carry the mail and to carry the troops and munitions of war, on very reasonable terms; and let Congress also grant them, through the public lands, a strip ten miles wide, on the north side of the road and let the company be bound to build the road with American iron and other materials exclusively of domestic origin.

Let us now consider what will be the consequences of such a plan:—

Thus fortified, with tangible means, the road will be built in five years. When built, its very existence will defend our possessions on the Pacific.—It will avert all danger of Indian wars, north and south of its line. Upon its bed, a telegraphic wire will enable the government to issue its orders to California and to Oregon, with the rapidity of lightning—and will transmit individual correspondence with the same electric speed.

In case of a declaration of war against the United States by a European power, the instantaneous transmission of the news and of the implements of war, including even seamen, to our possessions on the Pacific Coast, will give us the command of the trade of our own enemy in the Indian Seas, and enable us to protect our own.

The cost of this railroad will be more than repaid by the additional value which it will impart to the public lands west of Missouri.

Employing iron and other materials, exclusively American, will give life and animation at once to a great mass of industry, now lying dormant.

The plan now proposed, will finish the road, in a short space of five years, because the money will be easily obtained, by the sale of United States Stocks.

Another plan, which is before the public, contemplates to create the money by the sale of the land.—But by following that plan, the land cannot be sold, until after the road is built, and the money to build the road, cannot be tangible, until the land is sold.—The plan is therefore radically defective. If it be adopted and adhered to, 50 years will not suffice to bring the road to completion.

And what is 50 years, as to the accumulation of interest, while the road is in construction? It is an increase of its cost more than four fold. And what is 50 years, in the onward march of this mighty nation? It is, (judging from the past,) the increase of its population, from 22 millions, its present number, to the prodigious number of 88 millions. And what is 50 years, in the existence of most of us? Alas! it is the passing to the grave of more than two generations.

As to the constitutional power of Congress, thus to loan the public credit, to the amount of \$93,000,000, there cannot, in this case, be a shadow of doubt; because this loan is made, in pursuance to the clearly defined powers of Congress, viz:—

To provide for the national defence: To provide for the transportation of the mail, (which will be done, both on the land and by lightning.)

To take provident care of the public domain, by increasing its value, by the best known modes of internal communication:

To cement the bonds of union, between parts of this vast empire, which will be thus riveted together, by unceasing intercourse.

Mr. President:—I perceive that you are already convinced, and that you go with me and with my intelligent fellow citizens around me, for a railroad to San Francisco, and for a railroad to be used before most of us shall have departed for another world. Let us then resolve that it shall forthwith be done, and it is done; and let us say:

The south shore railroad—its extension, via Boston, in the shortest time possible, to San Francisco, by the mighty lever of the national credit.

For reasons given in our last number, we cannot subscribe to the scheme of Mr. Degrand. In the outset he begs the very question upon which his whole plan rests, viz: the selection of "a company composed of men in whose integrity and steadfastness of purpose confidence can be reposed by the nation."

Where shall these men be found, by what authority shall they be appointed, and what security shall we have that the work shall always remain in such hands? Who is to be a judge of qualifications? A New Englander would say that it should be entrusted to men from this section of the country, for the reason that New Englanders have displayed more "steadfastness of purpose" and more ability in railway affairs than can be found in any other part

of the country. The south would not trust the management of the road to the "scheming Yankee."—It would claim that its leading men alone presented the qualifications which are the necessary conditions prescribed. The west would say, "this is a work which belongs to us; you of the Atlantic States have always been the recipients of government patronage. It is but just that we should have appropriations of the money to be expended among ourselves." A squabble would at once ensue for the management of this great work, and the amount of money which this plan proposes to place as a stake, to be carried off by the successful party in the struggle, would of necessity lead to every species of political corruption and bargaining to secure so vast a prize, which, of itself, would preclude the selection of the men of the character contemplated by the plan. Again, the plan supposes the existence of a power competent to decide upon this point of qualification and certain to appoint none but the proper men. From this we dissent altogether. Each administration would appoint its own partisans as directors, who would exert all the influence that their position, and the immense means at their command would give them to sustain in power those on whom their offices depended. Our only safety consists in completely disinvesting the "purse from the sword," the money holding from executive power.

As by the plan proposed, the road is to be a private enterprise, government should receive every security for its aid to this, as to any other private work. The \$2,000,000 advanced by the company would be only security for an equal sum advanced by government, and the inconvenience that would be felt from withdrawing a large amount of money from the business of the country, should have no effect in setting aside so important a rule in all business affairs.—Again, if the road is to realise one-half of what is predicted of it, if over it is to pass the commerce of the world, it should never be made the subject of private management, anymore than should the navigation of the Mississippi. The rights of all our citizens, and the commerce of the world, should never be surrendered to the management of individuals who might have no other principle of action than their own cupidity, and whose interest would come in direct conflict with that of the public. Again, individuals could give us no security for the proper construction of the work; so that, after all, the aid that government might render, it might be entirely unfit for the office it will be called upon to perform.

The Coal Trade for 1849.

The quantity sent by Railroad, this week, is 25,777,17—by Canal, 15,957 05—for the week, 42,725 02, tons, although the shipping season is rapidly drawing to a close.

The trade continues about as dull as usual, and there is but little hope of any favorable change for the balance of the season, or even while the present tariff law is in force. The Warehouses, which our Government in their liberality to foster and encourage foreign importations, provided under the Tariff of 1846, are filled to overflowing with foreign Iron &c., sufficient to supply all the wants of the country. Under such circumstances how can we expect any improvement in the Coal Trade?

Freight to New York has advanced to \$1 75 per ton, from Port Carbon—\$1 70 is paid from Schuylkill Haven—to Philadelphia there is no change.—Miners Journal.

The Regular Trains on the Atlantic and St Lawrence Railroad, have commenced running to what is usually called the Widow Merrill's, in Paris—being about two miles short of the Depot at Paris Cape. Between the Widow Merrill's and Paris Cape there is an important Bridge in the course of construction, across the Little Androscoggin. That bridge will be completed in the course of the

fall—after which the trains will run to Paris Cape. A corps of Engineers is now in the field, making a final location of the Road, between Paris Cape and the Androscoggin at Bethel, under the new agreement with Messrs. Black & Wood, in concert with the Canadian Company.—*Aegis*.

Two Trains Daily, between Alabama and Boston, and New York and Boston.—We learn (says the Boston Atlas) from Mr. Twitchell, the Superintendent of the Worcester Railroad, that on and after the 8th of next month, there will be run over the Boston and Worcester and Western Railroad, two through trains daily, (Sundays excepted,) from Albany, leaving that city at 8 A. M. and 3 P. M. and arriving in Boston at 6 and 11 1/2 P. M. Trains will also leave New York at the same hours as Albany, and arrive at Boston at the same time.

New York.

Harlem Railroad.—The arrangement in regard to the extension of the Harlem Railroad from Dorcy Plains to Chatham Four-Corners, where it will connect with the Albany Road, is substantially as follows: Three heavy capitalists proposed to build the new road for \$2,000,000, the company paying the engineering expenses and right of way, estimated at about \$800,000. The road is to make payment in 7 per cent. bonds based on the new road only, and the earnings of the new road are to be depended upon for the payment of the interest on their bonds. The old road, of course, is to pay the new road a fair compensation for the business brought it by the new road.

Crawfordsville and Lafayette Railroad.

A correspondent of the Lafayette Daily Journal writes that "this road is progressing with the speed of a Locomotive. There is a continued string of workmen for seventeen miles on this end of the line. Immediately on this side of Crawfordsville, the number of shanties indicated a host of workmen in that vicinity. One half of the road will be ready for grading by the first of December next. This enterprise—the energy with which it is progressing, speaks well for the citizens of Crawfordsville. The scheme, put in operation since last winter, and in less than one year or half of the road almost ready for the wood structure, and that too, by money raised at home, is a thing unparalleled in Hoosier enterprise."

The able and efficient President, Major Eiston, knows what can be done, and is exerting himself nobly in its behalf, as much so as though it were an individual concern. They have only paid, as yet three dollars on a share;—another assessment takes place in a few days."

Georgia.

The Burke County Railroad.—We learn that F. P. Halcomb, Esq., chief engineer on the South Western Railroad, is at present engaged with a corps of engineers, in making examination on a route for the Burke County Road, between Augusta and Waynesboro'. This examination is being made through a section of country in a more direct line between the two places, and farther from Savannah river than the former proposed route. The route from Waynesborough, has been heretofore well examined, to the Central road. There is no longer doubt of the speedy commencement and completion of the road. The subscriptions, we learn, are constantly increasing.—*Georgian*.

Georgia Power Loom Manufactory.—Messrs. Poe & Co., of Augusta, have completed a contract for the construction of a brick building, on the Canal in Augusta, 100 feet long, 50 feet wide, and three stories high. The Company have paid a cash capital of \$25,000, which is furnished by some of the wealthiest citizens in the place, and which can readily be increased to any given amount required. It is to be employed in the manufactory of power looms, and of every other species of machinery used in cotton and woolen mills. Mr. Poe is himself an humble mechanic, and judging from the specimens of his skill exhibited at the late fair, he will be enabled to turn out as fine machinery as can be produced in the northern shops.—*Mercur Jour. & Mess.*

Railroads in Cuba.—On the 10th ult. a new line of railroad from Navajas, connecting with the Havana and Cardenas road, was opened for the accommodation of the public. The railroads on the island of Cuba are the only ones in the Spanish dominions

Cleveland and Columbus Railroad.

The work upon the railroad from Columbus to Cleveland is progressing rapidly. The contractors, Messrs. Harback and Co., have over 3,000 men employed, at a monthly expenditure of between \$50,000 and \$60,000. It will be one of the best roads in the Union; the aggregate amount of curves on the whole 135 miles is less than five miles, and the maximum grade only 15 feet per mile, excepting at its approach to the Lake. The track of the first 35 miles, from this city, is now being laid with 63 lb. T rail, and will be opened by New Years to Wellington; from this point a line of stages will be run to Bellevue, connecting with the Sandusky and Cincinnati railroad, which will avoid any night travel between Cleveland and Cincinnati or Columbus, in coaches. The balance of the road to Columbus will be finished within one year. Passengers will then be able (if the stage connections between this and Columbus can be made to suit,) to travel from Chillicothe to New York city, in 48 hours.

A railroad is also projected from Sandusky city to Cleveland, and a company from Cleveland to Buffalo is already organized. When these works are completed, and our road to Newark, there will be a continuous line of railroad from Chillicothe to the city of New York. The construction of the Scioto and Hocking Valley railroad will secure this, and whether it shall be constructed or not, will depend in a great degree upon the vote of Ross county on Tuesday next. The Scioto and Hocking Valley railroad will connect with all the railroads now in course of construction in Ohio, and will enable the citizens of Chillicothe and Ross county, to enjoy all the advantages to be derived from railroads, at a less expense, and in less time than any other road which is projected.—*Scioto Gazette*.

AMERICAN RAILROAD JOURNAL.

Saturday, October 6, 1849.

Memoranda for the Conventions.

The Pacific railroad is a subject of world-wide importance; it addresses itself to the consumer of 'occidental' merchandise in Calcutta, Canton; to the consumer of 'oriental' merchandise in Berlin, Bristol, and Boston. This measure, carrying out the very idea that brought the great Columbus to this 'brave world,' will open to mankind the long sought for western route to the terra incognita of dearth and diamonds. This is above all an American measure, one for building up cities on the silent shores of the Pacific; for growing corn on the untrodden slopes of the Rocky Mountains—in short an inspiration of an overruling Providence for shaping out and quickening the destinies of this great Anglo-Saxon Republic.

The Pacific railroad is a great question; yet men of narrow souls will huxter it as though it were a transaction of penny-tape. It is a subject of wide, of national interest, one of universal benevolence; and yet political drabs, making it the stalking-horse of a shabby selfishness, will degrade it to the uses of place-hunting finesse. Gloomy men standing in stolid cowardice on the borders of the prairies, lag behind the idea; ardent men rush before it, throwing in their hot haste but a passing glance at the snow-capped peaks of the Rocky Mountains.—The railroad to the Pacific is an inevitable, an immediate necessity; the discussion of such a question demands a sober, vigorous judgment, a patriotism that once broad, honest, generous. How far will the coming convention meet these conditions?—How, for instance, will those meetings deport themselves on the question, which are to be the termini? Fie on them if this be the program; the political tricksters will say out their

penny-showmen; all the mile-square patriotism from north to south will prick up its ears; and perhaps the mountebank mouthings of one, or the curlish barkings of the other, will out—sound the many inspirations of common honesty and common sense. But happily the question of route is a plain question of equity.

The two competing points on the Pacific Ocean are San Francisco and Puget's Sound. San Francisco has acquired an importance which, though possibly ephemeral, cannot be overlooked in consideration of things beyond the Rocky Mountains; but while public opinion just now points to that place solely, the people should not forget that all information on the subject associates genial climate, generous soil, industrial resource, and all other conditions of commercial greatness, with that magnificent estuary, Puget's Sound.

The South Pass in latitude 42 1/2°, the North Pass in latitude 48°, the Pass Del Norte, in latitude 32° are the points named for crossing the summit between the two oceans. The air line—the one of a great circle—between New Orleans and San Francisco—the extreme points of southern interests on both shores, intersects the Rocky Mountains at the 37° of latitude, five degrees north of the Pass Del Norte; and as the air line between Boston and Puget's Sound, the extreme points of northern interests on both shores—intersects the Rocky Mountains at the 48°, 11 still more northerly; it is concluded that the Pass Del Norte, in the strict equity of the case, can have no claim whatever. So much for the Pass Del Norte. Again: Although the air-line between Boston and Puget's Sound crosses the dividing ridge in the latitude of the North Pass, yet the air line between San Francisco and New Orleans intersects this ridge 11° more southerly, plain fair dealing places the North Pass also out of the question. The South Pass then is the gate of intercourse between the valley of the Sacramento and that of the Mississippi. But further: the air line between Boston and Puget's Sound on the north crosses the Rocky Mountains at the 48° of latitude, that between New Orleans and San Francisco on the south at the 37° of latitude; and the mean between these two extremes being 42 1/2° the latitude of the South Pass, it follows that the south pass is the point of mutual accommodation. Besides: the South Pass forms an isosceles triangle with San Francisco and Puget's S. and holding, therefore, the same position in reference to either, it is concluded that the South Pass is the point of mutual accommodations for the extreme points of the Pacific interests. Finally: the air line between Boston and San Francisco, intersecting the Rocky Mountains at about 42 1/2° the latitude of the South Pass; and the air line from New Orleans to Puget's Sound, intersecting these mountains at the same point it follows that it is the point mutual accommodation for all sections of the country, whether east or west of the Rocky Mountains.

The western terminus is another vexata questio in the hands of stunted patriotism or thimble-rigging statesmanship; but happily this too may be decided by reference to the plainest principles of fair dealing. The line bisecting any angle of the triangle A B C shows the average direction between the two adjacent sides; and the intersecting points of the three lines bisecting the three angles is therefore the central point for A. B. & C. Now in the triangle Boston, New Orleans and Puget's Sound, the line running midway between each pair of sides will pass through St. Louis; in the triangle San Francisco Boston and New Orleans, the line running midway between each pair of sides will pass through

St. Louis: in the triangle Boston, New Orleans, and South Pass, the latter being already a fixed point on the route, the line running midway between each pair of sides will pass thro' St. Louis: and therefore it follows that St. Louis, as the mean between all the extremes of which the question admits, is the point fixed by the abstract conditions of the case for the eastern terminus of the Pacific railroad.

The eastern terminus and the crossing of the Rocky Mountains are deduced here from unquestionable abstract premises, and utterly irrespective of physical considerations. The only topographical fact in fixing these theoretical points is simply that of practicability as a crossing of the South Pass. I go no further into the question of route;—it is either an impudent or a cunning pretence in the present state of our knowledge of the country to assign a more detailed location. The public are therefore advised earnestly of the uselessness of debating this question—a question on which the sum total of our precise information is simply nothing. Men of good sense in all sections of the Union will understand readily that with barely sufficient facts to establish conditionally but two points on the line, all that can be done at the present moment is, to lay down from these a theoretical basis for an engineering exploration. This Journal in its honest anxiety for the success of the Pacific railroad lays great emphasis on this fact. The unanimous will of the whole people is necessary to carry out a work of such magnificence; and therefore do we urge earnestly that, while all discussions on the question of route must be carried on in ignorance of the facts, they can have only the effect, by exciting dissension and ill-feeling, of defeating this master-stroke of progress—a measure requiring above all others harmony and good will. One of the great merits in the plan put forward in this Journal for carrying out the railway to the Pacific, is that this question of route is not allowed to interfere until the machinery is in bona fide existence; and that while saving the measure from the certainty of sectional opposition, it places the decision of the case in the hands of a body representing exactly the various interests concerned. M.B.H.

Railroad Accident.

We learn from the Lewiston Falls Journal of yesterday, that the up train of cars on Thursday afternoon, from the junction to Winthrop, ran off the track two miles above this place, at Barker's Mills, in consequence of the gross carelessness of the individual (Mr. Joseph Read, we believe,) having charge of the switch at that place, completely capsizing the engine and doing much damage to the tender and baggage car of the train. Fortunately, none of the passengers, of whom there about fifty, were severely injured, and the escape of the engineer and fireman was truly miraculous.

The accident, and all the loss occasioned by it, might have been prevented by the use of Tyler's Patent Safety Switch, which render such accidents almost impossible.

Railway Connection between Montreal and Quebec.

It will be seen from the following communication, that the Canadians are agitating the subject of connecting Quebec with the St. Lawrence and Atlantic road, and consequently with the railways of New England and of New York. This is a task requiring so little effort, that we have strong expectations of seeing this work accomplished, as soon at least as the St. Lawrence and Atlantic road is completed.

To the Editor Quebec Morning Chronicle:

Sir,—Feeling an interest in all that concerns the progress of Quebec, I cannot refrain from bringing before the notice of your readers a project which, in my humble opinion, is more calculated than many other things to advance the interests of your city, as well as the interests of the surrounding country.—I refer to the construction of a railroad at Point Levi to Melbourne, to connect with the St. Lawrence and Atlantic railroad. The latter road is contracted to be delivered, in three years from this month, complete and ready for business, with titles for land, &c., through to Portland, for the sum of £6,550 per mile—locating, laying out, &c., being subject to the control and approval of the company's engineers. By the time that the St. Lawrence and Atlantic railroad will be finished, it will be tapped by the Pasumpsic and by other roads, so that by its construction Quebec would be connected with Portland, Boston and New York. By the construction of a railroad from Quebec, the townships would be opened up, the immense tracts of fine land through which it would pass, would soon be filled with industrious farmers, and their produce would reach your markets, to be exchanged for merchandise, &c. It would be difficult to estimate the advantages which this work would effect, and nothing short of the absolute impossibility to construct it, should deter those interested in the growth and prosperity of your city from immediately taking measures to secure its completion. Nor is this a matter impossible. The directors of the St. Lawrence and Atlantic road pay for their 97 miles from St. Hyacinthe to the province line as follows:

Montreal City Bonds at par.....	\$500,000
25 per cent. of the capital stock at par,	
remainder one half the cost of the road from Montreal in stock guaranteed by the province at 6 per cent. interest. Now, as the length of the road from Point Levi to Melbourne would be about 80 miles, the cost, at the rate of £6,550 per mile would be \$2,096,000. Is it too much then for Quebec to take \$200,000 of stock? if not, the road might be built thus:—	
Contractors 25 per cent. of the stock at par.....	\$524,000
Cash.....	200,000
Quebec City Bonds at par.....	324,000
Stock for half the road guaranteed by the province at 6 per cent. interest, for....	\$1,048,000
	\$2,096,000

I have no doubt the contractors for the St. Lawrence and Atlantic railroad would also agree to finish and complete the proposed road on the same terms and within the same period. There can be no question of the advantages which would result therefrom, but it is questionable, if the apathy, for which your good citizens have become rather celebrated, will allow of your making the effort. A. MERCHANT.

Montreal, 17th, Sept. 1849.

We are surprised that the editor of the Railroad Journal does object to Mr. Whitney's plan because he has not proposed to guarantee, or give 'sufficient security,' that he will live to see the work completed; and we ask, what would be an adequate security! We certainly cannot understand what the Railroad Journal editor wants, or his meaning by "no security." Does he mean to say that Mr. Whitney should give security that the wilderness lands, which he proposes to buy, shall furnish the necessary means to build the road? or does he mean to say that Mr. W. does not propose ample security that he will apply the present value of the lands to the construction of the road? Mr. Whitney proposes to build in advance of selling any lands; we think this full safe security.—*Pathfinder.*

We will explain our meaning. In matters of business, contracting parties, no matter how high their motives or honorable their character, must be bound strictly to the precise intentions of the contract. Without intending any reflection whatever on the personal honor of Mr. Whitney, we must insist that his bill as it stands is a loose, one-sided unbusiness-like bargain. Take any of the provisions of the bill—take for instance the very provision selected in the above quotation as furnishing 'full safe security' for the people viz: "That Mr. Whitney proposes to build in advance of selling any lands." Now does not this 'full safe security,'

as it is termed with some naivety, admit for instance that Mr. Whitney after having built ten miles from Puzet's Sound, shall appropriate lands five miles deep with a frontage on the sound of 60 miles. This land must as sure as the Sun is in Heaven, be the site at no distant day of perhaps the greatest city in the world, and therefore while every subsequent ten miles must be made under an increase of cost and a decrease of profit, Mr. Whitney will see at once, that while at perfect liberty to do so his personal interest is to stop with this magnificent acquisition of a city-site on the shores of unquestionably the finest estuary in the world.—Where then is this 'safe full security?' With great respect for Mr. Whitney's honor, we repeat that in his proposed contract with the people there is no security on his part, seeing that in even the very particulars paraded by his supporters we can point out so clearly an instance in which his bill gives him at once a perfect license, and we had almost said an inevitable temptation to default.

To the Editor of the American Railroad Journal

LONACONING, Maryland, Oct. 3 1849.

Sir:—I read with more than ordinary interest the valuable communications which appear in your excellent Journal on the "Iron Ores and Iron Manufacture of the United States." Having observed that the writer of these articles notices the patented improvements adopted by some of the furnaces described, I beg to call your attention and that of the iron trade generally to the fact that the improvement frequently mentioned in the description of furnaces under consideration—of using the waste gases either for heating the blast or generating steam, is the invention of Mr. Faber—and was patented by me as his assignee, in 1812.

Many establishments purchased licenses from me when I first introduced that improvement in this country, and have had it in constant successful operation. But as my time and attention has been entirely engrossed by my works here during the past four years, a great number of furnaces have adopted said improvement without obtaining licenses from me, and probably unaware of the existence of my patent.

I shall be obliged to you, therefore, if you will call the attention of your able correspondent H., and the iron masters generally to this subject. At my earliest leisure moment I will prepare an abstract of the patent in question to be published in connection with an advertisement for the columns of your Journal.

Very respectfully,
Your obt. serv't.,
C. E. DETMOLD.

Maine.

York and Cumberland Railroad.

We have been favored with a copy of a report recently made to the directors of this company, by A. C. Morton, Esq., Consulting Engineer. This company is now making a renewed effort to obtain the necessary means to complete this work, or at least that portion of it between Portland and Saco, a distance of about 20 miles, and the above report was prepared for the purpose of putting the public in possession of all facts proper to be known before subscribing to its stock. The route, its physical characteristics, cost of road, capacity of the country through which it proposes to traverse, to give it a profitable business, etc. The report is illustrated by a map of the route of the proposed road, showing its connections with other roads, which we present to our readers with the present number of the Journal.

The report is a model of its kind, and presents the evidence touching the probable business of the road in so distinct a manner, that its perusal cannot fail to convince every person who examines it, what he has

a right to expect from this source. The country on the line of the road is as densely populated as any agricultural section in New England, and will compare favorably with any other in its agricultural resources. The water power upon its line is much greater and more available than upon any line of equal extent of which we have any knowledge. Its prospective connections will be better illustrated by the map, than by any description.

The city of Portland is very deeply interested in the success of this work. The size of Boston naturally attracts to it the trade of all New England, and Portland can retain the trade of that part of Maine west of the latter city only by giving to it the facilities of a railway communication with itself. The question for the inhabitants of Portland to consider is, not so much what will be the value of the stock in this road, as how much it will tend to increase their business and the value of their property. In this view we think that they can much better afford to lose what may be necessary to complete the road, than to fail to secure it, now that it is within their grasp. We presume that this view of the case has been thoroughly considered by them, and we have no doubt but that action in this matter will accord with their interest.

In speaking of the route and the business prospects of the road Mr. Morton says—

The design of your road as before stated, is to connect with the Boston and Maine road, and thus give an interior communication between Portland and Boston and the intermediate towns, furnishing a cheap and expeditious conveyance to market, for the trade of that section of the country through which it passes, while it will open a new and picturesque route for through travel.

Taking up the question of its local advantages for business I would remark that soon after reaching the flourishing village of Saccarappa, your road will have a very considerable income.

Here the Presumpscot river has a fall of 32 feet, and the water power caused thereby is adequate to operate 100,000 spindles, and at Congin, one mile below Saccarappa, and within a slight distance of the line of your road, there is a fall of 17 feet.— Within 6 miles of the city of Portland, you bring into immediate use an extent of water power as great as that now in use at Saco and Biddeford.

It appears a matter of surprise that so great and valuable a water power, so convenient to tide water as this, should remain till this time comparatively unused. There is no other Antiquity in the United States, (unless perhaps we except Baltimore) that boasts of such unrivalled advantages for manufacturing industry in its immediate vicinity, as the city of Portland.

The Presumpscot river is discharged from Sebago Lake 17 miles from Portland. The latter is elevated 250 feet above tide water, and covers a surface of 160 square miles. Between this lake and the sea, there are no less than 15 distinct falls, varying from 10 to 32 feet each, having an aggregate of 228 feet. All of these falls are capable of being made valuable for manufacturing purposes, and it is not asserting too much, to say that a continuous manufacturing village will eventually extend from where your railway reaches the Presumpscot, to the outlet of Sebago Lake. There is an even and uniform flow of water in the Presumpscot, from the capacity of its great natural reservoir, Lake Sebago, that insures against the damages of sudden floods, or the evils arising from severe drought in the summer.— In this respect, it has capacity and advantages beyond most streams in New England, at present in use, and from the proximity of its water falls, to a large seaport, may claim to possess advantages no where surpassed.

The only surprise is, considering the density of population upon the line, the wealth of the inhabitants, and its favorable location for business, that it has not before been brought into greater notice by means of a railway.

To see a Lowell, or a Manchester, within six miles of Portland, at an early day, it needs only the prevalence of the same spirit of enterprise, and the same forecast that has given to the other manufacturing towns of New England their importance.

At Saccarappa there are at present in operation 3 cotton mills, have 8700 spindles and employing 350 persons. There is also 1 power loom harness factory—1 flouring mill—2 shingle and lath mills—2 machine shops—1 lock shop—1 iron foundry—4 saw mills, and various other kind of machinery. There are also 18 stores.

Within the limits of the free grammar school district which extends one mile in each direction from the bridge, there are 2000 inhabitants. It is estimated by intelligent timber merchants that the saw mills manufacture 8,000,000 feet of lumber annually. There are nine lines of stages running through this place, and an omnibus running twice daily to Portland.

At Congin, there are 2 paper mills—1 veneering mill and one store.

The present amount of freight from these places is over 15,000 tons annually.

Above Saccarappa there are in use several valuable water powers operating 20 saws—1 cotton factory and other machinery.

The next important point on the line is Gorham, a rich agricultural town, having a population of over 3000 inhabitants, and containing 12 stores—1 academy, and 1 female seminary.

From this place to Sebago lake, the distance is about seven miles, and the construction of a branch from your road to this point, will connect with a steamboat navigation of 30 miles, in extent, thereby securing the travel of this favorite route to the White Mountains, and the trade of the surrounding towns. There are at the present time, 6 stage coaches passing daily through this place.

Your road reaches the Saco river in the town of Buxton, which with the town of Hollis on the opposite side of the river, will furnish for the road a large amount of trade. Bar mills are situated about half a mile below the road, where the river has a fall of 20 feet.

At Salmon Falls, about 1 mile below Bar Mills, there is a fall of 30 feet at one point, and an additional fall in a distance of half a mile of probably 30 or 40 feet, the former being improved to some extent. When it is known that the amount of water flowing into the Saco river at these places is very nearly equal to the same stream at Saco, where with a fall of 38 feet it now drives about 100,000 spindles and a large amount of other machinery, some idea may be formed of the value of the water power at the places above mentioned.

Within the limits of these two towns, there are 23 stores, 30 saw mills, 5 grist mills, 1 cotton 1 woolen factory, 4 lath and 2 planeing mills, and a considerable amount of other machinery. The amount of lumber annually manufactured exceeds 20 millions of feet, and there is an extensive business carried on in the manufacture of shingles, Pails, Tubs, Sugar Boxes, Heading, etc.

The value of the articles manufactured being mostly products of the forests, exceeds \$400,000 annually. It will also be observed by reference to the preceding tabular statement, that the agricultural products and the number of neat cattle and other animals in these towns are large, and compare favorably with other towns in the county of York.— In the town of Hollis there are extensive quarries of granite of great beauty and value for building purposes, and large quantities will undoubtedly be transported to market when a cheap conveyance is furnished. It is estimated by intelligent business men, that the total amount of freight which will be furnished by these two towns, with the present trade, will exceed 16,000 tons annually.

The Saco river has its principal source in the notch of the White Mountains, and flowing in a southeasterly direction, its volume is increased in the distance of a few miles by its mountain tributaries to that of a large and powerful stream. In its whole length it receives the drainage of a section of country of 650 square miles in extent. After it emerges from the highland district it runs for a distance of 60 miles through a rich agricultural country opening a beautiful and fertile valley through which a large trade flows.

The aggregate amount of fall available for manufacturing purposes at various places, within a distance of 21 miles above the point where your line crosses it, exceeds 200 feet.

It furnishes a highly favorable route for a branch to your road, the construction of which would fur-

ther develop the capabilities of the country by bringing into use the whole of its valuable water power, and building up manufacturing town along its banks. The day is probably not far distant when this branch will be extended up the valley of the Saco in a direct line towards the White Mountains, as far as Conway, New Hampshire, where it will meet a line already surveyed from Meredith to the same point, thus connecting your road by another attractive route with the roads of New Hampshire and Vermont.

The towns bordering the Saco and Ossipee rivers, which are tributary to your road, possess great natural resources and at the present time furnish a large and valuable trade. But when your road shall have been opened, it will like all similar works, materially increase the value of lands and the amount of trade, for the reason that it will give to the agriculturalists of this comparatively secluded district, nearly the same facilities of reaching the market, as those more favored towns in the immediate vicinity. It will call into existence new branches of trade, by furnishing a cheap and rapid means of transportation for heavy and bulky articles which at present are comparatively shut out of market from the great expense of conveyance. The effect of railways is to equalize trade, and the value of commodities in different sections of the country; to reduce the cost of articles drawn from the cities of the seaboard by remote towns and increase the value of the products of the interior by lessening the cost of their delivery in market.

After crossing the Saco river, your road will pass through an agricultural country for the whole distance. On reaching Alfred, the shire town of York county, you are in the midst of an exceedingly fertile and populous district. It is from this point that I would propose a branch line, to which allusion will hereafter be made; extending westerly to Winnipisseege Lake.

The superiority of Portland, as a market, over any town east of Boston, for York county and the whole region to the north of your line both in Maine and New Hampshire, will with this branch line, secure to your road nearly the whole of this valuable trade. In Berwick, at Salmon Falls, the point where your road unites with the Boston and Maine road, and in Somersworth on the opposite side of the river, are several cotton mills, having at present 37,000 spindles, and a capital of over one million of dollars.— At Great Falls, a short distance above, there are extensive manufacturing establishments, where there are 60,000 spindles in operation.

The large population and extensive manufacturing interests at, and in the immediate vicinity of the western terminus of your road will naturally add much to the intercourse with the interior, and doubtless contribute largely to your business.

It is unnecessary to pursue the object of the local trade of your line, further than briefly to allude to some of the leading articles which will constitute the bulk of its freight business.

Among the various advantages which indicate the great superiority of your road, the principal consideration is the fact, that for nearly its whole extent, the country is thickly populated, the soil fertile and in a high state of cultivation.

The surplus productions of agriculturalists must therefore compose a very considerable portion of the tonnage of the road. Large quantities of pressed hay, grain, beef, potatoes, cattle sheep, etc., will be forwarded to market by this conveyance.

Allusion has been made in another part of this report, to a proposed branch line to your road, which in its influence, upon your trade and the value of your stock, is scarcely second to your advantages at either terminus. This is a connection with the roads of New Hampshire and Vermont, running westerly to Lake Champlain and northwesterly to the Canada line.

The most natural point of divergence from your line to form this connection appears to be in the town of Alfred, a distance of about 33 miles from Portland and running as nearly in a westerly direction as the ground will permit, to the south end of Winnipisseege Lake in the town of Alton, thence along its southwestern shore to Gilford, when it would bear more westerly and probably intersect the Boston, Concord and Montreal railroad near Meredith.

From this point, looking to a still more westerly connection, the above mentioned road would probably be followed for a number of miles to a point in

the town of Northfield, where a branch could be constructed, connecting that with the northern road at a point in the vicinity of the village of Franklin.— This would perfect a direct westerly line of railways from Portland to Burlington on Lake Champlain.

This must be regarded as an important connection and one which not only brings Lake Champlain nearer to Portland than Boston, but also the upper Connecticut and Passumpsic valleys, through the Boston, Concord and Montreal road to Haverhill.

The project of a road from Montpelier, Vermont, to the Connecticut at Wells river village or Bradford, has been much discussed! Should this be constructed, uniting with the Boston, Concord and Montreal road at or in the vicinity of Haverhill, by constructing the other link from the last mentioned road at Winnepiseogee Lake to your road in Alfred, another and more direct line of railway communication from Portland to Lake Champlain at Burlington, would be completed.

This materially reduces the distance below that by the way of the northern and central road to Montpelier as above described, and as it strikes the Connecticut valley at a point from 30 to 40 miles above any other road leading from Lake Champlain to the seaboard, it enjoys unusual advantages. It not only presents a much shorter route for the western trade, but its manifest tendency is to interrupt the trade of the upper Connecticut and Passumpsic valleys, turning it into a new and more direct channel to an Atlantic market. Your road would then constitute the last and most important link of this great chain over which the accumulated trade of several of the richest districts of New England could reach the seaboard. With this view of the question, it appears a proper subject of investigation as showing the favorable position and advantages of your line for the western trade, and involving considerations of much interest to every friend and stockholder of the road.

For a more perfect illustration of the advantages of this route, its relative position to the country it is designed to accommodate, and to other channels of trade, I refer to the map accompanying this report.

The beneficial effects of railroads on the value of lands, is a subject with which all are familiar and to which I need not hardly here allude. These benefits are not confined to the immediate vicinity of railroads but extend to large districts of country, considerably remote from the line, where the increased value thus given to lands often far exceeds the cost of the roads.

In the State of Massachusetts, the immense increase in the value of real estate, has resulted mainly from the introduction of railroads, and equally favorable results have followed their construction in other parts of the country. The increased valuation of real and personal estate in the city of Boston only, from 1841 to 1848, most of which may be ascribed to the effects of her railroads, was about 60 millions of dollars, or more than the cost of all the roads in the State.

To the city of Portland, your road will bring advantages far beyond what most of its friends can estimate at this time, not only securing the rich trade of the western part of the State, now in danger of being drawn from us by competing lines, but opening to her a new and favorable route to other States, competing successfully with the most fortunate lines to Boston from the Connecticut valley and Lake Champlain. From her real estate and business men and in fact, from all classes of her citizens, your road should receive a hearty and liberal support.

Railways have been the great agency that has given to New England her present commercial and political importance. Boston and Massachusetts have given examples in this respect which are worthy of imitation. But we need not go beyond the limits of our State for proof of prosperity clearly attributable to the influence of railroads. The most casual observer cannot fail to be impressed with the evidences of prosperity at Portland and along the line of the new roads entered upon in Maine within the last four years. The results already reached are but the promises of greater ones yet to come, and hold out to our citizens of Maine the most flattering prospect for the future, and encourage them to perseverance in the noble work of perfecting a great system of railways within her own borders.

Mr. Andrew Trew, Engineer, is requested to call at the Railroad Journal office, where he will hear from a friend who is in the city.

Utica French Burr Mill Stone Manufactory.

The undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

Utica N. Y. Sep. 1849.

ALBANY AND BUFFALO RAILROADS.

Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2 1/2 a.m., 12 1/2 m., 3 1/2 p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 1/2, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y

Albany and Schenectady Railroad Co. Albany, August, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be cash, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,

Proposals will also be received until the 15th of Oct. next for the construction of the Railroad on the Eastern side of the Mountain, about eight and a half miles. It comprises much heavy work and a Tunnel about 720 feet long.

C. CROZET,

Engineer Blue Ridge Railroad. Brooksville, July 26, 1849.

TO CONTRACTORS.

ANDROSCOGGIN RAILROAD.—Proposals will be received by the subscriber, at Lewiston Falls, and by W. A. Williams, at the Engineer's Office at Leeds Centre, until the 15th of October next, for the grading and masonry of the 1st division of this road, extending from the Androscoggin and Kennebec railroad in Leeds, to Benjamin's Brook in East Livermore, 14 miles.

Plans and profiles will be ready for examination, and the route shown on and after the 9th day of October.

Proposals for the grading and masonry of the second division, extending from Benjamin's Brook to Livermore Falls, 6 miles, and for building a bridge over the Dead river in the 1st division, will be received as above until the 1st day of November next.

Plans and profiles of the 2d division will be ready for examination, and the line shown, on and after the 23d day of October next.

WILLIAM KILBOURNE, President.

September 29, 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. M. M. White, Agent, au7uf No. 74 Broadway, New York.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.

—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

NOTICE TO

Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE, }
Washington City, D.C., April 23th, 1846. }

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34t

Engine and Car Works,

PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

Illustrated Scientific Works.

LEA AND BLANCHARD, Philadelphia, publish the following important works on various branches of Practical Science. They will be found exceedingly low in price, while their mechanical and typographical execution are of the best kind.

I.

Principles of mechanics applied to machinery and engineering by Julius Weisbach. Translated by Professor Gordon of Glasgow, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 872 illustrations on wood.

From Charles H. Haswell, Esq., Engineer in Chief, U. S. N.

The design of the author in supplying the instructor with a guide for teaching, and the student with an auxiliary for the requirement of the science of mechanics, has, in my opinion, been attained in a most successful manner. The illustrations, in the fullness of their construction, and in typographical execution, are without a parallel. It will afford me much pleasure to recommend its use by the members of the profession with which I am connected.

This work is one of the most interesting to mathematicians than has been laid before us for some time; and we may safely term it a scientific gem.—*The Builder.*

The most valuable contribution to practical science that has yet appeared in this country.—*Athenaeum.*

Unequaled by anything of the kind yet produced in this country—the most standard book on mechanics, machinery and engineering now extant.—*N. Y. Commercial.*

In every way worthy of being recommended to our readers.—*Franklin Institute Journal.*

What the "Mechanique Celeste" is to the astronomer, a treasury of principles, facts, and formulæ on which he may draw on almost any and every occasion,

that can be conceived to arise in the field either of demonstration or operation.—*Methodist Quarterly Review.*

II.

Technology, or chemistry applied to the arts and to manufactures. By D. F. Knapp, Translated by Drs. Ronalds and Richardson, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 460 illustrations on wood.

One of the best works of moderate times.—*New York Commercial.*

We think it will prove the most popular, as it is decidedly the best of the series. Written by one who has for many years studied both theoretically and practically the progress which he describes. The descriptions are precise, and conveyed in a simple unpretending style so that they are easily understood, while they are sufficiently full in detail, to include within them everything necessary to the entire comprehension of the operations. The work is also carefully brought down to include the most recent improvements introduced upon the continent of Europe, and thus gives us full descriptions of processes to which reference is frequently made in other works, while many of them are we believe, now for the first time, presented in a complete state to the English reader.—*Franklin Institute Journal.*

In addition to the valuable scientific matter contained in the original work, very extensive American additions have been made to it by the editor, which are exceedingly valuable, and of much interest to the general reader. The publishers have spared no pains in bringing out a work of superior mechanical execution and rare excellence, with numerous skilfully engraved cuts, designed to illustrate the various subjects treated in this work. We feel confident that, as a truly useful publication, it will be eagerly sought after and highly appreciated.—*N. Y. Farmer and Mechanic.*

III.

Principles of Physics and Meteorology, by Professor J. Muller, Edited with additions by R. Eglsfeld Grifith. In one large octavo volume, with 550 wood engravings and two colored plates.

This is a book of no ordinary or ephemeral value.—It is one of a series, now republishing in London, on the different branches of science, which from its thorough character and extended range, is much needed in this country. Its design is to render more easily accessible an extensive knowledge of the general principles of physics and meteorology; and the distinguished author has certainly realized the design to a wonderful extent. The subject treated upon are very numerous—statics, hydrostatics, dynamics, hydrodynamics, pneumatics, the laws of the motions of waves in general, sound, the theory of musical notes, the voice and hearing, geometrical and physical optics, magnetism, electricity and galvanism, in all their subdivisions, heat and meteorology. The size is nevertheless convenient—one handsome octavo volume, of six hundred pages—in clear, bold type, and profusely illustrated. In the execution of the illustrations we have rarely seen any thing equal to this American edition.—*N. Y. Commercial.*

IV.

Practical Pharmacy; comprising the arrangements, apparatus, and manipulations of the Pharmaceutical Shop and Laboratory. By Francis Mohr, Ph. D., and Theophilus Redwood. Edited with alterations and additions by W. Proctor, Jr. One very handsome octavo volume, with 506 engravings on wood.

We had scarcely finished a glance at the beautiful London edition of Mohr and Redwood's pharmacy, before Professor Proctor's improved edition of this fine technical treatise, was laid on our table by Messrs. Lea and Blanchard. This work is one which will at once find its place in every laboratory and pharmaceutical shop, and is well calculated to recommend new and improved methods of manipulation to both chemists and pharmacists. In the absence of highly appointed laboratories and of pharmaceutical instruction which is so general in this country, such works as the present are particularly valuable. The beautiful and abundant wood cuts which adorn almost every page of the book, enter the descriptions of apparatus perfectly plain, and its reconstruction easy even by the tyro. Professor Proctor has long been known to pharmaceutical readers in this country, as the author of numerous and important researches in the Materia Medica, and his additions to the present edition of Mohr and Redwood are frequent and valuable.

The American Journal of Science and Arts.

V.

The Young Millwright and Millers Guide; Illustrated by Twenty Eight Descriptive Plates, by Oliver Evans. Twelfth Edition, with additions and corrections, by Thomas P. Jones, with a description of an Improved Merchant Flour Mill, with Engravings, by C. and O. Evans. In one volume 8vo., with 110 figures on twenty eight plates.

Plumbago, or Black Lead.

BLACK LEAD IN ITS CRUDE STATE, and Black Lead Paints, prepared for various purposes. This paint is peculiarly adapted for the covering of all kinds of iron railing, or iron work wherever exposed; such as railroad bars, anchors, bolts for vessels, etc.—It makes the most durable paint to protect woodwork from moisture, and the indestructible nature of the body of it peculiarly fits it for covering the inside of depots, roofs of buildings, and all wood work exposed to fire.

The mine from which this article is taken is near Raleigh N. C. It has been examined by many of the most scientific men in this country, who all concur in pronouncing it of the best quality. In the fourth vol. of the American Journal of science, Professor Silliman speaks of it in the following manner. "The Plumbago from North Carolina is of a very fine quality and appears well adapted for pot & crayons." Professor Dewy speaks of it "as the finest he ever saw." Professor Olmstead, now of Yale College in his geological report of the State of North Carolina, Page 5 says.—"Not long since I received a letter from a gentleman in Vermont who contemplated setting up the manufacture of Black Lead Pots or Crucibles, requesting some particulars respecting this Plumbago, having been informed on the highest authority, that it was the best that could be procured within the United States."

It is a very fine article and superior for Pencils also for Crucibles, Pots etc., when the composition of silicious minerals is properly made to suit it, and may be had in any reasonable quantities of the subscriber on liberal terms at Raleigh North Carolina or at James Hol]dene 55 West St. New York.

Sep., 7th 1849.

Richard Smith,

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849.

6m33

Pennsylvania Railroad.

PROPALS will be received at Johnstown, Cambria county, Pa., between the 1st and 12th of October next, for the Graduation and Masonry of that portion of the Western Division of the Pennsylvania Railroad east of Section No. 54, opposite Blairsville—a distance of 26 miles—embracing a considerable am't of heavy excavation and embankment.

Plans and specifications of the work may be seen at the office, in Johnstown, within the periods above mentioned.

For further information apply to Edward Miller, Esq., Engineer of the Western Division, Summit P. O., Cambria county, J. EDGAR THOMSON, Chief Engineer and General Superintendent. Engineer Department P. R. Co., Philadelphia, Sept. 6, 1849. }

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Allegany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac K.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Andrew W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors.
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
MR. M. BUTT HEWSON, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—on to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes will be had at first prices, of Erastus Corning & Co Albany; Menitt & Co., New York; E. Pratt & B: 107 E. Street Md

L A P — W E L D E D
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machine; purposes; Cast, Shear, Blisters and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of iron usually made at the works of the company, and offer for sale on advantageous terms.—

- 150 tons No. 1 Bonton Foundry Pig Iron.
- 100 " No. 2 do. do. do.
- 300 " Nos. 2 & 3 Forge do. do.
- 100 " No. 2 Glendon do. do.
- 140 " Nos. 2 & 3 Lehigh Crane do do.
- 100 " No. 1 Pompton Charcoal do.
- 100 " New-Jersey Blooms
- 50 " New-Jersey Faggoting Iron, for shafts
- Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
- Do do Rounds and Squares, 3/4 to 3 inch.
- Rounds and Squares, 3-16 to 1 inch.
- Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
- Bars, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
- Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, Hot Blast Charcoal Pig Iron made at the Catoctin (Maryland), and Taylor (Virginia), Furnaces; Cold Blast Charcoal Pig Iron from the Cloverdale and Catawba, Va., Furnaces, suitable for Wheels or Machinery requiring extra strength; also Boiler and Flue Iron from the mills of Edge & Hilles in Delaware, and best quality Boiler Blooms made from Cold Blast Pig Iron at the Shenandoah Works, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper. American Pig Iron of other brands, and Rolled and Hammered Bar Iron furnished at lowest prices. Agents for Watson's Perth Amboy Fire Bricks, and Rich & Cos, New York Salamander Iron Chests.
Baltimore, June 14, 1849. 6 mos

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc. The foreign patents are procured through special Agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; Deeds, Conveyances, Agreements, Assignments, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sies, and Machinery, in any part of the country. Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Office, No. 5 Wall St.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia. Alex'r Fullerton & Co., 119 Milk street, Boston. Stickney & Beatty, South Charles street, Baltimore. May 6, 1848.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of Rolls (Rollers), both chilled and dry-sand, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection.

In store and to arrive. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849.

The above will favorably compare with any other rails.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted,

Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

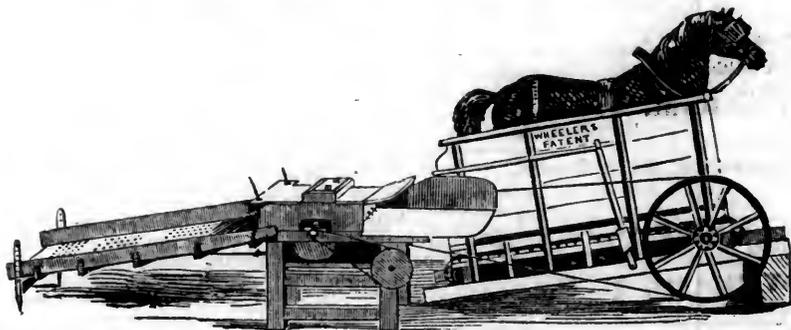
- 300 Tons A 1, Iron Dale Foundry Iron.
- 100 " 1, " " " "
- 100 " 2, " " " "
- 100 " " Forge " "
- 400 " Wilkesbarre " "
- 100 " "Roaring Run" Foundry Iron.
- 300 " Fort " "
- 50 " Catoctin " "
- 250 " Chikiswalungo " "
- 50 " "Columbia" "chilling" iron, a very superior article for car wheels.
- 75 " "Columbia" refined boiler blooms.
- 30 " 1 x 1/2 Slit iron.
- 50 " Best Penna. boiler iron.
- 50 " "Puddled" " "
- 50 " Bagnall & Sons refined bar iron.
- 50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
64 South street

New York.

Railroad Horse Power and Saw Mill.



The above cut represents the most simply constructed Endless Railway Power in use. As shown it is attached to a threshing machine, with which it is mos. extensively used; but for sawing wood at railroad stations it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12 to 20 cords of four foot wood per day. They have been used several years on several roads in New England, and for manufacturing establishments more than three thousand of these powers are in use, and without exception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satisfaction as above described, or may be returned at my expense, and the purchase money refunded.

HORACE L. EMERY,

Nos. 469 & 371 Broadway, Albany, N. Y.

September 6, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,** Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.
May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under **Tyer & Helm's** patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,** Reading, Pa.

To Steam Engine Builders.

The undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Braases.
- 1 Cast Iron Lever Beam (forked).

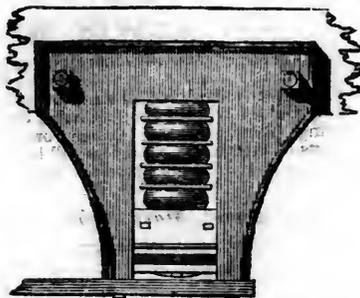
The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

Steam Boiler Explosions.

The Subscriber having been appointed sole Agent for **Faber's Magnetic Water Gauge**, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, **JOSEPH P. PIRSSON,** Civil Engineer, 5 Wall st.

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been re-

ceived from the said agent. Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of **Mr. Kneivitt** the Agent, at 38 Broadway New York, and of Messrs **James Lee & Co.,** 18 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, **BALTIMORE, MARYLAND.**

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, *Baltimore, June 6, 1849.*

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.
Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order: Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. ly25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,** 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

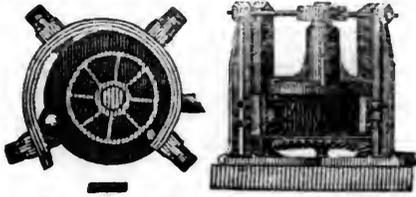
4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by **WM. MINIFIE & CO.,** 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

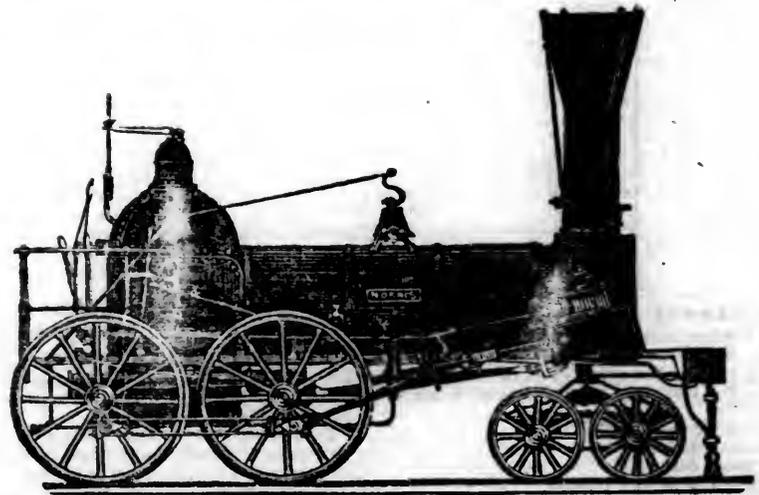
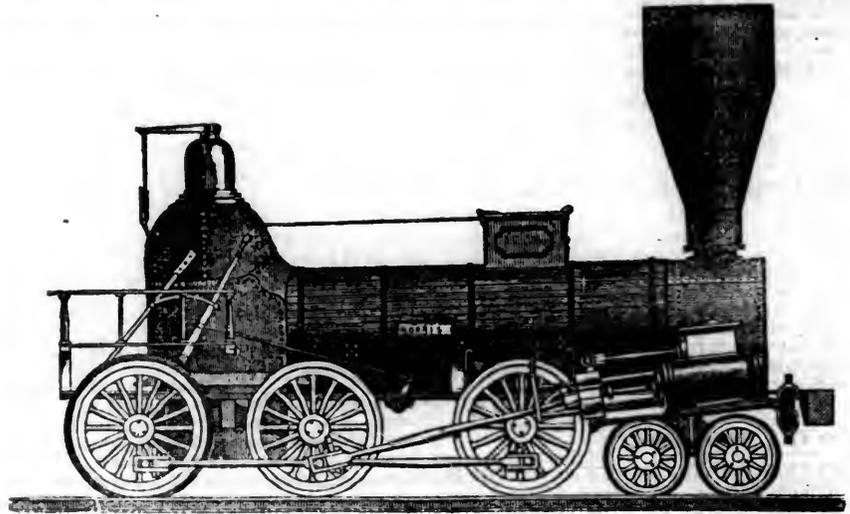
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Rollers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 42] SATURDAY, OCTOBER 13, 1849. [WHOLE No. 703, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, October 13, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 624.

NEW YORK

Attracted by the abundance of these ores and the extent of the woodland convenient to them, a company was found about twenty years since to commence the manufacture of iron here, either in the bloomery fire or blast furnace. The earlier trials were in blooming, and some bar iron was made, which was neither cold short nor red short, and which proved of superior quality for its tenacity. An examination was made of it by Professor Walter R. Johnson; and his report, published in the Journal of the Franklin Institute, shows that it was quite equal to the best of American bar iron. But great difficulties were experienced in the process of manufacture; and though the best skill the country could afford was employed, it was not at all successful. With some varieties of the ore no loup could be produced; with others the loup would not hold together under the hammer; and with all a large proportion of iron was lost in the cinder. A small blast furnace of seven feet across the boshes was then built to run the ore into pig iron. This has now been in operation about six years, but all this time working with the greatest difficulty, and several times chilling. The pig

iron for the most part is a silvery high iron of extreme hardness, sometimes mottled and high iron mixed.—What is singular, the hotter the furnace works, up to a certain point, when it is sure to chill, the more it runs this peculiar silvery high iron, yielding it for weeks together. With various modifications in the form of the furnace, with hot and with cold blast, with every variety of flux that could be procured, with ores thoroughly roasted, and in a raw state, and under the best skill and experience, *not a pound of glassy cinder* has ever been produced, nor the furnace been made to run freely for a day at a time. As it usually works, the cinder is of two kinds—one jet black and spongy, which shoots out like forge cinder and suddenly cools—the other a mixture of unreduced ore, iron, cinder and charcoal, heavy and black, which is hauled out in great quantity from the hearth, where it collects without separation, threatening constantly to chill the furnace. There is another kind, obtained in experimenting with calcareous fluxes, of more stony structure, thick and heavy, which flows sluggishly and cools in wrinkles across the current. This is a dangerous cinder, for it gets under the iron in the hearth, sticks close to its walls and is sure to fill it up, unless removed with the severest labor. Such fluxes are found by experience altogether unsuited to the ores. They are worked with sand or quartz and a very siliceous clay, a part of which is made into a grout with the fine stamped ore—ten parts of ore to one of clay. With a less able and enterprising company and a manager with any less than the extraordinary patience and perseverance of the present superintendent, Mr. Andrew Porteus, the works would long ago have been abandoned. But they continue from year to year under his care to turn out from one to two tons of iron a day. It is true this is with an unusual consumption of charcoal and of ore; but the iron is thought to possess such peculiar qualities for the manufacture of steel, that this expense is not so much regarded; neither that of transportation, which to New York city has been, until the present year, as high as from \$12 to \$16, or even \$18 the ton. It is now reduced by thorough repairs made at great expense by the company this year, on the whole line of road from the old State road to Tahawus, a distance of nineteen miles, and of increased facilities in the navigation of Lake Sandford; so that hereafter it is thought it will not exceed nine dollars per ton. With the same determination to succeed, the company have commenced to build a new and larger furnace at the head of navigation, in the hope it may prove more successful than the present small stack.

The true cause of the difficulty of working these ores was not fully known until the summer of 1848, when it was ascertained by Mr. Hayes of Boston, that the Mill Pond ore contained no less than ten per cent.

of titanic acid. Professor Johnson informs me he had also detected its presence, without, however, having determined its quantity. From the behavior of all the ores found in the hypersthene rock in the crucible, as well as their working in the large way in the blast furnace, the bloomery fire, and in Dickerson's patent forge, it is evident they all partake of the same general character, and that it is titanium alone, which renders them so refractory; and also that this is present in such proportion as to baffle all economical working of them with our present skill for the purposes to which iron is usually applied.

Having tried with them no less than forty experiments with different fluxes in crucibles exposed to high temperatures, I here subjoin a table containing the results, which may be of service to others meeting with refractory ores, of whose nature they are in doubt. The fluxes employed were such materials as the country around the mines afforded, and which could be procured for use in the blast furnace. The only glassy cinder obtained was with the Cheney ore; all the others refused to separate, behaving precisely in the crucible as in the blast furnace. The great difficulty of exactly determining the percentage of titanic acid in ores insoluble in acids, and the uncertainty in which we are as to the proportion, which renders an ore worthless,* give an important practical bearing to carefully conducted assays in the dry way. The result of these is to suggest as the only remedy for the refractory nature of the ore a thorough trial in the furnace of the Cheney ore mixed in different proportions with the others. Its not being conveniently accessible has stood in the way of its trial, and a fear lest it might impair the iron in the qualities desired. I have been informed that subsequently to my experiments an attempt has been made to use it, but with no improvement in the running of the furnace. I do not know to what extent the trials were carried, but under the management of Mr. Porteus, they were probably sufficient to determine the value of the ore.

Several of my assays being but repetitions of others, or varying little from them, a selection is made of all that are necessary to exemplify their behavior with the different fluxes. The flux, called the *wall rock*, is from the wall of the Mill Pond ore bed. It is one of the varieties of the hypersthene rock. A mixture of this with

Professor H. D. Rogers, in the Pennsylvania State geological report for 1840, mentions a titaniferous ore, which occurs in Chester county, and was worked for a time in the Isabella furnace, but was finally given up on account of its refractory character. It was carried in large quantities to the bog ore furnaces in New Jersey, and there worked mixed with the bog ores with some success. According to Professor Rogers the ore contained 22.39 per cent. of titanic acid, and 59.44 per cent. of iron.

brings strangers to our shores from the most distant regions of the earth. So far so good; but it may not be so much longer, when crowds from Europe will begin to pour upon these shores. We feel it our duty, in view of the bad consequences that all exaggerations do produce, to contribute our share towards rectifying the impressions that went abroad upon the subject of the mines in this country.—Even our government at home, had not received an official account from its subordinates here, that represented the truth in its simple garb. In a word, there have been no thorough investigations of the subject; but people on all sides, simple citizens as well as government officers, were content to seize upon a few remarkable cases, that were made more so by passing through many lips, and represent them abroad as of common occurrence. Hence, much disappointment followed to hundreds who came here to shovel in, as they thought, the precious dust, and be off to their respective homes in the twinkling of an eye.

It is not to be understood that we are going to decri the mines; no, far from it; we mean to divest them of the mantle which the heated fancy has cast about them, and represent the simple truth, without any poetic ornament.

On the outset we wish it to be understood that we speak advisedly, we have surveyed, so to speak, the length and breadth of the mines by personal inspection and observation, at a great expense of our time, money and labour, and besides, we claim the right to presume somewhat upon the authority of science.

The region which here is known as the Gold Mines, is closed on the east by the Sierra Nevada or Snowy Mountains, running nearly north and south. Two large streams descend from the Sierra Nevada—one at the north, called the Sacramento River; the other on the south, known as San Joaquin. These two streams run, as if purposely, to the apex of the triangle they enclose, there to meet and make a common and united irruption upon the waters of San Francisco Bay. In this triangle, thus formed by these two rivers, with the Snowy Mountains, are numerous streams; but they all are tributaries either of one or the other river; the largest of them are at the north, and empty themselves into the Sacramento. The surface of the country, looking westward from the ridge of the Snowy Mountains, which may be from five to six thousand feet above the level of the sea, is broken up into ridges, giving directions to the streams that separate, some west by north, others west by south, and gradually growing smaller, they get confused into hills, till they finally soften into the plains enclosed by the two above mentioned rivers. The plains, generally speaking, are covered with luxuriant grass skirted along the rivers with oak timber. As the hills rise, vegetation becomes scantier. The range of mountains in which gold is found, is distinguished by a uniformity of its vegetable kingdom, which is neither meagre nor very abundant. The oak predominates here, only now and then relieved by several varieties of the pine family. As the gold disappears, the reign of the pine and the granite extends. The depositaries of gold look universally more inviting to the beholder than their barren neighbors; the former always have the figure described by the line of beauty, viz: the curved line, be they ever so precipitous, as they frequently are—a distinction never to be lost sight of. The extent of these auriferous hills is greater than the public know or imagine, but not in the direction it is supposed. They extend beyond the Sacramento, and even San Joaquin, northwest of the former and southwest of the latter, bending round towards the sea coast. Nay, the same formation, with more or less difference, runs along the whole Pacific shores till it is lost in the southern portion of the Chilean republic; but gold has not been, nor probably will be, found anywhere in equal abundance as in Upper California. This abundance, however, is much exaggerated by the heated imagination of the public. It is not in the nature of placer gold to be durable long. A very few years, when there will be many arms at work, will exhaust it; its origin is the guaranty of this fact. The breadth of this auriferous region limits itself within the lines running north and south from forty to sixty miles from the ridge of the Sierra Nevada; and on the west, as the hills begin to soften into the plains.

At some remote period in the history of the globe,

the same internal convulsion that heaved up the Sierra Nevada, has also upheaved the auriferous hills, which at first presented a naked surface to the atmospheric changes, by the influence of which, the quartz constantly breaking up, left free the precious metal on its surface. In the progress of time, the same atmospheric influences caused to accumulate, on these hills, soil which grew deeper with every decay of vegetation, till it grew strong enough to support the majestic oak. The freed particles of gold thus became covered by the soil, and mixed up with it, and the process of the separation of the metal from the stone was arrested. How gold was injected into the veins of quartz is more than we can say; but the fact that it was so, in a liquid state, is beyond question, as we see it adapt itself to the sides of the stone in all imaginable forms, from the finest filament to the largest lump ever found with a most variously indented surface, filling up completely the crack of the stone, always tending to a rounded pear like appearance, as is the case with all melting substances. When freed, external friction, of course, modifies its appearance more or less; hence we find it, in rivers particularly, in fine flakes, but when it is in larger bulk, it puts on a plate like appearance, as if it were hammered out by the hands of an artisan—as really it is by the frequently enormous weight of stones under which it is deposited. Water, that universal carrier, washing the sides of the hills, brought the gold from the surface into the ravines and rivers, to which its own weight facilitated the progress.

According to the strength of the current of water, the weight of the particles of gold and the obstacles in the way, it is deposited in one or another spot, the lighter particles of course floating away farthest from their original bed. As this process of gold deposition has taken place in some remote period of the earth's existence, hence we find all these deposits, generally speaking, covered with a greater or smaller depth of soil, sand, gravel, and stones. Strictly speaking, gold does not belong to the rivers—it was washed into them from the adjoining hills; hence it is useless to look for gold at the head of those streams when the neighboring hills are not of the auriferous nature; and we find this fact corroborated by our personal examination of the heads of the streams of the gold region. The same rule holds good, for the same reasons, in regard to the lower portion of a gold carrying stream, except that it is limited by the fact that particles of gold may be deposited a considerable distance below their original source.

The mode of deposit being made clear, it will be equally clear that it is not on every spot in this very auriferous region that we must look for gold, which fact experience proves to be true; or at least, it is not on every spot that we can find enough of it to make it an object to bestow our labor on it. Hence it equally follows, the limitation of the quantity of gold to be expected from the mines as a general aggregate, however rich they may prove. The first comers had the best chances to hit upon rich deposits; but as diggers multiply, the chances of falling upon virgin deposits grow smaller, and they will have to be content with what the others, through imperfection of their labor, have left; consequently the work becomes more and more heavy and less profitable; although it may be yet sufficiently compensatory, if the expenses of living be not excessive. This is precisely already the case—the labor is much harder this year than it was last. At present there are not so many of those bappy hits as formerly, altho' we yet hear now and then of a lucky haul, which, however, when it reaches the ears of the public, becomes extremely distorted, and particularly so, when companies that have dammed some spots of some of the rivers wish to dispose advantageously of their shares; these easily find ready letter-writers, who communicate the lucky event to the public thro' the press. The accounts of successful digging in gold that went abroad, never have been accompanied with statements of hardships attending the process; yet we are free to confess that there is no harder labor than that of gold digging and washing; this species of labor requires the strongest sinews inured to fatigue in peculiar localities, together with the general discomfort attending upon life in the mines, may make gold digging particularly irksome. Yet all this can be borne, and one's labor may sometimes be crowned with brilliant success. We have made the above statement with the view of

laying the subject before those who may yet be novices in the matters, that they may understand their own case; we are far from discouraging the new aspirants after the favors of dame Fortune; we tell them, take their chance—it may be a good one; but such and such circumstances are attending this courtship. Those from distant parts who, on mere sound of the discovery of gold in California, rush headlong, sometimes leaving very good business and comfortable living, cannot but rue the day if they put their sole dependence upon their success in the mines. If they would come here with an intention of following some patient calling, they could not but grow rich with time. We have already plenty of miners: a larger number of them only diminishes the profits of all. However, come they must, for they are bent on it, be the consequences what they may.

When this gold mania ceases to rage, individuals will abandon the mines; and then there will be a good opportunity for companies with heavy capital to step in; there will be enough of profitable work for them; and it is then that the country will enter on a career of real progress—and not till then. Such companies, with superior mechanical facilities to do much labor in a short space, will be enabled to go over the whole mineral field, although already dug over by individuals, and reap yet a rich reward for their efforts. And when there will be no more gold washing to be done, then a new era in the mining of the country will commence—we mean, a regular system of mining by sinking shafts into the very bowels of the rocks, will be entered upon. Spots for this system of mining are to be found in this auriferous region.

[Intelligence from the Placers.

The month of August has multiplied the number of gold washers on the principal streams of the Sierra Nevada; but the prospects for the mass crowding on are but imperceptibly lessening. The water is nearly at the lowest stage, and quite in proportion to the increase of laborers and chances are rendered more favorable by this circumstance. New washings have been discovered, and old ones abandoned. We have no prodigious gold stories to relate; but, confining ourselves to the simple assurance of good luck for those who labor, we trust not to defeat the expectations of the most visionary.

The most southerly stream occupied by miners, is Maripossa river, about 20 miles southeast of the Merced.

The Sacramento river probably forms the most northerly boudry stream of the placer; but it is erroneous to suppose the region watered by it auriferous. Gold has never been found upon that stream in quantities sufficient to justify continued labor. Its "golden sands" have never been silted, except in poetic strains.

At Mormon Island a company are engaged in scientific mining. They employ quicksilver in extracting the metal from ground previously subjected to the cradle or pan process, and with a machine invented for the purpose, average about \$200 per day.

▲ TRINITY RIVER EXPEDITION.

Major P. B. Reading, whose name is identical with the earliest Anglo Saxon explorations of California, has recently returned from a trip into the interesting region of Trinity river. He started from the Sacramento about the middle of June, travelled up Clear Creek, and crossed the ridge dividing the waters of the Sacramento from the streams flowing into the ocean by the only practical route. His camp on this ridge was one night above the snow line. Trinity river was found to possess auriferous sands, and as the party followed up the stream, the ore was found in greater abundance. They averaged for the few days remaining there about 40 dollars each per diem. We shall publish a more detailed account of this expedition in a few days.

SUCCESSFUL GOLD DIGGING.

Dr. H. Van Dyke, a member of the North Fort Dam and Mining Association which company has recently completed a lateral canal at Beals Bar, a little above the juncture of the North Fork with the Rio Americano, has just returned from their scenes of operations. The work of drainage had been completed only three days before he left, and though the company labored under many disadvantages

taxes, they had raised, in this short time, over \$15,000.

This association is composed of about thirty hard working men, and from the result of the few days' labor since drainage, and the fine prospects of continued success, they confidently count upon a yield of about ten ounces per diem, each man, the next and succeeding month.

Description of Florida.

Extract of a letter from L. C. Gaines, of South Florida, to a friend in East Tennessee.

I will endeavor to give you a short and correct description of the southern portion of the peninsula of Florida, as far as ascertained by me, beginning at the 29 parallel of North Latitude, or south of the Suwannee river. As you go south, there is a continued elevation until you reach the everglades, which is the source of the St. Johns river.— This region is naturally divided into three portions, possessing different characteristics. The middle portion is a kind of table land, diversified with hills and slopes, and from twenty to thirty miles wide, containing fresh water lakes of various sizes; some twenty or thirty miles in circuit, surrounded by excellent hammock land and abounding in the finest fish. Some of these have outlets, into the St. Johns, and some of them have no outlets. This table land is almost entirely destitute of streams of water, but few springs, and their branches generally sink before they run half a mile. In almost all parts of this portion there is a sufficient number of open clear ponds for stock water, and water is easily procured by sinking wells of various depths. The usual depth is thirty or thirty five feet. The water of these wells is more or less impregnated with lime, but pleasant enough to the taste, and I believe healthy.— There is one spring in Marion county that is really a curiosity. It is in fact the bursting up of a river. An ordinary steamboat might turn in the spring. It is 80 or 100 feet deep and the water is so clear that you might see plainly a dime on the sandy bottom. Its stream affords navigation for floats and barges, and will, no doubt, be run by steamers when the business of the country shall warrant it. It empties in the St. Johns river.

More than half of the land of this strip is pine barren, mostly poor, though some of the pine land is but little inferior to the hammock. These hammocks are the strangest feature of the country. They are covered with dense forests of the richest imaginable growth, and rendered almost impassible by the undergrowth. You come upon them in the pine woods suddenly without any change in the soil, poor pine land often bordering immediately on the richest hammocks, which look like islands or rather oases. What astonishes you is, that these hammocks are higher ground than the surrounding pine land. While exploring one you expect every minute to come upon some large stream of water, but are generally disappointed, and on coming to the outskirts, find the pine land descending instead of ascending, as you were expecting to find it, for they have the appearance of rich river bottom. These hammocks are of various sizes, from five acres to as large as 40,000 acres; some bordering on the

lakes, mostly surrounded by the pine barren, with a few springs and high land ponds. In some portions of the country you find oak and hickory or pine and hickory, which is nearly as good as the hammock land. There are several qualities of these various kinds of land. The richest of the hammock land, I am fully persuaded, is as rich as any land in Alabama, Mississippi or Tennessee, their richest river bottoms not excepted. This strip comprises Alachua, Marion, and Benton counties, and is the most desirable portion of East Florida.

The strip on the Atlantic coast is a low flat country, mostly watered by the St. Johns river, which runs parallel with the coast from south to north, from 80 to 40 miles from it. This is a magnificent river, connecting a chain of lakes from the everglades to its mouth. It has an average of a mile in width, independent of its lakes, some of which are forty or fifty miles in circuit. It has but few tributaries and but little current. There is but little rich land either on the lakes or river, but what there is, is very valuable on account of the convenience of navigation, so necessary to the sugar raising and the successful culture of the tropical plants. The river and its lakes are a protection against killing frosts, which sometimes destroy the fruit trees in the interior. There are also some very valuable lands on the Atlantic coast south of St. Augustine, and on Indian river, which is only an inlet. The greater portion of this strip is poor, flat saw-palmetto pine land, with few places for settlement, and consequently the population must always remain scarce, though in time there will be in it many large sugar plantations. Health on the coast and river is good—mosquitoes quiet annoying though not worse than in Alabama and similar situations.

The strip on the gulf is more desirable; well watered—large springs making many short but navigable rivers, with an immense amount of rich hammock. This white population will never be large on this strip, from the fact that it is unhealthy to settle in the hammocks, and on the surrounding pine lands with some exceptions. are low, flat saw-palmetto pine barrens, and very wet in the rainy season. The Indian territory is said to embrace some of the most valuable and desirable of the peninsula.

To return to the middle strip. It is the most desirable, because there is more rich land and it is more regularly dispersed over the entire country than in other portions. There is a better prospect for health, and consequently will be the most densely populated with the best society—climate mild, warmer in winter and cooler in summer than in higher latitudes, or in the same latitudes not possessing the same contiguity to old ocean. Killing frosts never make their appearance in my county (Marion) until about November. Further south vegetation is never killed except in extreme seasons. The thermometer never raises above 94 degrees in the shade. The summers are long but the heat is counteracted by the nights, which are ever pleasant, and you know our days never grow so

long as with you, consequently the heat is less oppressive. As to health, new comers, generally to go through the process of acclimating incident to a change of life. The diseases are but few, mostly intermittents and dropsical cases.

The productions are corn cotton sugar-cane potatoes, peas and pumpkins; all succeed well, and in fact it is the home of the vegetable tribe. The best lands will yield from 30 to 40 bushels heavy corn, a bale peted gulf cotton or from one to one and a half hogsheads sugar (weighing 1500 lbs) per acre. Sea Island cotton can not be raised very advantageously in the interior, nor is the Cuba tobacco a valuable crop to any but the most experienced hands. The best crop for profit I believe, is cane corn and a small amount of cotton. The cane and corn may be planted together, or on the same land, without interfering or but very little with each other, as the corn, if planted early, will be made before the cane is large enough to require much of the force of the land. Five acres of corn and cane, and four or five acres of cotton would be the crop of the hand, which he could very easily cultivate. During the cotton picking season from August to November, the time to commence the saving of the cane crop, a very nice amount of cotton might be housed, say at least,
 2 1-2 bales at \$30 \$75,00
 5 acres cane, 1500 lbs., each 7500 at
 5 cts., 375,00
 Corn to supply a farm not counted. \$450,00

\$450 to the hand might be realised if properly farmed, though this is better than any large planter is doing and better than many small ones, for there is neither science, system nor economy used here. Yet in farming many of the tropical fruits are being tried here and seem to succeed well. The orange is indigenous. We have generally a rainy season from June to September, which greatly interferes with farming operations. This year, however, the seasons are regular, and this, last of June, we are suffering some for rain.—*Knoxville Register.*

We copy from the North British Review, the following account of the railways in Germany:

In Prussia, a comprehensive system of railways, to the extent of 3200 miles, was planned by Government; but up to 1845, 652 miles only were completed, as shown in the following table—the political disturbances in 1848 and 1849 having doubtless prevented the execution of the general plan:

Berlin and Anhalt.....	93½	£726,873
Berlin and Potsdam.....	16	210,000
Berlin and Stettin.....	83	783,000
Berlin and Frankfurt-on-the-Main.....	42½	420,000
Length of Line in Miles.		Cost.
Lower Silesian }	134	1,200,000
Upper Silesian }	49½	630,000
Breslau and Schweidnitz... }	37	285,000
Magdeburg and Leipsic... }	67½	615,000
Magdeburg and Halberstadt.....	35½	286,555
Dusseldorf and Elbertfeld... }	16	304,170
Cologne and Aix-la-Chapelle.....	52	1,425,000
Cologne and Bonn.....	18½	131,000
Total.....	652	£7,017,193

According to this table, the average cost of the Prussian lines is about £10,000 per mile.

The following table shows the length and cost of each of the lines formed in Austria:

Length in Miles.	Cost.
Linz Gmunden Budweis...119	£712,000
Emperor Ferdinand's line.179	1,700,000
Vienna to Gloggnitz.....46	1,950,000
Olmütz and Prague.....151	1,853,725
Marzschlag and Gratz... 57½	not given.
Total.....495	£4,936,325

These lines show an average of about £11,300 per mile.

The small States of Germany have executed the following lines of railway, 541 miles in length, of which 371 miles belong to the Government:—

Length in Miles.	Cost.
Baden..... 97	£1,704,036
Brunswick and Hanover.. 38	209,707
Brunswick & Oscherleben. 43	240,000
Brunswick and Harsburg. 27½	127,500
Hamburg to Bergstorf.... 10½	191,332
Altona and Kiel..... 64	3-2,500
Leipsic to Dresden..... 71½	975,000
Saxon Bavarian..... 51	903,000
Tannus Railway..... 28	265,361
Municinto Augsburg..... 37½	350,000
Louis, Southern and Northern..... 70	4,286,500
Nurenberg and Furth.... 4	17,708
Total.....541	£9,676,249

The average cost of these lines will be about £19,000 per mile.

Wilmington and Manchester Railroad.

The directors of the Wilmington and Manchester railroad company had a meeting at Marion Court House on the 22d ult. The annexed abstract from the report made to the board by the resident engineer (Mr. Fleming) will show how the work is progressing:—

Total length of road.....162 miles
 " Grading under contract...129½ "

Stock taken in grading.....\$197,100
 Materials for superstructure, &c. 41,600

\$238,700

From junction to Great Pee Dee river Swamp.....65½ miles.
 Grading within this distance under contract.....61½ "
 Superstructure do.....37½ "

From Great Pee Dee river Swamp to state line.....30 "
 Grading within this distance under contract.....16½ "

From State line to Wilmington.....60½
 Grading within this distance under contract.....51½ "

No. of Negroes employed in grading.....516
 No. overseers and white laborers, about..... 33

Total.....554

The Marion Star of last week says:—We understand that the board have determined, if possible, to lay down the road to the Great Pee Dee river and have it in operation by the last of the ensuing year, and at all events to the turning point, within 9 miles of Darlington, C. H., which will do all of the transportation and travel west of the Great Pee Dee river, and a portion from this side. We hope soon to be able to report the whole of the contractors in Marion district east of the Great Pee Dee at work with sufficient force to accomplish the grading during the coming year.

This is important with respect to the state subscription, for the sooner the work is done in this state, the sooner will the company be able to get the subscription of South Carolina and use it in the purchase of iron, to which the present low prices of that article are most favorable. It would be a source of profit, as well as immense saving to the company, to effect their purchase now, and we learn the directors are using every exertion to do so.—*Wilmington Chronicle.*

RAILROAD TO SAN FRANCISCO.

Appendix B, to P. P. F. Degrand's plan for a railway to the Pacific.

When the railroad is in operation from Boston to San Francisco, the length of passage for its 3,000 miles, (going night and day, at the rate of 25 miles per hour, including stops,) will, for the express-train, be only five days.

For 1st class cars, at 2 cents per mile, the fare will be only.....\$60
 For 2d class cars, at 1 cent per mile, the fare will be only..... 30

The cost then of transporting from the Atlantic seaboard, 150,000 persons to California, and of bringing back 50,000 persons from California, will be as follows:

Fare of 150,000 passengers, 1st class, at \$60 each.....\$9,000,000
 Time and food for said 150,000 passengers, for 5 days, at \$5 per day, say \$25 for each person..... 3,750,000
 Fare of 50,000 2d class passengers, at \$30 each..... 1,500,000
 Time and food for said 50,000 passengers for 5 days, at \$2 per day, say \$10 for each person..... 500,000

Total cost by the railroad line.....14,750,000

The express train can be provided with berths and other conveniences for the night time. It can make short stops, at convenient places for meals. It can be provided with newspapers, pamphlets, books, chess boards, backgammon boards, and other amusements, as is a steamboat. The cars can be well ventilated, night and day, by Espy's at the top, and can be lighted by lamps, serving also as ventilators. On a portion of the road they can occasionally have a band of music.

If it be said that all the travellers will not elect to go by the express train, night and day, and that there should be, for their time, a greater allowance than 4 days, the reply is, that many of the travellers will, at their starting point, be at the west of the Atlantic seaboard, as, for instance, he who starts from St. Louis, in Missouri. Starting thence, he will spend only about half the time, and pay only about half the fare of him who starts from the Atlantic seaboard; because his journey will be only 1,600 miles.

We may therefore safely estimate that the above amount, (\$14,750,000,) will be the average of the whole, by the railroad line.

Let us now examine what is the expense, by the sea route, for the same individuals:

To transport, by the sea route, the same number of persons, will cost as follows, part going round Cape Horn, part through the Straits of Magellan, and part through the Isthmus of Panama:

Passage for 150,000 1st class passengers, at \$50 each.....\$22,500,000
 Time of said 150,000 passengers, for 100 days on an average, at \$3½ per day—say \$350 for each person..... 52,500,000
 Passage for 50,000 2d class passengers, at \$50 each..... 2,500,000
 Time of said 50,000 passengers, 100 days on an average, at \$1 per day, say \$100 for each person..... 5,000,000

Total cost by the sea route.....\$82,500,000
 Deduct cost by the railroad line..... 14,750,000

Clear saving in the expense.....\$67,750,000

To this saving we may add the extra risk of life, by the sea route, and the disappointment and extra delays occasionally incident to a voyage by sea.

In point of time, of great hardships and of expense the route by land, as it now exists, over a trackless waste, compares even more unfavorably with the railroad line.

If, then, we estimate that there will go California annually, 150,000 persons, and that 100,000 of them will settle there, and 50,000 come back, the annual saving of expense, by having the railroad, will be \$67,750,000.

In other words, the saving in two years will more than repay to the nation, the whole cost of the railroad from St. Louis, to San Francisco.

If we adopt the plan, now before Congress, of

building the road, with the cash produced by the sale of the land given by the United States, (which land cannot be sold and reduced to cash, until the road is built,) we shall inevitably delay the completion of the road, more than fifty years. The loss of \$67,750,000 a year, amounts in fifty years, to \$3,387,500,000; a sum sufficient to pay off the whole British national debt!

Shall this enlightened nation—responsible as we are for our high fame—tamely submit to this disgraceful and enormous loss? Or shall we avert it and show ourselves worthy of our high destiny, by the simple process of borrowing United States stock, to the amount of \$93,000,000; thereby creating the angible and efficient means of completing this great national work, in the short space of five years?

Indiana.

Mr. Brooks of New Albany, the able and efficient President of the New Albany and Salem railroad company, arrived at this place on Monday evening last. He came to consult with the directors of the Crawfordsville and Wabash railroad company, relative to the necessity of a speedy junction of the two roads. We learn from Mr. Brooks that the Albany and Salem road is now progressing with great rapidity. Fifty-six miles of the road are now already under contract, of which, eighteen will be in operation sometime during the fall. The citizens of Lawrence, Owen, and Monroe, are all alive to the work. Nearly enough stock has been taken to justify the board in putting the road under contract to Gosport.

Having ascertained the feelings and wishes of the people on the whole route from New Albany to Crawfordsville, and having learned from Major Elston the condition of our road and the views and ability, Mr. Brooks is decidedly of the opinion that a junction of the two roads can, with proper efforts, be effected in three years from the present time, and with two such industrious, energetic, persevering, calculating men as Mr. Brooks and Major Elston to lead, we cannot doubt that all suitable means will be put forth and a speedy completion of the road effected. The distance from New Albany to Lafayette is about two hundred miles. This road when completed will be the longest in the State, passing through its very heart, having as its tributaries as rich a tier of counties as are to be found in the west. It will constitute the great central thoroughfare of Indiana.

It is a fact admitted by all, that the longer a railroad the more profitable the stock, and the greater the facilities for getting to market the more valuable property lying upon the route, hence we have a double inducement to complete the road. Not only will the stock yield handsome dividends, but every acre of land will be enhanced in value, every kind of produce will command higher prices, and every department of business will be promoted.—*Wilmington Jour.*

Baltimore and Ohio Railroad.

The 23d annual report of the president and directors of the above company has just been issued. It treats:

I. Of the Main Stem.

During the fiscal year ending on the 30th September, 1849, the aggregate receipts of the company from passengers, and mails, and merchandise, have amounted to \$1,241,202 45; being an increase of \$27,540,68 over the preceding year. Of this amount \$846,704 49 have been received from freight and \$394,496 96 from passengers, showing a large augmentation of the former, and a decrease of \$72,009 05 in the latter.

The total cost of working the road, and keeping it in repair during the same period, has been \$614,634 15, which will be found distributed under the various heads of expenditure.

The net revenue of the Company is thus shown to be \$596,571 03, or 8½ per cent upon the original capital of \$7,000,000, and about 8½ per cent upon the augmented capital of \$7,227,400, being an excess of \$45,113 23 over the year 1848. There has been carried to the credit of the sinking fund, during the same period, for the redemption of the bonds due on account of the Washington Branch, the sum of \$33,561 69.

In accordance with a resolution adopted on the 5th

of December, 1847, that from and after that period, the net earnings of the road should be applied towards its extension Westward, and in the increase of its capital; and, to the amount so applied, the President and Directors should increase the capital stock of the Company, by delivering to the Stockholders at par, new shares of stock in proportion to the respective shares represented by them. In pursuance of this policy the Board have directed an increase of the capital stock to the extent of the net revenue thus appropriated or retained, during the past year, being a dividend of 5 3-16 per cent. upon the original capital of \$7,000,000, or 5 per cent. upon the augmented capital of \$7,227,400.

During the past year seven Passenger cars, one first class Locomotive, and 42 cars of all other descriptions have been constructed in the Company's shops; and, in all instances, have proved highly creditable to the mechanical skill of the efficient head of that department.

Considerable modifications have been introduced, since the commencement of the year, in the organization and details of the service, looking to increased economy and efficiency in the general management of the road. So far these improvements have been attended with satisfactory results; and, the less frequency of interruption to the tonnage and passenger business, from the condition of the track and other causes, attest the value of the changes which have been made. It is confidently believed that these results will be more satisfactory hereafter, when the new system comes to be more thoroughly tested, and modified, as experience may suggest, from time to time.

Since the last annual report, the latter road to the South side of the Basin, forming a continuous communication with tide water, has been completed, and is now in full operation. The large abatement which has taken place in the horse power heretofore employed, consequent upon the necessity for using the track through Pratt street, and the increase in the coal trade, amounting during the year to 108,000 tons, has been attended with the most decided advantage to the Company. The facilities afforded by a direct communication with the water, and the steady demand for coal from abroad, has given increased activity to this branch of the company's business. The entire cost of the latter road to tide water, including the purchase of additional grounds at Locust Point, has been \$175,422 43, of which \$107,362, 02 have been paid in bonds, and \$69,060 41 in money.

The board are happy to announce that the improvements in the road bed, directed by a resolution of the board, on the 13th of October, 1847, are now rapidly drawing to a close. The total cost of these improvements up to the present time, has been \$254,934 65. The amount outstanding upon the contracts will not exceed \$25,000. When this work shall have been completed, no curve will then exist of a less radius than about 600 feet, excepting at three points upon the line. The advantage of these improvements is already being felt, in the greatly increased speed with which the travel is conducted, and the general effect upon both passengers and tonnage trains passing over the road.

The heavy demands for reconstruction will also cease to operate as a drain upon the Company after the present year. This work has been attempted with an aggregate cost of \$660,462 45, of which \$27,038 77 have been paid in Bonds, and \$633,423 68 in money. Before the winter sets in, the Company will have a continuous track of heavy rail in complete order from Baltimore to Cumberland.

The total amount of outstanding liabilities, attendant upon these various works as above detailed, will be found not to exceed \$50,000 of Bonds falling due in 1867. This sum, together with the Sterling bonds, when used, constitute the entire indebtedness of the Company, from whatever cause, exclusive of the bonds issued in the construction of the Washington branch road, which are more the secured by the property and revenue of that branch, and towards the redemption of which, a sinking fund of \$145,780 29 has been provided by the Company.

Before disposing of this part of their subject, the board would allude briefly to the large increase of the trade in hogs, as indicated by the operations of the past year. In 1817 the whole number of hogs transported over this road, did not exceed 84,500; in 1848 the number had increased to 111,852, and du-

ring the past fiscal year we have to note a still further increase in this tonnage to 195,665, or equal to 75 per cent. over the year immediately preceding. During the single month of December, there were transported over this road upwards of 64,000 hogs. The rapid development of this trade has gone beyond the most sanguine expectations of the Company, and has opened a new prospect of wealth to the city of Baltimore.

II. Of the Washington Branch.

The operations of the Washington Branch have been satisfactory, and show an improvement in the business of the road. The gross revenue of the year ending on the 30th September, 1849, has been \$274,832 95, and the expenses of working the road, and keeping it in repair during the same period, including \$8,190 paid for new passenger cars, and \$6,715 01 for losses by accidents—\$6,172 36 of which originated prior to the 1st of October, 1848, have amounted to \$109,174 94, to which if we add the bonus of one-fifth of the receipts from passengers paid to the State, will leave the sum of \$161,191 71 chargeable against the earnings of the road. The net revenue notwithstanding, will be found to exceed that the preceding year.

Of the net revenue, in addition to the semi-annual dividend of 3 per cent. declared in April last, the board have declared a dividend of 3 per cent. payable on and after the 16th inst.

The reconstruction of the bridges at Little Patuxent and Bladenburg, swept away by the freshet of October, 1837, has been commenced, and will be pressed to completion without unnecessary delay.

The board regret to say that they have not been able to conclude an arrangement with the authorities of the city of Washington, for the establishment of a permanent station house in that city.

III. Of the Extension to the Ohio River.

By the adoption of the Cumberland route, the best interests of the company have been respected, and this great work entered upon its western progress with a cordial and individual support.

Prior to the commencement of active operations, and before any part of the road was advertised for contract, the board deemed it of the first importance to place the company in a situation to ensure the letting of their work upon the most advantageous terms, and at the lowest cash prices. With this view a sale of £200,000 of the 5 per cent. bonds of the State of Maryland, was effected with the house of Messrs. Baring, Brothers & Co. on terms entirely satisfactory.

Since the commencement of the present fiscal year, a distance of 103 1/2 miles of this road, comprising all the difficult sections, between Cumberland and the Ohio river, has been placed under contract, and considerable progress has been made upon many parts of the line. During the present autumn, the entire space between Cumberland and the Tygart's Valley river will be in active progress of construction. The board are happy to announce that the prices at which this work has been let, promise to secure a reduction upon the estimated cost of about 22 per cent., amounting to about \$600,000.

Assuming a similar scale of contract prices for the next 20 miles of the road, extending down the Tygart's Valley river, as far as Fairmont, on the Monongahela river, the total cost of the graduation, and of the masonry above described, would not exceed \$2,389,777—which would fall within the estimates, about \$650,000. And a further application of like prices to the same work upon the remaining distance to the Ohio river would exhibit a saving sufficient to bring the entire cost of this portion of the work to the original conjectural estimates of the chief engineer.

The chief engineer of this company has been fully aware of the heavy responsibility which attaches to the department over which he presides, in the estimates which he has presented of the cost of this work; and the large saving upon the contracts which have been let, on the portion of the line now in progress of construction, shows how cautious that officer has been, in avoiding an under estimate of the amount required to complete the connection with the Ohio river.

A confident opinion has been expressed by the chief engineer, that the entire line of the road from its present terminus at Cumberland to the city of Wheeling may be completed in two years from

the 1st of June next, and the lettings which have taken place, were intended to equalize the difficult sections, so that the whole work might be accomplished without delay at any intermediate point within the period stated by him.

The completion of this work in three, instead of six years, will be attended with a saving of more than the entire cost of the road from the Monongahela to the city of Wheeling—besides which, it will place the city of Baltimore in connection with the Ohio river, in advance of any other work. This company can never be permitted to struggle on, with its own tardy resources, when delay would be attended with such serious consequences. With a moderate effort on the part of our citizens, and as the board believe, without risk, the whole work may be completed in two years from the 1st of June next, and it remains to be seen whether, with their co-operation the credit of the company cannot be made available in this important undertaking.

From 1810 to 1849, the aggregate receipts of this road have advanced from \$432,885 to \$1,211,105 48. The regular and steady gradation, by which this increase has been reached, cannot fail to satisfy the stockholders of the sound and healthy patronage which it is destined to command, when brought in actual contact with the Ohio river.

It is confidently believed that no line of road, either now, or which may be hereafter projected, will be likely to hold out the same attraction, to both trade and travel, seeking the shortest and most advantageous outlet, on the sea board.

Wheeling has been called the head of navigation of the Ohio river. From this point to Pittsburgh, the reputed terminus of the Central Pennsylvania road, is a distance of 90 miles, and the river trade and travel, when it has reached Wheeling, is almost as near to the city of Baltimore in point of time, by the Baltimore and Ohio railroad when completed, as to Pittsburgh by the river navigation.

The advantages of water transportation for articles of heavy bulk, cannot be too highly estimated and it is believed that the travel on the Ohio river by steam, judging from the experience of our own waters, will never be materially diminished, by other and more direct lines of communication by railroad. The cost of transportation from Cincinnati to Wheeling would not exceed two dollars per ton, and from \$2 50 to \$3 per passenger for the entire distance. The facilities afforded by the line of this road could not fail to give to the city of Baltimore, the monopoly of this great highway.

But looking, as we must needs do, to the connection with the extended line from S. Louis and Cincinnati, the position of this company is still more advantageous. If the western roads converging at a common point at Columbus, intersect this road at the Ohio river, the distance from Columbus to Baltimore is less than from the same point to Philadelphia by 55 miles, than New York, via Cleveland and Dunkirk, by 216 miles, and to Boston by 330 miles.

These advantages in favor of the city Baltimore by the line of this road, are too formidable to be overcome, and they are rendered the more commanding when viewed in connection with the superior attractions of climate, and the unobstructed harbor which at all seasons of the year, opens a free access to the ocean.

In recurring to the benefits likely to flow from the prompt extension of this work, the board cannot but feel encouraged at the animating prospect which it discloses. No portion of our Union, whether considered in reference to its agricultural resources, or the genius and enterprise of its population, can be said to compare with the vast region lying west of the Ohio river—whose attention is now directed to this market, as the nearest and most convenient for its surplus products.

The city of Baltimore, commanding one of the finest harbors on the sea-board, and possessing advantages of climate not to be met with in any other point, defying the competition of any of her northern rivals, from her closer proximity to the trade of the west, and offering an outlet to her exports at all seasons free and unobstructed, may well be supposed to stand in a position second to no other city.—With the Baltimore and Ohio railroad on the one hand, pouring into her lap the products of Ohio, Indiana, Illinois, Missouri, Tennessee, Kentucky, and the extended valley of the Mississippi—and the Bal-

timore and Susquehann road, with a continuous line to Harrisburgh, placing her in closer connection with Pittsburgh by 23 miles than Philadelphia by her own central line, and offering the strongest temptation to such of the trade and travel as may be drawn from its greater northern attractions, at Cleveland, or any other point, she may well claim with these works accomplished, to have placed herself beyond the reach of future contingencies. Her system of internal improvements will be complete. If nature has been lavish of her gifts, the wisdom and enterprise of her citizens will not have been wanting, in the most liberal efforts, to make them available under the wise system which has been adopted.

By order of the board,
THOMAS SWANN, President.

Boston.

The subjoined is an estimate given by the Boston Courier, of the amount its citizens have embarked in a few leading enterprises, principally since the spring of 1846:—

In factories and manufacturing cities,	
The cities enumerated.....	\$13,000,000
Purchase of railroads out of State.....	8,000,000
Extension of old lines of railroad.....	6,000,000
Construction of new railroads in Massachusetts.....	7,000,000
Construction of new railroads out of the State.....	12,000,000
Boston Aqueduct, estimated as having cost with reservoirs and dead interest.....	4,000,000
Stock taken in United States loan.....	7,000,000
	<hr/>
	57,000,000
Amount unpaid less than 7,000,000, July 29th, 1848.	
Estimated dividends to be received by citizens of Massachusetts, April to June, 1848—	
From Banks.....	\$2,000,000
United States Loan.....	400,000
Railroads.....	3,000,000
Accumulation of Savings Banks.....	1,000,000
	<hr/>
	\$9,400,000

The valuation of the state for 1848, if the increase of value in Boston and its vicinity be any criterion, must exceed \$450,000,000, and the annual accumulation little short of 22,000,000.

Massachusetts.

Lowell and Lawrence Railroad Company.—At the annual meeting of this Company held yesterday, a large number of the Stockholders being present, the following gentlemen were re-elected Directors for the ensuing year, by nearly a unanimous vote, viz: William Livingston, Sidney Spalding, Otis Allen, Frederick Parker, Horace Howard, Isaac Farrington and Abner W. Buttrick. At a meeting of the Directors subsequently held, William Livingston was re-elected President, Frederick Parker, Clerk, and John A Knowles, Treasurer of the Corporation. According to the report of the Directors, the road was put in operation July 1st, 1848, and the receipts and expenditures from that time up to the 1st inst., being fifteen months, are as follows;

Receipts for passengers.....	\$42,151.84
“ “ freight.....	10,182.09
Total amount of receipts.....	<hr/>
	\$52,333.93
Amount paid for running expenses,...	\$28,531.13
Estimated amt of debts now due for expenses,.....	5,200.00
Amount of interest on loans,.....	4,500.00
Amount of div. of per cent. payable the 15th inst.,.....	10,000.00
	<hr/>
	\$48,231.14

Leaving as a surplus to meet any contingent expenses of the Company,....\$4,102.79
As much as \$1000 was expended during the last year for side tracks, draining and other improvements.—*Lowell Courier.*

Vermont.

Railroad to Highgate.—We are happy to ac-

nounce that active steps are in progress to verify the surveys of the route for a railroad from Burlington Northward, towards Canada line. Edwin F. Johnson Esq., an engineer of established and high reputation, is now engaged in making an examination of the line. The results of his exploration and estimates will doubtless, in due time, be laid before the public. We have no question that they will show that a railroad can be constructed from Burlington to Swanton at an expense quite below the average cost of Vermont roads, and on an unusually favorable line in respects, of grades and curves.—*Burlington Free Press.*

The New York Courier and Enquirer contains the following from its correspondent in Washington.

Washington, Oct. 6, 1849.—The American people seem to have concluded that the much talked of railroad to the Pacific Ocean shall be commenced. The indications from all parts of the country are sufficiently explicit on this point. It is understood that the administration have determined to recommend to Congress definitive and important action in the premises. The matter may not be more than hinted at in the President's Message, but will probably be set forth in the report of one of the secretaries—probably in that of the interior. The proposition, for efficiency and practical wisdom, will commend itself strongly to the common sense of the country. I do not believe it will embrace any of the prominent features of the Whitney plan.

Whitney's Pacific Railroad.

At the Working Men's Convention held in this city last week, the subject of the Pacific railroad was discussed, and while the convention approved the work, condemned Whitney's plan as "a scheme of gigantic robbery, the successful prosecution of which would, more than any other cause, corrupt the National Legislature, and hasten the downfall of the republic.

Maine.

Railroad Meeting.—The annual meeting of the Kennebec and Portland railroad company was being held at Bath on Thursday last.—The meeting was numerously attended and the greatest harmony prevailed.

Renel Williams, Geo. F. Patten, Wm. B. Sewall, John D. Lang, Joseph M'Keen, Marshall S. Hager, Thomas W. Smith, Wm. B. Grant, George W. Stanley, were chosen directors.

The doings of the directors in relation to extending the road from North Yarmouth to Portland were unanimously approved by the company, and it is confidently expected that on the fourth of July next the public will be able to ride on the rails of the Kennebec and Portland railroad into the city of Portland.

We understand that the original stockholders are all wed until the fifteenth day of the present month to take the balance of the preferred stock, after which it will be offered to any person desiring to take it. Subscribers in this town can call on Mr. Gilman, Mr. Flagg, or Mr. Tupper, who are a committee to receive subscriptions until that day.—*Gazette.*

New Jersey.

Owners of Cattle bound to keep them off Railways.
New Jersey Supreme Court, July (1849) term.—*Vandegrift vs. Rediker.*

This was an action of trespass brought against the engineer of a locomotive, for running against and killing the plaintiff's cow. The cow was at large, and had strayed on an unenclosed part of the Camden and Amboy railroad, near Bordentown just as the train, at its usual speed, was approaching. The railroad, at the place of the accident, runs along the public highway, and the view along the track is unobstructed for a quarter of a mile each way. The bell was tapped, and the engine reversed, a few seconds before the collision, but not in time to stop the cars. The engineer was proved to be a generally careful man in business. The opinion of the Court was delivered at the present (July) term, by Mr. Justice Carpenter, the result of which is, that the owner of cattle is bound to keep them on his own premises at his peril; that an engineer in charge

of a locomotive is not liable for an accidental injury to a cow, which, suffered to go at large, has strayed on a railroad; and that nothing but wilfulness on his part will make him liable for the loss of a cow so exposed by the fault of the owner.

Michigan.

Erie and Kalamazoo Railroad.—At the regular annual meeting of the stockholders of the Erie and Kalamazoo railroad company, held at Adrian, Michigan, on the 1st day of October, the following gentlemen were elected directors for the ensuing year:

George Crane, Esq., Adrian, Michigan; Addison Comstock, do; George Bliss, Springfield, Mass.; Hon. Washington Hunt, Albany, N. Y.; Hon. Charles Blunt, New York city; Hon. Hugh White, Saratoga co., N. Y.; George W. Newell, Esq., Albany, N.Y.; T. W. Bradbury, Toledo, O.; Fryd-erick Harbach, Esq., Cleveland, O.

The new board will meet in a few weeks, and in connection with the directors of the Michigan Southern railroad, will consider the various routes for the location and extension of the latter road from Hillsdale to Cold Water, and also the location of the line westward of La Porte in Indiana, towards Chicago. We learn that the surveys which have been going on for several months exhibit most satisfactory results, and that during the winter the entire line from Toledo or Monroe and Chicago will be located.

Pennsylvania.

Philadelphia and Reading Railroad.—We have the report of the managers of this road just submitted to the public. As it is very voluminous, and as we find the labor of abridgement well performed by the Boston Traveller, we take the liberty of borrowing its abstract of the report for our Columns.

The report of the Managers of the Reading Railroad presents a brief view of the business of the road for the year ending June 30. The gross receipts have been \$884,537; and the expenditures 548,963. Net earnings 335,574—of which 272,625 was absorbed by interest on bonds, due July 1, and 62,949 remained for dividends on preferred stock. This is only 2½ per cent., instead of 3½ as was expected.—The managers state that this unexpected reduction of profits has been caused by an entire suspension, for nearly two months, of the coal business, through the concerted action of the coal operators. They are confident that 4½ per cent. can be paid in January next, making 7 per cent. for the year.

The managers do not go into detail in respect to the financial affairs of the Company, as the report of Mr. D. A. Neal, of Salem, which accompanies that of the managers, covers the whole ground.—They concur fully in Mr. Neal's statement and views, and recommend measures, in accordance with his suggestions, for disposing of the bonds which will become due in January next, and which constitute the present and urgent embarrassment of the Company.

Mr. Neal's report is a very elaborate document, filling 40 pages: The affairs of the Co., are stated in the minutest manner, and with a clearness which must render them intelligible to every reader. He must have waded through a sea of details, by which any other than the clearest head would have been overwhelmed. We should think his exhibit would be satisfactory to all parties, and that those particularly interested would be inclined to adopt this plan of relieving the Co., from the difficulty which is threatened by the approaching maturity of the 1850 bonds.

Mr. Neal proceeds in a business like manner,—and with a candor which commends his statements and observations to entire confidence,—to the all important inquiry, what the cost of the road has been, and what amount of income can be derived from it;

in other words, what is the real value of the property. In this inquiry is involved the question; whether the the property existing in the shape of the bonds and stock of the Reading railroad, shall continue to be the sport of the stock market—a mere medium of speculation— or whether it shall be made to assume a permanent character.

In 1844, the liabilities of the company were estimated at \$9,457,569 64, for bonds, floating debt and stock (40,200 shares at \$50 each). Assuming this estimate to be correct, Mr. Neal compares it with that of the annual report of 1848, and shows that in the four years the liabilities were increased \$5,720,760 65; that is, that since 1844, that amount has been added to the capital. The manner in which this amount has been expended, is explained in detail, and may be seen by the following recapitulation:

	Nov. 30 1844	Increase.	Nov. 30 1848.
R. roads, depots & stations	8,081,501 88	3,398,535 40	11,470,040 28
Engines and cars	1,047,182 08	1,231,144 28	2,278,326 36
Real estate	269,688 00	208,846 52	478,534 52
Sundries	43,862 44	649,444 12	693,306 56
Cash	15,352 24	7,226 42	22,578 66
Materials		134,227 34	134,227 34
Telegraph stock		10,350 00	10,350 00
Delinquent subscribers		25,000 00	25,000 00
Bills Receivable		65,986 57	65,986 57
	9,457,569 64	5,720,760 65	15,178,330 29

A minute statement is given of the stock issued, and of the character of the bonds, mortgages, etc. The net earnings of the road for the four years—1844 to 1848—are shown to have been \$2,880,250 83, which amount was appropriated to dividends, tax on dividends, and interest on floating debt and bond and mortgages.

The accounts of the road are exhibited in detail, as brought down to June 30, 1848, when all outstanding accounts were adjusted, and the floating debt reduced to the amount of the Company's assets. The statement shows the following results:

On the 30th of November, 1848, the total cost of the railway, equipment and real estate was.....\$14,226,881 16

Since increased by Disc't. on bonds sold in 1849.....\$1,176,260 00

Bal. of bonds on loan of 1847-56.....	303,417 00
Interest on above....	54,392 58
Land damages.....	1,050 10
Coupons paid in January, 1849.....	266,877 00
Back interest and allowances, as per P. and L. account....	224,908 75
Discount on \$211,000 of bonds to be sold, at 60 p. c.....	84,400 00
Estimated amount of unset claims, real estate for stations, etc.,.....	9,343 16
	2,153,435 15
Less sale of engine	1,750 00
	\$2,151,685 15
Total sum June 30th, 1849.....	16,378,566 31
Paid for by stock 84,362 35 100 shares.....	4,218,117 50
Preferred ditto.....	2,336,000 00
	6,554,117 50
Bonds due 1850 2,533,700	
" " 1856 160,000	
" " 1860 6,920,800 9,614,500 00	

Bonds and Mortgages	209,900 00	16,378,517 50
Balance		48 81
Property on hand, cash..	72,185 82	
Bills receivable.....	26,135 67	
Stocks and Securities received in settlement of accounts at their present market value.....	185,965 38	
Debts due considered good.....	156,169 45	
Do. doubtful 264,912 34	187,032 58	
Balance due from offices.....	59,978 61	
Materials on hand...	192,254 48	
Due from construction account.....	16,313 74	
Interest account.....	3,749 00	899,776 73
		899,825 54
Telegraphic stock.....		10,350 00

To balance which the company owe..	910,175 54
Notes payable.....	187,920 14
Drafts payable.....	1,105 00
Balances of accounts.....	336,794 15
Back interest on 1856 bonds.....	13,851 20
Taxes and Int. on real estate.....	2,084 25
Suspense acct. for unset claims.....	32,846 66
Income account.....	335,574 14
	910,175 54

It will be seen that the cost of the road has been provided for by the stock and bonds, and all other liabilities are met by assets, which have been put at a valuation at which part of them has been and the balance by proper management undoubtedly will be realized. To cover, however, any possible deficiency, the company holds real estate at or near Richmond, not required for the purposes of the road worth 90 to 100 thousand dollars, which will be ample in any supposable case.

Here we have a clear view of the actual condition of the road at this time. Mr. Neal then goes into an interesting and very satisfactory consideration of the capacity of the road, under these circumstances, to give a return on the capital invested.—He comes to the conclusion—and this is a material point, for upon it depends the intrinsic worth of the vast property invested in the Reading railroad—that the road can be made to yield a net income more than equivalent to the stipulated interest on the loans. In a word, he estimates that after allowing for an ample renewal fund, and paying full interest on bonds, and 7 per cent. on preferred shares, a surplus of 200,000 dollars, or 4 1/2 per cent. on the common stock, may be earned and appropriated in part or wholly, to the liquidation of the Company's liabilities. It is difficult to abbreviate Mr. Neal's statements, which are always very comprehensive; but the substance of his estimates in regard to operating the road may be stated as follows:

Taking the actual cost of the road, as stated, to be \$16,378,561 31, the interest on bonds and preferred stock is \$770,561; and this is considered a permanent charge on the business of the road. Another charge is a renewal fund, that is, a deduction from the income of an amount sufficient to perpetuate the road in its present state. This is set down at \$78,000, being based on the gross traffic, at \$3 per 100 tons carried 100 miles. Another permanent charge is a tax of 5 per cent. on dividends, which is demanded by the State of Pennsylvania. This is estimated at 27,469 90 dollars. A careful estimate is then made of the minimum average business for the next four years.

The result, in the aggregate, is as follows:

Receipts for transportation.....	\$1,913,000 00
Expenditures for do.....	839,650 00

Net earnings.....	\$1,073 350 00
Renewal fund, interest, e.c. as above	876,030 90

Net income on common stock.... \$197,319 10
By the statement of accounts quoted above, it will be seen that the amount of common stock is \$4,218,117 50. This net income therefore is nearly 4 3/4 per cent.

Mr. Neal states that he has made this estimate with a strong leaning to the side of security, and not to support a favorite theory. He has so much confidence in it himself, that with five others whom he has no doubt he can find, he is willing to take the road for ten years, on this basis, and give satisfactory security for its fulfilment.

Mr. Neal suggests various measures of retrenchment in conducting the operations of the road, which are obviously feasible and necessary. He concludes by suggesting a mode of overcoming the greatest remaining difficulty, namely, the provision for the bonds becoming due in Jan. 1850, to the amount of \$3,864,800, and which it is admitted to be absolutely impossible to pay in cash at maturity. This plan, in his own words, is as follows:

"I assume that none of the 1850 Bonds are converted into Preferred Stock, but that the holders will accept in lieu of them new 6 per cent Bonds payable at some time beyond those due in 1860, say in 1870, secured by mortgage of the Road and Property of the Company, for the especial benefit of those who make such exchange with the following provisions:

1st. That out of the net income after paying 7 per cent on the Preferred Stock and before any dividend shall be paid on the Common Stock, the sum \$100,000 shall be deducted, three-fourths of which shall be invested in New Bonds, given in lieu of those due in 1850, so long as such investment can be made under par, and one-fourth in the '56 to 60' Bonds, on the Pennsylvania State Stocks, as per contract as in the Mortgage Deed of 1836.

2d. That the balance of the net income, shall be divided in cash to the holders of the Common Stock, until it amounts to seven per cent, and then to the holders of both Preferred and Common Stock.

3d. That the amount of the Renewal Fund, that shall not be used during the current year, be invested in the Mortgage Bonds, or Common Stock of the Company, whichever may be the most under par, but not at, or over par.

4th. That all Bonds and Stock, so purchased, shall be cancelled and new Stock to the same amount be created, but such Stock shall not be entitled to dividends for four years from the 30th of November, 1848.

5th. That at the end of the four years aforesaid, the Stock thus created shall be appropriated as follows:

So much thereof as shall have been purchased with the reserve from the Renewal Fund, shall be held for the purposes of that Fund. So much of the investment of the tax on earnings not divided, as may be necessary to pay the tax to the State on the dividend of stock, herein after provided for, shall be sold to meet that amount and the balance, if any, retained as a sinking fund.

The amount of the 1870 bonds so purchased and converted into new stock, shall be annually credited to the common stock at cost, till with the cash dividend paid, it shall amount to 7 per cent. afterwards the balance shall be credited pro rata to the common and preferred stock, and the issue made in January 1853.

No new stock being thrown on the market for 3 years, it will have a chance to recover.

In regard to dividends on the new stock it is clear that it makes no difference to the stockholders, they receiving in cash all the balance, whether it be divided among 100,000, or 110,000 shares, each receives the same amount of money.

If we suppose the estimate of the net income, in the report to be realized, the following will be the result:

Net income as per estimate.....	197,319 10
Add 1 per cent. interest, on the loans, due in 1850, which were then assumed to be	

converted and to bear 7 per cent. as preferred stock.....	38,647 00
State tax on dividend, on preferred stock, not taken \$270,529, at 5 per cent.....	13,526 45
	249,492 55
Tax on \$100,000, not divided but invested.....	5,000 00
Portion of renewal fund, not used in the year, say half.....	39,000 00
	393,492 55
The Cash Dividend will be \$249,492 55 less \$100,000 invested.....	149,492 55
less tax on \$52,173 45, amount of 1 per cent on 150 loan and on dividend on preferred stock above.....	2,484 45
	147,008 10
On 4,218,117 50 3/4 per cent, is 147,634 11	
NOTE. It is evident, other things remaining the same, that this will be increased every year, by the interest on the bonds, or dividends on the stock purchased.	
There will have been invested	
account Stock.....	100,000 00
" Renewal.....	39,000 00
" Tax.....	5,000 00
	141,000 00
Or say in four years.....	\$576,000 00

This, or some similar arrangement, it is thought, will give the holders of the matured bonds the security of a property almost certain to yield a revenue equivalent to a capital of \$17,000,000 dollars, pledged for only about half that sum; and that they will, without a question, receive their interest semi-annually, with the certainty of a gradual absorption of the principal. Without some such arrangement, the Managers may be driven to make an assignment of the property, which would be fatal to the interests of all concerned.

AMERICAN RAILROAD JOURNAL.

Saturday, October 13, 1849.

Railroad to the Pacific.

Should the Railway to the Pacific be private property, or under the control of persons interested in the results of its earnings?

Every part of the Union is interested in California—those portions the more distant the most—the north and the east, if possible, more than the valley of the Mississippi; because the settlement of that country will open an extensive market for eastern manufactures and employment for eastern shipping. The expense of reaching this country, and of forwarding merchandise to it, is just so much of a draw-back upon the value of this new acquisition. To obviate this as far as possible, to practically bring together the two sections, is the object of a railway from the Mississippi to the Pacific. The value of such a work is to be measured in part by the amount saved by this over the ordinary channel of communication, & reaches its highest point, when it transports goods and passengers over it at the simple cost of transportation, and from the proper construction and management of the road, at the lowest possible charge. The great object of this road is to take from some central point on the Mississippi, at which will converge roads from Mobile, Savannah, Charleston and Norfolk in the south, and Baltimore, Philadelphia, New York and Boston in the north, passengers and merchandise received from these various points, and lay them down on the Pacific at the lowest possible cost.

If the road should be private property, it would be in the power of individuals to impose, in the shape of tolls, such a tax upon merchandise, and travellers passing over it, as they might choose.—Such a road could not for a long time at least have any competition. We have a right to suppose, tha

in such a case, the owners of the road would make the most money possible out of their property, and thus the trade and commerce of the United States, and as the enthusiastic believe, of the world, would be subject to all the burdens that individual cupidity could impose. There is, therefore, the same and an equal objection against making this work private property, as there is to giving to individuals the sole privilege of navigating the Pacific, for reasons too evident to be pointed out. Public rights of such vast magnitude should never be surrendered to the control of individuals. Then are objections equally strong against making this work a public enterprise, and placing it under the control of the general government. Citizens of all parties recoil from the proposition of investing government with such a tremendous instrument of political corruption. The general government, too, may be considered as practically incompetent to the construction and proper management of this work. It is this feeling that has secured such favorable attention to the private schemes proposed, and this is the strongest argument that Mr. Whitney makes use of, and very properly so, in favor of his scheme; and as his road would inevitably fall into the hands of the general government, his strongest argument makes directly against his own plan.

By the plan proposed, the several States, each by its representative in the board of direction, have an equal voice in the construction and management of this work. The true interest of the whole people, therefore, will be carried out in the action of the directors. The plan makes the best provisions that can be made, that the road shall be built and managed at the least possible expense, consistent with true economy. By this plan, the strongest motive acting upon the directors, will be a desire faithfully and honestly to execute the powers with which they are invested. They can in no event, have control over, or custody of the money applicable to the road; which can only be drawn from the treasury, upon proper vouchers, in payment of work performed.—The agent of government holding the money, viz: the treasury department will have no connection whatever with the road. This plan, therefore makes the road popular in its design; secures to it the same economy of management as to a private enterprise, and imparts to it all the confidence that could be felt toward a work undertaken by the general government, and relieves equally of all fear of abuse or mismanagement of power either by the private individuals or corrupt officials.

For the American Railroad Journal.

Pacific Railroad--Boston Plan.

The concoctor of the "Boston Plan" must be no ordinary man: he has shown singularly strong instincts in Cocker's well-known game of "Profit and Loss." But in every point of view this Boston scheme is quite a unique affair. It is none of your crude, vague, off-hand thoughts:—it is a regular downright precise speculation. It proposes in the first place that no stimulus, stronger than cold water, shall be allowed to moisten any of the clay, human or vegetable, concerned in the Pacific railroad; and amongst other things of the first importance to the merits of the case, goes on to say that the men, poor souls, shall work by spells of eight hours duration, morning, noon and night. Now, we ourselves doat on precision above all things, and as in our opinion, only one thing more is necessary to make it perfect, we take leave in our admiration of this precious, this model 'Boston Plan' to suggest here that some provision be set forth on the face of the plan for providing the men on the sections west of the Mississippi with mosquito nets.

The Boston Plan might have presented itself to the world in a nutshell. It proposes that "a compa-

ny, in whose integrity and steadiness of purpose, confidence can be reposed by the Nation," shall, after paying into their own treasury two millions of dollars, have a right by way of loan to a new issue of United States six per cents, to an amount not exceeding ninety-eight millions; and that in addition to this, they, the aforesaid 'confidence' company, shall appropriate "a strip of land ten miles wide north of the line" for the especial benefit of themselves and their worships' heirs male. Besides the security furnished by their integrity, these 'confidence men,' whoever they shall happen to be, will graciously give the government, 'a mortgage on the road and its appurtenances,' 'if,' as the Boston Plan most innocently suggests, 'the government desire it.' One-third of the stock and a like proportion of the Directory is placed by this magnanimous scheme at the disposal of the general government. The interest on the 98 millions will be paid regularly—so saith the plan—and after fifty years the principal is to be paid off by annual instalments of two millions. Here endeth the 'Boston Plan.'

Was ever known anything more preposterous than this 'Boston Plan!' A company of men say coolly enough—"My dear government, if you give us 98 millions, we will subscribe 2 of our own in Pacific railway stock." This silly scheme is so full in even minor details, that absurd as such a thing seems, we must conclude that it is a complete enunciation, and that therefore as appears on the face of it a subscription of two millions dollars, will place at the disposal of a party of men unbound by any obligation, without any proviso, any security, the public money to the amount of ninety-eight millions! True enough, the 'road and appurtenances' are named as a guarantee for the good faith of the company—a guarantee which, to be by any means an equivalent for the amount to be guaranteed, presupposes the very good faith for which the guarantee is required. Here the Boston Plan humorously sends the company on a merry-go-round excursion after their own good faith, pretty much after the fashion of a certain dog that sometimes amuses us by innocently describing circles in pursuit of his tail. Again, we are told that this loan of 98 millions, furnishing an excellent medium of exchange with foreign countries, will have the same effect on trade as an addition to that amount to the circulating capital of the country. If the public are served by running into debt, the more the Boston Plan borrows the better: for our part, following its own most modest examples, we would suggest that in order to serve the public to the extent of another hundred millions the Boston Plan should go for a loan of 198 millions.

—The estimated cost of the Pacific railroad is stated in the appendix to the plan at 66,666 dollars per mile; and the length of the line being given there as 1,600 miles, the total cost will therefore be upwards of 106 millions. Now, the capital of the company being fixed at 100 millions, and the limit of loan being fixed at 98 millions, the question suggests itself, who, if the estimate be correct, is to pay up the balance, 6 millions? The government? But if, as in our ignorance of the conditions of the case is quite possible, the cost of construction should reach the figure put forward under that head in another of the many plans brought forward, that is to say, 150 millions, who then is to make up the deficiency? Of course the government. Therefore we say that fixing the limit of loan at 98 millions is quite ridiculous; so also would be the pledging of the public credit on even a sufficient security to an amount to which imprudence or dishonesty only can

Table showing the weight or pressure a beam of cast iron, 1 inch in breadth, will sustain, without destroying its elastic force, when it is supported at the ends, and loaded in the middle of its length, and also the deflection in the middle which that weight will produce. Calculated by Mr. Fredgold.

Length	1 foot.	2 feet.	3 feet.	4 feet.	5 feet.	6 feet.	7 feet.	8 feet.	9 feet.	10 feet.	12 feet.	14 feet.	16 feet.	18 feet.	20 feet.	22 feet.	24 feet.	26 feet.		
Depth 1 in.	lbs. def. 850.02	lbs. def. 425.08	lbs. def. 283.18	lbs. def. 212.32	lbs. def. 170.5	lbs. def. 142.72	lbs. def. 121.98	lbs. def. 106.128	lbs. def. 93.162	lbs. def. 85.20	lbs. def. 77.1	lbs. def. 71.1	lbs. def. 66.1	lbs. def. 62.1	lbs. def. 58.1	lbs. def. 55.1	lbs. def. 52.1	lbs. def. 49.1	lbs. def. 46.1	
1 1/4	1912.014	956.033	637.12	477.21	383.33	320.48	273.65	239.85	214.08	192.134	171.144	154.196	141.256	131.324	123.170	116.181	111.142	106.131	101.131	
2	4700.04	2350.02	1567.00	1193.00	958.00	808.00	703.00	619.00	550.00	495.00	453.00	421.00	394.00	371.00	352.00	336.00	322.00	309.00	297.00	
2 1/2	1769.072	884.536	589.691	442.268	353.707	298.000	256.000	224.000	198.000	177.000	160.000	147.000	137.000	129.000	123.000	118.000	114.000	110.000	106.000	103.000
3	3457.052	1728.526	1152.017	864.013	687.010	564.008	480.006	414.004	360.002	315.000	279.000	250.000	226.000	207.000	192.000	181.000	172.000	164.000	157.000	
3 1/4	3392.08	1696.04	1130.027	847.020	671.015	550.012	468.009	404.006	352.004	308.002	273.000	245.000	221.000	202.000	187.000	176.000	167.000	160.000	154.000	
4	4250.00	2125.00	1416.67	1062.50	842.00	701.67	601.67	521.67	456.67	402.50	358.33	323.33	293.33	268.33	247.50	230.00	216.00	204.00	193.00	
4 1/4	4230.00	2115.00	1410.00	1057.50	837.50	697.50	597.50	517.50	452.50	398.33	354.17	319.17	289.17	264.17	243.33	225.83	212.00	200.00	189.00	
5	5112.00	2556.00	1704.00	1278.00	1022.00	841.67	714.00	614.00	534.00	469.00	415.00	370.00	330.00	295.00	264.00	242.00	224.00	212.00	201.00	
6	6935.00	3467.50	2311.00	1742.00	1393.00	1144.00	980.00	842.00	732.00	642.00	562.00	492.00	432.00	382.00	337.00	302.00	272.00	248.00	228.00	
7	8908.00	4454.00	2970.00	2227.00	1781.00	1484.00	1274.00	1100.00	954.00	834.00	734.00	644.00	564.00	494.00	434.00	384.00	334.00	304.00	274.00	
8	11000.00	5500.00	3633.33	2725.00	2180.00	1783.33	1516.67	1316.67	1146.67	1000.00	876.67	766.67	670.00	588.00	516.00	454.00	402.00	360.00	328.00	
9	13200.00	6600.00	4366.67	3275.00	2620.00	2133.33	1826.67	1586.67	1386.67	1200.00	1056.67	926.67	810.00	708.00	626.00	554.00	492.00	440.00	408.00	
10	15600.00	7800.00	5133.33	3825.00	3060.00	2480.00	2080.00	1786.67	1546.67	1356.67	1196.67	1056.67	930.00	818.00	726.00	644.00	572.00	510.00	468.00	
11	18200.00	9100.00	6033.33	4475.00	3550.00	2866.67	2386.67	2046.67	1776.67	1556.67	1376.67	1216.67	1076.67	946.67	834.00	742.00	660.00	588.00	536.00	
12	21000.00	10500.00	7066.67	5225.00	4100.00	3333.33	2786.67	2396.67	2066.67	1816.67	1616.67	1436.67	1276.67	1136.67	1006.67	894.00	802.00	720.00	658.00	
13	24000.00	12000.00	8233.33	6125.00	4780.00	3933.33	3286.67	2846.67	2466.67	2166.67	1936.67	1726.67	1546.67	1386.67	1236.67	1106.67	984.00	892.00	810.00	
14	27200.00	13600.00	9533.33	7125.00	5520.00	4533.33	3786.67	3296.67	2866.67	2516.67	2246.67	2006.67	1786.67	1606.67	1446.67	1286.67	1146.67	1016.67	924.00	
15	30600.00	15300.00	10966.67	8275.00	6420.00	5333.33	4436.67	3896.67	3366.67	2966.67	2646.67	2366.67	2116.67	1916.67	1716.67	1536.67	1366.67	1216.67	1086.67	
16	34200.00	17100.00	12533.33	9575.00	7460.00	6233.33	5236.67	4596.67	3966.67	3466.67	3066.67	2746.67	2466.67	2216.67	1996.67	1786.67	1596.67	1416.67	1266.67	
17	38000.00	19000.00	14233.33	11025.00	8640.00	7233.33	6136.67	5396.67	4666.67	4066.67	3566.67	3206.67	2866.67	2566.67	2316.67	2066.67	1846.67	1636.67	1466.67	
18	42000.00	21000.00	16066.67	12625.00	9960.00	8233.33	7136.67	6296.67	5466.67	4766.67	4166.67	3666.67	3266.67	2916.67	2566.67	2266.67	2016.67	1786.67	1596.67	
19	46200.00	23100.00	18033.33	14375.00	11420.00	9433.33	8136.67	7296.67	6466.67	5666.67	4966.67	4366.67	3866.67	3416.67	3016.67	2666.67	2316.67	2046.67	1836.67	
20	50600.00	25300.00	20133.33	16275.00	13040.00	10733.33	9236.67	8296.67	7466.67	6566.67	5766.67	5066.67	4466.67	3916.67	3416.67	3016.67	2666.67	2316.67	2046.67	
21	55200.00	27600.00	22366.67	18325.00	14800.00	12233.33	10436.67	9296.67	8466.67	7566.67	6666.67	5866.67	5166.67	4516.67	4016.67	3566.67	3116.67	2716.67	2366.67	
22	60000.00	30000.00	24733.33	20475.00	16720.00	14033.33	11436.67	10296.67	9466.67	8566.67	7666.67	6766.67	5966.67	5216.67	4616.67	4116.67	3666.67	3216.67	2816.67	
23	65000.00	32500.00	27333.33	22825.00	18840.00	16033.33	12636.67	11496.67	10596.67	9666.67	8766.67	7866.67	7066.67	6216.67	5516.67	4916.67	4416.67	3916.67	3466.67	
24	70200.00	35100.00	30066.67	25375.00	21160.00	18233.33	14036.67	12796.67	11896.67	10966.67	10066.67	9166.67	8266.67	7416.67	6616.67	5916.67	5316.67	4816.67	4366.67	
25	75600.00	37800.00	32933.33	28125.00	23760.00	20633.33	15536.67	14196.67	13196.67	12266.67	11366.67	10466.67	9566.67	8716.67	7916.67	7116.67	6416.67	5816.67	5366.67	
26	81200.00	40600.00	36033.33	31075.00	26640.00	23333.33	17236.67	15596.67	14696.67	13766.67	12866.67	11966.67	11066.67	10166.67	9316.67	8516.67	7816.67	7216.67	6766.67	
27	87000.00	43500.00	39266.67	34225.00	30000.00	26233.33	19236.67	17296.67	16396.67	15466.67	14566.67	13666.67	12766.67	11866.67	11066.67	10266.67	9566.67	8966.67	8466.67	
28	93000.00	46500.00	42633.33	37575.00	33960.00	29333.33	21436.67	19496.67	18596.67	17666.67	16766.67	15866.67	14966.67	14066.67	13266.67	12466.67	11766.67	11166.67	1066.67	
29	99200.00	49600.00	46233.33	41125.00	38480.00	32833.33	23836.67	21896.67	20996.67	20066.67	19166.67	18266.67	17366.67	16466.67	15666.67	14866.67	14166.67	13566.67	1306.67	
30	105600.00	52800.00	50066.67	44875.00	43640.00	36833.33	26436.67	24496.67	23596.67	22666.67	21766.67	20866.67	20066.67	19266.67	18466.67	17766.67	17166.67	1666.67	1626.67	
31	112200.00	56100.00	54233.33	48825.00	49560.00	41033.33	29236.67	27496.67	26596.67	25666.67	24766.67	23866.67	23066.67	22266.67	21566.67	20966.67	2046.67	2006.67	1976.67	
32	119000.00	59500.00	58333.33	52975.00	55680.00	45933.33	32236.67	30096.67	29196.67	28266.67	27366.67	26466.67	25666.67	24866.67	24166.67	23566.67	2306.67	2266.67	2236.67	
33	126000.00	63000.00	62533.33	57325.00	61920.00	51433.33	35236.67	32496.67	31596.67	30666.67	29766.67	28866.67	28066.67	27266.67	26566.67	25966.67	2546.67	2506.67	2476.67	
34	133200.00	66600.00	66933.33	61875.00	69360.00	57633.33	38436.67	35096.67	34196.67	33266.67	32366.67	31466.67	30666.67	29866.67	29166.67	28566.67	2806.67	2766.67	2736.67	
35	140600.00	70200.00	71533.33	66625.00	78000.00	64633.33	41736.67	38096.67	37196.67	36266.67	35366.67	34466.67	33666.67	32866.67	32166.67	31566.67	3106.67	3066.67	3036.67	
36	148200.00	74000.00	76333.33	71575.00	87840.00	72833.33	45236.67	40896.67	39996.67	39066.67	38166.67	37266.67	36466.67	35666.67	34966.67	34366.67	3386.67	3346.67	3316.67	

* The first column shows weight in pounds: the second, the deflection in inches.

pretend on serious considerations to fix a limit. One-third of the directors of the Pacific railroad are, according to the 'Boston Plan,' to be appointed by the government. Will the people allow a far more fruitful source of jobbing and corruption than any, than all put together, of the 'places.' Even if this scheme were judicious in every other respect, we feel assured that the good sense and honesty of the country would condemn it on even this one ground.

If, as is very likely, the road would not pay the interest on the loan for the first few years, what is to be the result? If, as is also possible, the road does not pay its working expenses for some time, who is to make good the deficiency? How is the 98 millions to be drawn, altogether, or by degrees? as the work progresses, or whether it progresses or not? All these questions, the plan as it now stands enables the company to answer just as they please.

Again, this "strip of land 10 miles wide," representing an area of ten millions two hundred and forty thousand acres of land, taking it even at 20 cents an acre, will cover the total amount subscribed by the company, and forns clearly a certain reimbursement for their outlay, no matter by what waste and corruption the funds for the construction of the road shall have been expended. It is not by any means likely that a railroad to the Pacific, taking into consideration all the probable difficulties attending its construction, will for many years to come, pay 6 per cent. (the government interest) over and above its working expenses; and while, therefore, all hope of dividend on their stock will be lost to the company, their only object will be to make the railway, for the development of their 10 million acres, at all risks, at any cost, at any waste. This plan, therefore, fails to provide a judicious board of management, seeing that they are all, with perfect license to job, deprived of any interest whatever in the funds they are at liberty to disburse.

But the whole scheme is a piece of simple presumption from beginning to end. We are only surprised to find ourselves speaking of it seriously; and, indeed, were not brought forward by men of undoubted respectability of character and great experience in railway works generally, we would never have given a thing so outrageously absurd a moment's consideration, whether grave or gay.

Economics of Construction.

Economy of material and labor is the chief—I had almost said the only object of Civil Engineering.—Ignorant ingenuity may, and indeed has, executed important works; but these triumphs, though perhaps applauded by the public at large, must always appear to the eye of the scientific Architect or Engineer, to have been effected at a great waste of labor and material. The engineering warts of this great country grow so much more rapidly than even the prolific capital of the people, that here more than in any other nation, is required strict, severe economy in engineering works; and therefore as unskilful, unscientific ingenuity alone can only carry out these at a fearful waste of resource, men interested in internal improvements can see the good old 'Knickerbockers' of engineering, retiring on the laurels of a strong but untutored constructiveness, with a regret lessened by the reflection that their successors are men of science—men read up to the pitch of their glorious calling. In order to help out this progress in public works, I beg leave respectfully to throw out some hints on the strength of materials with the view of 'jogging the memory' of my brethren throughout the Union.

The strain to which beams are subjected results firstly from loads pressing or drawing in the direction of the lengths; and secondly from loads acting indirectly or directly across the section. The first of these may be called compressive; though, as will be seen by and by, a loaded post is chargeable in proportion to its height with a certain amount of cross-strain. The second of the first pair is called the tensile strain or tension; and acting on the cohesion of the parts along the longest line of cohesive resistance is, with the exception of the former, the most favorable strain to which material can be submitted. The strain produced by loads acting indirectly across the section on the cohesion of the parts is called torsion: this tending to make the particles of the part acted on revolve on those of the part fixed, is, when it can be avoided, an injudicious strain. The strain occasioned on a beam fixed at one end and loaded at the other, or supported at both ends and loaded between the supports, is very common in construction, although its highly unfavorable results on the economy of material should exclude it from construction where any other strain may be substituted. The analysis of a piece of frame-work into its various strains, is the first step in proportioning the material; inasmuch as the strength of material being different under different strains the scantling necessary for a bearer under a given load may be fifty times too heavy for a strut, and an hundred times too heavy for a tie. Besides this, the resolution of the forces acting on the parts of a frame are necessary on the ground of the superior fitness of a certain material for a certain strain: in a metal bridge, for instance, it is always necessary and economical that all the other parts are castings, to put in the ties in wrought iron. The reason of this is, that while the price of cast and of wrought iron is at the most as 1 to 1½, the tensile strength is in the proportion of one to four:—the skill of resolving the strains leading in such cases to a saving of 60 to 70 per cent. A knowledge of these facts gives a direction therefore to natural constructiveness by pointing out the advantage of substituting one strain for another; and further develops the true economy of construction by regulating the exact amount of material necessary to resist a given maximum strain. In the first instance I will confine my remarks to the strength of material showing its application in the case of beams of the simplest form, and reserving for some future time an article on the effects of form generally on the economy of material.

M.B.H.

To be Continued.

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This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationary Engines; Boilers, Steam pipes, Shipjoints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dannels and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is completed and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

Utica N. Y. Sep. 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.
Address **J. B. MOORHEAD,**
Frazer P. O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albemarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
Proposals will also be received until the 15th of Oct. next for the construction of the Railroad on the Eastern side of the Mountain, about eight and a half miles. It comprises much heavy work and a Tunnel about 720 feet long.

C. CROZET,
Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

TO CONTRACTORS.

ANDROSCOGGIN RAILROAD.—Proposals will be received by the subscriber, at Lewiston Falls, and by W. A. Williams, at the Engineer's Office at Leeds Centre, until the 15th of October next, for the grading and masonry of the 1st division of this road, extending from the Androscoggin and Kennebec railroad in Leeds, to Benjamin's Brook in East Livermore, 14 miles.

Plans and profiles will be ready for examination, and the route shown on and after the 9th day of October.

Proposals for the grading and masonry of the second division, extending from Benjamin's Brook to Livermore Falls, 6 miles, and for building a bridge over the Dead river in the 1st division, will be received as above until the 1st day of November next.

Plans and profiles of the 2d division will be ready for examination, and the line shown, on and after the 23d day of October next.

WILLIAM KILBOURNE, President.

September 29, 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. **M. M. White,** Agent,
au7tf No. 74 Broadway, New York.

ALBANY AND BUFFALO RAILROADS.—

Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ m., 3½ p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34f

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

Illustrated Scientific Works.

LEA AND BLANCHARD, Philadelphia, publish the following important works on various branches of Practical Science. They will be found exceedingly low in price, while their mechanical and typographical execution are of the best kind.

I.

Principles of mechanics applied to machinery and engineering by Julius Weisbach. Translated by Professor Gordon of Glasgow, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 872 illustrations on wood.

From Charles H. Haswell, Esq., Engineer in Chief, U. S. N.

The design of the author in supplying the instructor with a guide for teaching, and the student with an auxiliary for the acquirement of the science of mechanics, has, in my opinion, been attained in a most successful manner. The illustrations, in the fullness of their construction, and in typographical execution, are without a parallel. It will afford me much pleasure to recommend its use by the members of the profession with which I am connected.

This work is one of the most interesting to mathematicians than has been laid before us for some time; and we may safely term it a scientific gem.—*The Builder.*

The most valuable contribution to practical science that has yet appeared in this country.—*Athenæum.*

Unequaled by anything of the kind yet produced in this country—the most standard book on mechanics, machinery and engineering now extant.—*N. Y. Commercial.*

In every way worthy of being recommended to our readers.—*Franklin Institute Journal.*

What the "Mechanique Celeste" is to the astronomer, a treasury of principles, facts, and formulæ on which he may draw on almost any and every occasion,

that can be conceived to arise in the field either of demonstration or operation.—*Methodist Quarterly Review.*

II.

Technology, or chemistry applied to the arts and to manufactures. By D. F. Knapp, Translated by Drs. Ronalds and Richardson, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 460 illustrations on wood.

One of the best works of moderate times.—*New York Commercial.*

We think it will prove the most popular, as it is decidedly the best of the series. Written by one who has for many years studied both theoretically and practically the progress which he describes. The descriptions are precise, and conveyed in a simple unpretending style so that they are easily understood, while they are sufficiently full in detail, to include within them everything necessary to the entire comprehension of the operations. The work is also carefully brought down to include the most recent improvements introduced upon the continent of Europe, and thus gives us full descriptions of processes to which reference is frequently made in other works, while many of them are we believe, now for the first time, presented in a complete state to the English reader.—*Franklin Institute Journal.*

In addition to the valuable scientific matter contained in the original work, very extensive American additions have been made to it by the editor, which are exceedingly valuable, and of much interest to the general reader. The publishers have spared no pains in bringing out a work of superior mechanical execution and rare excellence, with numerous skillfully engraved cuts, designed to illustrate the various subjects treated in this work. We feel confident that, as a truly useful publication, it will be eagerly sought after and highly appreciated.—*N. Y. Farmer and Mechanic.*

III.

Principles of Physics and Meteorology, by Professor J. Muller, Edited with additions by R. Eglsfeld Grifith. In one large octavo volume, with 550 wood engravings and two colored plates.

This is a book of no ordinary or ephemeral value.—It is one of a series, now republishing in London, on the different branches of science, which from its thorough character and extended range, is much needed in this country. Its design is to render more easily accessible an extensive knowledge of the general principles of physics and meteorology; and the distinguished author has certainly realized the design to a wonderful extent. The subject treated upon are very numerous—statics, hydrostatics, dynamics, hydrodynamics, pneumatics, the laws of the motions of waves in general, sound, the theory of musical notes, the voice and hearing, geometrical and physical optics, magnetism, electricity and galvanism, in all their subdivisions, heat and meteorology. The size is nevertheless convenient—one handsome octavo volume, of six hundred pages—in clear, bold type, and profusely illustrated. In the execution of the illustrations we have rarely seen any thing equal to this American edition.—*N. Y. Commercial.*

IV.

Practical Pharmacy; comprising the arrangements, apparatus, and manipulations of the Pharmaceutical Shop and Laboratory. By Francis Mohr, Ph. D., and Theophilus Redwood. Edited with alterations and additions by W. Proctor, Jr. One very handsome octavo volume, with 506 engravings on wood.

We had scarcely finished a glance at the beautiful London edition of Mohr and Redwood's pharmacy, before Professor Proctor's improved edition of this fine technical treatise, was laid on our table by Messrs. Lea and Blanchard. This work is one which will at once find its place in every laboratory and pharmaceutical shop, and is well calculated to recommend new and improved methods of manipulation to both chemists and pharmacists. In the absence of highly appointed laboratories and of pharmaceutical instruction which is so general in this country, such works as the present are particularly valuable. The beautiful and abundant wood cuts which adorn almost every page of the book, enter the descriptions of apparatus perfectly plain, and its reconstruction easy even by the tyro. Professor Proctor has long been known to pharmaceutical readers in this country, as the author of numerous and important researches in the *Materia Medica*, and his additions to the present edition of Mohr and Redwood are frequent and valuable.

The American Journal of Science and Arts.

V.

The Young Millwright and Millers Guide; Illustrated by Twenty Eight Descriptive Plates, by Oliver Evans. Twelfth Edition, with additions and corrections, by Thomas P. Jones, with a description of an Improved Merchant Flour Mill, with Engravings, by C. and O. Evans. In one volume 8vo., with 110 figures on twenty eight plates.

Plumbago, or Black Lead,

BLACK LEAD IN ITS CRUDE STATE, AND Black Lead Paints, prepared for various purposes. This paint is peculiarly adapted for the covering of all kinds of iron railing, or iron work wherever exposed; such as railroad bars, anchors, bolts for vessels, etc.—It makes the most durable paint to protect woodwork from moisture, and the indestructible nature of the body of it peculiarly fits it for covering the inside of depots, roofs of buildings, and all wood work exposed to fire.

The mine from which this article is taken is near Raleigh N. C. It has been examined by many of the most scientific men in this country, who all concur in pronouncing it of the best quality. In the fourth vol. of the American Journal of science, Professor Silliman speaks of it in the following manner. "The Plumbago from North Carolina is of a very fine quality and appears well adapted for pot & crayons." Professor Dewy speaks of it "as the finest he ever saw." Professor Olmstead, now of Yale College in his geological report of the State of North Carolina, Page 5 says.—"Not long since I received a letter from a gentleman in Vermont who contemplated setting up the manufacture of Black Lead Pots or Crucibles, requesting some particulars respecting this Plumbago, having been informed on the highest authority, that it was the best that could be procured within the United States."

It is a very fine article and superior for Pencils also for Crucibles, Pots etc., when the composition of silicious minerals is properly made to suit it, and may be had in any reasonable quantities of the subscriber on liberal terms at Raleigh North Carolina or at James Holme 55 West St. New York.

Sep., 7th 1849.

Richard Smith,

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,

No. 24 Commercial St. Boston.

August, 16, 1849.

6m33

Patents for Inventions.

THE Subscriber offers his services for the procurement of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; *Deeds, Conveyances, Agreements, Assignments, etc.* Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

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Office, No. 5 Wall St.

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Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

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Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

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Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

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Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

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CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Ma. M. BURT HEWSON, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street. 3m.13
March 29 1849.

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Eastport, Md

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chains and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.

100 " No. 2 do. do. do.

300 " Nos. 2 & 3 Forge do. do.

100 " No. 2 Glendon do. do.

140 " Nos. 2 & 3 Lehigh Crane do. do.

100 " No. 1 Pompton Charcoal do.

100 " New-Jersey Blooms

50 " New-Jersey Faggoting Iron, for shafts

Best Bars, $\frac{1}{2}$ to 4 inch by $\frac{1}{2}$ to 1 inch thick.

Do do Rounds and Squares, $\frac{1}{2}$ to 3 inch.

Rounds and Squares, 3-16 to 1 inch.

Half Rounds, $\frac{1}{2}$ to 1 in. Ovals & Half Ovals $\frac{1}{2}$ to 1 $\frac{1}{2}$ in.

Bands, 1 $\frac{1}{2}$ to 4 inch. Hoops, $\frac{1}{2}$ to 2 inch.

Trunk Hoops, $\frac{1}{2}$ to 1 $\frac{1}{2}$ in. Horse Shoe & Nut Iron.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.,
63 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co.

Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc. by

JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 $\frac{1}{2}$ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, Agent, Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

WILLIAM JESSOP & SONS'**CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon.

Best warranted Cast Steel—square, flat and octagon.

Best double and single Shear Steel—warranted.

Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Salsut & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON, No 57 South Gay St., Baltimore, Md. Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast* Charcoal *Pig Iron* from the *Cloverdale* and *Catawba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*. Baltimore, June 14, 1849. 6 mos

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute

faithfully and promptly, orders for

Locomotive or Stationary Steam Engines,

Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw

Mills,

Slide, Hand or Chuck Lathes,

Machinery for cutting all kinds of Gearing.

Hydraulic, Tobacco and other Presses,

Car and Locomotive patent Ring Wheels, war-

ranted,

Bridge and Mill Castings of every description,

Gas and Water Pipes of all sizes, warranted,

Railroad Wheels with best faggotted axle, fur-

nished and fitted up for use, complete

Being provided with Heavy Lathes for Bor-

ing and Turning Screws, Cylinders, etc., we can

furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and

Estimates for Work in any part of the United States

furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,

Card, Reed, Cotton-flyer, Annealed, Broom,

Buckle, and Spring Wire. Also all kinds of Round,

Flat or Oval Wire, best adapted to various machine

purposes, annealed and tempered, straightened and

cut any length, manufactured and sold by

ICHABOD WASHBURN.

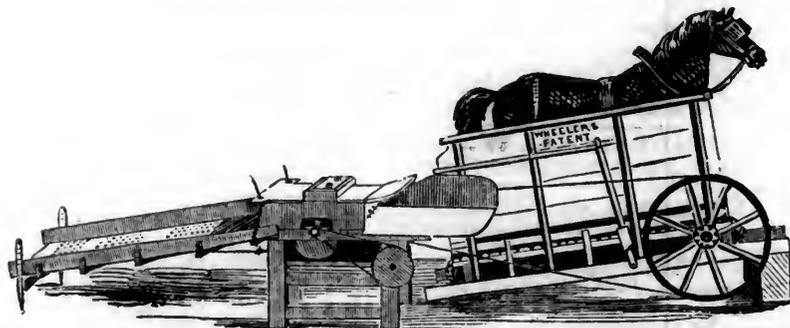
Worcester, Mass., May 25, 1849.

American and Foreign Iron.**FOR SALE,**

300	Tons	A 1,	Iron Dale Foundry Iron.
100	"	1,	" " " "
100	"	2,	" " " "
100	"	"	Forge " "
400	"	"	Wilkesbarre " "
100	"	"	"Roaring Run" Foundry Iron.
300	"	"	Fort " " "
50	"	"	Catoctin " " "
250	"	"	Chikiswalungo " " "
50	"	"	"Columbia" "chilling" iron, a very superior article for car wheels.
75	"	"	"Columbia" refined boiler blooms.
30	"	"	1 x $\frac{1}{2}$ Slit iron.
50	"	"	Best Penna. boiler iron.
50	"	"	"Puddled" " "
50	"	"	Bagnall & Sons refined bar iron.
50	"	"	Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
New York. 64 South street

Railroad Horse Power and Saw Mill.

The above cut represents the most simply constructed Endless Railway Power in use. As shown it is attached to a threshing machine, with which it is most extensively used; but for sawing wood at railroad stations it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12 to 20 cords of four foot wood per day. They have been used several years on several roads in New England, and for manufacturing establishments more than three thousand of these powers are in use, and without exception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satisfaction as above described, or may be returned at my expense, and the purchase money refunded.

HORACE L. EMERY,

Nos. 469 & 371 Broadway, Albany, N. Y.

September 6, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,** Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.
or, **L. CHAMBERLAIN, Sec'y,** at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR

Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

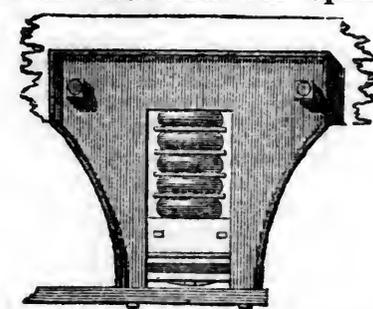
The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,
JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Kneivitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Kneivitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Kneivitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been re-

ceived from the said agent. Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of *Mr. Kneivitt* the Agent, at 38 Broadway New York, and of *Messrs. James Lee & Co.*; 18 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,
BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.
Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by
JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

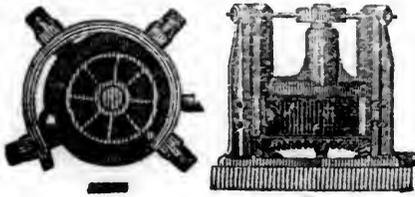
3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 60 STEEL PLATES. Published by **WM. MINIFIE & CO.,** 114 Baltimore St., Baltimore, Md. Price \$3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

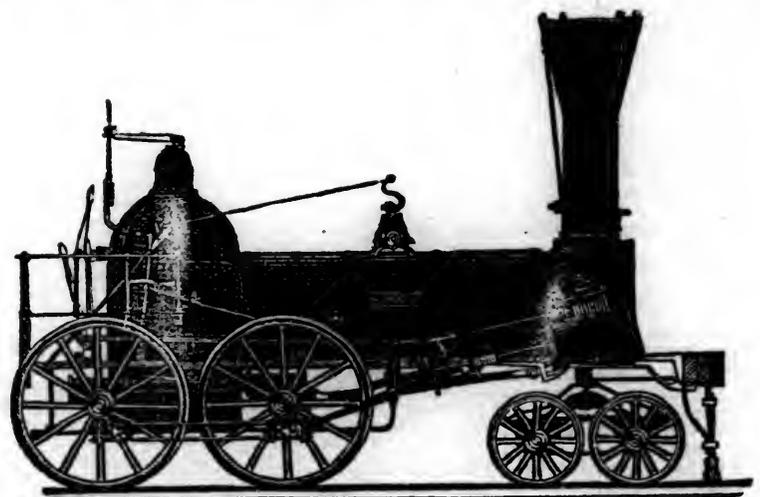
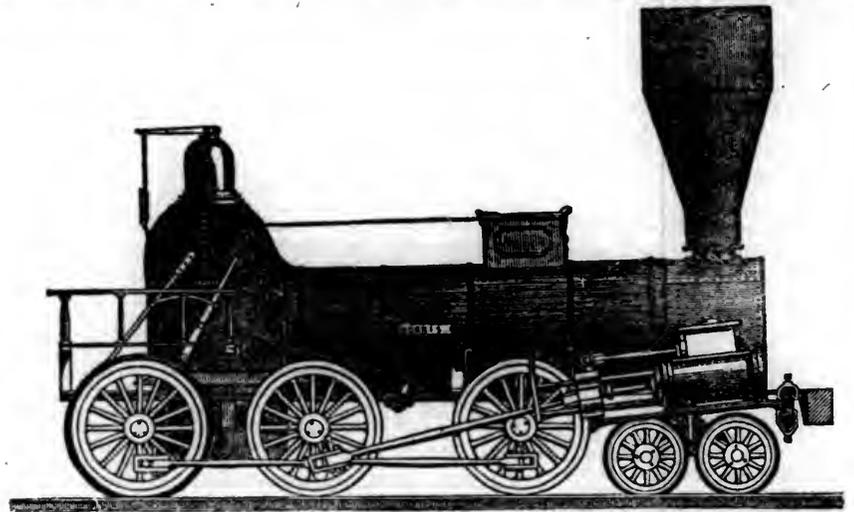
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
 SECOND QUARTO SERIES, VOL. V., No. 42] SATURDAY, OCTOBER 20, 1849. [WHOLE No. 704, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, For Mining and Metallurgy.
 GEN. CHAS. T. JAMES, For Manufactures and the
 Mechanic Arts.
 M. BUTT HEWSON, C. E., For Civil Engineering.

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AMERICAN RAILROAD JOURNAL.

PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, October 20, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 640.

NEW YORK

ST. LAWRENCE DISTRICT.

Parallel with the St. Lawrence river, and a few miles to the southeast of it, is the line of junction of the lowest member of the secondary formation, viz., the Potsdam sand stone—with that great body of primary rocks, which constitute the Alpine region between the St. Lawrence and Lake Champlain. The position of the strip of territory along this line is particularly favorable for the development of masses of ores and metallic veins. Here are found belts of rock of unusual occurrence within either of the two great formations at a distance from the other.—Such are serpentine particularly, and gneiss rock and beds of primary limestone. With these are large bodies of specular iron, lying generally not in the form of veins, but in irregular shaped collections of uncertain extent. The ore also occurs interstratified with the gneiss and with the Potsdam sand-

stone; and these rocks are again so highly charged with it, as to constitute that form of repository, called a *stocwerk*. It appears however, that it is only the large bodies found in the gneiss and serpentine, that can be relied upon for long continued supplies.—The serpentine itself seems frequently to be mingled with the other rocks forming breccias of serpentine and quartz among the beds of specular iron.*

In nearly all these particulars, as well as in the character of the ore itself, there is a striking resemblance to the iron mines of the Island of Elba. This Island celebrated from the remotest periods for its iron ores, comprises two very distinct groups of formations. Monte Campana, the centre of the western portion is a conical group of mountains almost entirely composed of feldspar rocks,† which have broken through and flowed over the sedimentary formations. These rocks are remarkable for presenting all the varieties of the feldspar rocks. Most frequently they are in the state of quartz porphyries, but often they assume the granite texture, and sometimes that of trachyte.

“The metalliferous formations of the Island of Elba are found concentrated with the serpentine in the eastern part of the Island. The sedimentary rocks are altogether metamorphic, but the metamorphism is of a peculiar character, remarkable for the abundance of the gabbro-rosso (a rock composed of serpentine minerals) and for the mixtures of the different rocks with the ingredients of the serpentines, constituting marbles resembling the Campan marbles of the Pyrenees, and argillaceous jaspers, green or red, with a glandular structure. This geographical proximity of the serpentines and metalliferous deposits is the result also of a still more decided agreement in their mode of occurrence. The bed of specular iron near Rio lies among the strata of slates, which rest against the flanks of the mountains of Ste. Catharine. Now all this group is composed of masses of serpentine, and this large bed of ore ought to be regarded as a true “gite de contact” (a part of the same geological formation). Its crystallized structure, its burying itself in the different me-

* Professor Emmons, state geological report page 96.

† In a description of some localities in St. Lawrence and Jefferson counties, published in Silliman's Journal, vol., XXV p. 349, the authors describe the granite about Gouverneur “as consisting almost entirely of feldspar. It contains very little quartz and not a particle of mica.” This vicinity is famous for its fine crystals of feldspar.

amorphic beds of the rocks including it, suggest the idea of metalliferous sublimations carried through these beds: the study of the details proves that these sublimations have taken place under the influence of considerable heat and pressure.”

The mass of magnetic ore and hematite of Mount Calamita on the same Island is seen enfolded in an arch of limestones and crystalline slates, 100 yards in height. The limestones in contact with the ores are converted into saccharoidal dolomites, and are otherwise altered, as is often seen when they are in contact with trap rocks. So that the author above quoted remarks that it is impossible to doubt that the iron ores have been in fact the uplifting rocks, and that the numerous evidences of metamorphism in the stratified rocks are equally the effects of their eruption.

The accompanying section represents the position of two of the principal bodies of specular ore in the town of Gouverneur in this district. It is taken from Professor Emmons's report. On the left is a hill of Potsdam sandstone, the strata dipping towards the south; in the next hill is the *Parish ore bed*, capped by the same sandstone; beyond it to the north is the *Kearney bed*, and next to this a hill of sandstone, the rock dipping north; or, as Professor Emmons observes—“thrown off in opposite directions from the masses of ore. An arrangement of this kind clearly indicates the nature and causes of changes at this place, which appear to have resulted from an uplift or an outburst of the ore in connection with the serpentine beneath it. That the serpentine and the specular oxide were the rocks, which created this disturbance in the position of the sandstone seems highly probable from the fact, that no igneous rocks as trap or green stone appear in the vicinity.”

Specular iron is one of the purest forms, in which the ores of this metal are found. When free from foreign matters it consists of 70 per cent. iron and 30 per cent. oxygen, being a pure per-oxide of iron. It occurs in crystalline masses of about the hardness of quartz, with bright metallic lustre like polished steel. When scratched or ground it gives a red powder. This red powder is the most distinctive mark of the ore, and the absence of any considerable mixture of the protoxide of iron may be inferred from its almost entire want of magnetism.—It is also found in an earthy state derived from the



a, a, Sandstone; b, Gneiss; c, Serpentine; d, Adit in the Parish Bed; e, Excavation at the Kearney Bed; f, f, Ore.

disintegration of the red stony ore—another frequent mode of its occurrence. Such is a great portion of the ore in the two beds above named. The red stony ore is more or less mixed with quartz gangue, and on its surface and lining its cavities are fine lenticular crystals of the specular oxide associated with well formed crystals of calcareous spar in six sided prisms with summits of three planes.

The principal mines of this ore in St. Lawrence county are the *Parish and Kearney beds*, represented in the above figure, and the *Tate and Polly beds* in Hermon. In Jefferson county, near St. Lawrence county, are several localities in the vicinity of Theresa Falls, of which the *Shirtless bed* appears to be the principal one. There are besides the *Sterling vein*, and others of less importance. These closely resemble each other in geological position, and appear to be all limited in their supplies of ore: but the accounts of them that are published, are not very precise in this respect. According to Professor Emmons the Parish and Kearney beds are about 40 rods apart. The former appears to lie nearly horizontally in the serpentine and gneiss. It covers a wide area; and again, it formerly formed a hill in a small valley 50 or 60 feet high, and in circumference 25 or 30 rods; but that it extends only 8 or 10 feet in depth when the serpentine beneath is reached—p. p. 93 and 341. In another place the same author remarks, "The Parish and Kearney and the Tate and Polley beds are large and important and capable of supplying ore to any amount. The Parish and Kearney beds in reality belong to one mass; and the indications in that neighborhood show that the beds may be opened at several different places in addition to those from which the ore is now raised."

Dr. Beek in his report describes them as $4\frac{1}{2}$ miles southwest from the village of Gouverneur, as "not more than 80 or 100 rods distant from each other, and are undoubtedly parts of one vast deposit, which has been traced at least a mile in a northern and southern direction. * * * The deposit of ore seems to be a bed resting on the primitive rock, and overlaid by the oldest of the sandstones.

The specimens from the Kearney beds present several varieties, such as the slaty, like the micaceous ore; hard and compact; jaspery and semicrystalline; the blades although small having the high lustre of the Elba ore. The powder of all these has a bright red color, and soils the fingers like red paint. Associated with the ore are crystals of brown spar, carbonate of iron, calcareous spar in dodecahedral crystals, and rarely sulphate of barytes. * * *

The most abundant ore, however, is that which has a brownish red color, compact texture, and a dull earthy aspect. The specific gravity of an average specimen of this is 4.855, and the following is its composition, viz:

Peroxide of iron	96.52
Silica, Alumina, etc.	3.48

The following account is by J. Finch, Esq., published in the XIX vol. of Silliman's Journal for the year 1831.

"The mine, from which the iron works of Rossie were supplied with ore, is situated one mile south of the road between Antwerp and Gouverneur, at a

distance of seven miles southwest from the latter village. The following minerals may be obtained.

1. Red iron froth. This occurs massive, but usually forms a coating to the other varieties of ore.—It has sometimes been mixed with oil and used as a paint; it has then a purple tint, very pleasing to the eye. At Rossie it has been applied to some buildings and the color is very durable. This species of iron ore stains very strongly. The sheep of the vicinity are partial to lying in the mine, and their fleece becomes stained of a deep red. It is said to be difficult to free their wool from this color. They exhibit the singular appearance of a flock of red sheep. A man, who was formerly employed in the mine, said that the clothes of the workmen were dyed in a similar way.*

2. Micaceous specular iron; called black lead by the miners. In thin layers sometimes lining small cavities. It is composed of thin laminae, or scales of shining metallic lustre; color bluish black.

3. Compact protoxide of iron." (magnetic oxide?)

"4. Red oxide of iron.

5. Spathose iron ore, in small quantities.

6. Iron flint or Eisen Kiesel; of a dull red color; excessively hard. Mixed with the other varieties of ore; sometimes so abundant as to cause great labor to the miners. It requires to be carefully separated.

7. Sulphuret of iron, disseminated in some parts of the rock, which then becomes of a dark yellowish brown color. Water passing over it decomposes the pyrites, and there is formed,

8. Sulphate of iron.

9. Ochre yellow, very impure.

10. Ferruginous quartz; purple tint; occurs in cavities in the ore.

The side of the hill, where the mine is situated, has been opened to a depth of forty feet. Many thousand tons of iron ore were obtained from this mine, when the works at Rossie were in operation, and the quantity is apparently inexhaustible. It has also been traced to a distance on the northwest" (Kearney bed?) "and a quantity of ore obtained."

The width of the principal deposit in the Parish bed, I am informed, is from 40 to 50 feet, and the expense of raising the ore is one dollar per ton.

The *Tate and Polley veins* in Hermon are situated upon the two opposite sides of a ridge of gneiss rock, which runs northeast and southwest, the rock dipping northwest. "The ore of the Tate resembles that of the Parish vein, being of a bright red color and earthy in its texture. The Polley vein has much of the same character, but contains much quartz; it is a leaner ore."†

The ores about *Theresa Falls* are described as generally of lean character, much mixed with quartz. See report above quoted, p. 376. These ores have been represented to me as very abundant, very accessible and convenient to the river and lake navigation,

as well as to large supplies of good hard wood for charcoal. Their geographical position in regard to the great lakes, and the whole western country, which north of the Ohio furnish no primary ores, except on the southern shores of Lake Superior, gives an importance to this district, which I think, has been rather neglected.

The *Sterling vein* is in Antwerp, five miles southeast of Oxbow, near the line of St. Lawrence county. It is enclosed in gneiss, and is accompanied with serpentine. It spreads out over a wide area, and affords ores similar to these of the Parish and Kearney beds, "principally the red mass or the oxide in an earthy state." It is somewhat siliceous, containing crystals of quartz.

Beside the specular ores, this district also contains in the eastern part of St. Lawrence county, veins of magnetic ores; and in many localities bog ores also have been worked. Though the former rival in extent the largest beds of iron ore in the United States, they are too far back in the country, which is rough and unsettled, to be of much present importance.—One in the township of *Chamont* is thus described by Professor Emmons. "It is situated upon the Oswegatchie river near the crossing of the Albany road. The vein is in a hill or rocky eminence running east and west, about 100 feet high on the south side and 50 on the north side. The top of the ridge is a naked and smooth rock about 50 rods wide, and near a mile in length. The whole of the hill is magnetic iron and quartz or white flint, a pepper and salt mixture. Some parts are richer in iron than others, but none are destitute. Some portion of the mass is nearly a pure oxide, a magnet taking up about 90 per cent.; while others yield by this mode of trial only 50 per cent. The ore is fine granular, the grains being only of the size of white mustard seed."

* * * "The mass of ore resembles the Palmer vein in Clinton county, being black; fine grained and strongly magnetic." * * * "The gangue is one, which indicates a favorable result in reduction."

Another bed near by has been found in hypersthene rock, like that of Adirondac, Essex county.

For the following account of an ore bed in the township of Clifton, on the Grass River, above Russell village, I am indebted to the Honorable John Leslie Russell of St. Lawrence Co.

"Near the centre of the town is an immense mass of this ore (the magnetic), known as the "*Dodge*" ore bed. Large quantities of it have been transported over bad roads through the woods, to Edwards and Fowler, and it is found to make excellent iron, either in forges or furnaces, and by mixing with specular and hematites very much to improve the quality of the product.

The *Dodge* ore bed is a hill, apparently of iron, mixed with rock in irregular masses, evidently thrown out from a vein below. But there has not been sufficient examination to ascertain the situation of the true vein at that point. On each side of the *Dodge* ore bed, in a northeasterly and southwesterly direction, regular veins, from six to twelve feet in width, of purest magnetic ore are found in five or six places, where the ridge are denuded, so as to

gation, as well as to large supplies of good hard wood for charcoal. Their geographical position in regard to the great lakes, and the whole western country, which north of the Ohio furnish no primary ores, except on the southern shores of Lake Superior, gives an importance to this district, which I think, has been rather neglected.

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* The roads over which the ore is hauled, acquire the same color; and the snow, it is said, in a little while after falling presents a most singular red appearance.—J. T. H.

† Emmons, State Report, page 346.

show the primitive rock. None of these veins have been opened to any extent. Mr. Parish, who owns the northeast quarter of the township, has raised about 100 tons from a well defined vein, near the northeast corner of the township, for the purpose of testing it in his furnace at Rossie. The ore is granular oxide, free from all mineral substances, except small grains of quartz and hypersthene. It is entirely free from sulphur, which injures the other ores of the county for bar iron.

This ore more closely resembles the "shot ore" of the Arnold vein in Clinton county than any other ore discovered in this State; and from tests of it on a small scale, will probably produce bar iron (with charcoal, equal to best Swedes and Russia iron.—In quantity it is inexhaustible and the expense of raising it cannot exceed 50 cents per ton. For furnaces it needs very little preparation, and no washing. It is situated near abundant water power, and surrounded by large tracts of best woodland, for charcoal."

The Bog ores of Brasher have been largely used: furnaces at Brasher, Waddington, Norfolk and Westville having been wholly or in part dependent upon them. Professor Emmons speaks of them as of good quality, easy to work, and making a soft tough iron (pig iron?); but rarely yielding more than 15 per cent. The beds are five or six miles long, and the average thickness two feet. After being dug out, the ores are renewed in fifteen or twenty years.—One furnace in Brasher makes 800 tons of pig iron annually.

Mr. Finch (before quoted) says—"At Norfolk I visited the furnace where cast iron is made during the winter season. They use bog ore, which is brought from some distance. It is classed into three kinds—loom-ore, shot-ore, pan-ore; varieties which arise merely from the state of aggregation. At a forge in the same village, where bar iron is made, they mix a proportion of the protoxide of iron, called mountain ore, with the varieties mentioned above. The mountain ore, which is brought from Malone, contains some very fine octohedral crystals."

Bog ore has been found in Fowler, and used in the furnace at Fullerville.

"In Gouverneur is a bed containing a great abundance of ore, in which there are large quantities of twigs and branches and roots of trees of all the kinds which grow in the neighborhood. It contains too large a proportion of sulphuret of iron to be used without roasting." * H.

Statistics of Lowell Manufactures.

The first objects of interest are the factories, which extend in a continuous line to the Merrimack river, from Pawtucket Falls, to the junction of the Merrimack and Concord rivers. A mile of mills and machinery. Then on the opposite side of the city are other mills numbering about twelve.

The first corporation was commenced in 1822, under the direction of Messrs. Patrick T. Jackson, Nathaniel Appleton and Kirk Boot, taking the name of Merrimack Manufacturing Company, for making prints and sheetings. In 1840 the Merrimack company employed nearly 1700 hands, male and female, this year about 2050. There are 12 corporations, incorporated in the following order:

Merrimack Manufacturing company, incorporated in 1822. Capital stock \$2,000,000. There are six mills exclusive of print works, containing 67,965 spindles and 1920 looms, which produce 345,000 yards of cotton cloth weekly. Emery Washburn, Esq., Agent.

Hamilton Manufacturing Company, incorporated in 1825. Capital stock \$1,100,000. Four mills and print works are included in the company, containing 36,228 spindles and 1086 looms, which produce 180,000 yards of prints, flannels and sheetings

weekly. They hire 1200 hands. John Avery, Esq., is Agent of the cotton department, and Wm. Spencer of the Print Works.

Appleton company, incorporated in 1828. Capital \$600,000. Two mills, containing 17,920 spindles and 600 looms, producing 130,000 yards of sheetings and shirtings weekly, with the aid of 520 hands, —Agent, George Motley, Esq.

Lowell Manufacturing company, incorporated in 1828. Capital 900,000. Two mills, one cotton and one woolen carpet mill; 220 cotton looms and about 60 carpet power looms, which, with 880 persons, manufacture 6500 yards of carpeting, 40 woolen rugs and 95,000 yards cotton cloth weekly, all under the agency of Alexander Wright, Esq.

The Middlesex company was incorporated in 1830. Capital \$600,000. There are four mills, and three dye houses, in which are 16,340 spindles; 45 looms for broadcloth, and 325 for cassimere, employin 1,750 hands, and making 18,957 yards of cassimere, and 2334 of Broadcloth. Agent, O. H. Perry, Esq.

Suffolk Mills, incorporated in 1830. Capital stock \$600,000. 14,448 spindles, and 483 looms, under cover of two mills, and worked by 500 hands, making 100,000 yards drilling per week. John Wright, Agent.

The Tremont Mills were incorporated in 1830, and have a capital stock of \$600,000. Two mills, containing 14,560 spindles, and 517 looms, producing 120,000 yards of sheetings and shirtings, with the aid of 500 hands, weekly. Under the agency of Chas. L. Tilden, Esq.

Lawrence Manufacturing company, incorporated in 1830, with a capital of 1,500,000 dollars. There are five mills, 44,800 spindles, and 1260 looms, worked by 1400 hands, who produce 260,000 yards of printing cloths, sheetings and shirtings, weekly, Agent, John Aiken, Esq.

Boott Cotton Mills, incorporated in 1825. Capital \$1,200,000. Five mills and picker house; 41,712 spindles and 1338 looms, worked by 1100 hands, making 220,000 yards drillings, shirtings and printing cloths, weekly. Agent, Hon. Linus Child.

Massachusetts Cotton Mills, incorporated in 1839. Capital 1,800,000 dollars. Six mills, including the Prescott Mills under the same agency; 45,720 spindles, and 1459 looms, worked by 1500 hands, making 475,000 yards sheetings, shirtings and drillings. Agent, James White, Esq.

Lowell Bleachery, incorporated in 1832. Capital 210,000 dollars. For bleaching and dying cotton goods 220 hands are employed, dying 2,000,000 yds. and bleaching 4,000,000 lbs. annually.

The Lowell Machine Shop, employing 700 hands, under the agency of W. A. Burke, Esq.

One pound of cotton will make, on an average, 3 2-10 yards of cloth. The wages of the operatives are paid to them once a month, regularly, and always sure pay. There are three banks in the city, viz: railroad, capital 600,000—Lowell, capital 200,000—and Appleton, capital 100,000 dollars. There are two Savings Banks, and the principal depositors are operatives. There is also a hospital established by the companies, for the accommodation and comfort of the operatives when sick, under the management of one of the ablest physicians and surgeons of the Eastern States, Dr. Gilman Kimball. The population in 1820 was 200, now it is estimated at 35,000. There is a valuable library owned by the city, containing about 8000 volumes, to which any person can have access by paying the small sum of 50 cents per annum. The terms are so low that the working class have access as well as the wealthy.

The fire department is perfect. There are 11 engines fully manned, together with 16,410 feet of hose. The firemen are paid in service time by the city, at 20 cents per hour. There are also force pumps at regular distances, on the principal streets, but more particularly around the corporations, through which water is forced by the action of the mills, and with which most of the streets are showered in the warm season, instead of the old custom of a "cistern on wheels," and done much quicker.

The average wages of females, clear of board, per week, 2 dollars—men, per day, 80 cents.

The Middlesex company annually make use of 6,000,000 teazels.

Each corporation has boarding houses to accommodate their own help.

The city is one of the healthiest in the Union. The population, as a class, are an active, Yankee set.

The powder Mills, belonging to Oliver M. Whipple, Esq., are situated about half a mile from the city, and produce a large quantity annually.

The Mechanics' Reading Room contains all the principal papers of the United States and England. The public schools are numerous, and attended on an average by four thousand daily.

500,000 dollars were expended in making "The New Canal, so called, commenced in June, 1846, and opened on Thanksgiving day, Nov. 25, 1847. It is nearly one mile in length, an immense work, a quarter of a mile being cut through solid rock.—It was under the direction of James B. Francis, Esq. An iron fence is erected from one end to the other, and on each side trees are set out, which makes a delightful promenade.

Cotton Crop of Alabama.

A correspondent of the Mobile Daily Advertiser gives the following speculations and figures in regard to the cotton crop of Alabama for 1848—its weight and value, at the average price sold at in Mobile, for the season of 1848-9.

"The subject above is one of great interest, and as the inquiry has been frequently made at different places of me, I have taken some pains to investigate it, and if, on reading the result, I afford satisfaction to the feelings of Alabamians, I shall feel fully recompensed for the research and communication. Absolute correctness is not pretended to be arrived at, but the intelligent reader, at all conversant with the size of the counties and qualities of their lands, will at once perceive that when estimates are made, they cannot be wide of the mark. To the figures:—

Receipts at Mobile from 1st September, 1848, to 1st Sept., 1849, 518,709 bales, averaging each 509½ pounds is.....	264,343,853
Weight of crop of nine counties on the Tennessee River, De Kalb, Franklin, Jackson, Lauderdale, Lawrence, Limestone, Marshall, Madison and Morgan, which goes down that river, or is hauled to Memphis, as per census of 1840, 49,170,224	
Weight of 65,000 bales of cotton estimated to go down the Chattahoochee, etc. from the northeastern and eastern counties, say Cherokee, Benton, Randolph, Russell, Chambers, Barbour, Dale, Henry and Covington.....	33,125,625
Consumed in factories and home looms, 12,000 bales, at 509½ lbs. to bale.....	6,370,313
	353,010,015
Deduct number of bales from the Tombigby, 80,000 from the eastern counties of Mississippi, 509½ lbs.....	40,770,000

Crop of Alabama for 1848-9—lbs. 312,240,015

Which in bales of 509½ lbs. each would be..... 612,922

Or of 350 lbs each—bales..... 892,117

Referring to the Merchants' and Planters' Price Current for the 1st of Sept., 1849, we see the receipts of cotton here from the Tombigby river are 175-254 bales. To get that of the State of Mississippi included therein, I put Monroe, Lowndes, Itawamba, etc. to be..... 50,000

Noxubee 20,000, Kemper, Lauderdale, etc. 10,000..... 30,000

80,000

Making the remainder of the 175,250 bales, I put down Mobile, Washington and Clarke..... 10,000

Marengo, 25,000, Choctaw, 7000..... 32,000

Sumter 30,000, Green, in the Fork, 10,000..... 40,000

Pickens, Fayette, and Marion..... 15,000

177,000

Slightly overrunning the receipts from that river. "I have no means here of ascertaining the crop of North Alabama at this time, so I adopt the census report for 1840, for the counties referred to on

* Emmons', page 349.

the Tennessee, with this remark, that I have heard the North Alabama crop estimated at much over these figures, and that with regard to the census report for the year 1839-'40 for the remainder of Alabama, it is grossly deficient.

"That it may be more strikingly apparent, I will here submit that the whole weight of the crop of Alabama is put down at 117,138,833 lbs., and deducting 49,170,224 lbs., the weights in it of those counted, we have 67,968,599 lbs. for Eastern and South Alabama. While the receipts at Mobile alone for the season of 1839-'40 were 445,725 bales, weighing 213,948,000 lbs. at 480 lbs. (which was perhaps a few pounds under their average at that time); thus more than trebling the quantum allowed these sections by the census report. The inference therefore is, that the North Alabama crop may have been somewhat larger, though I do not suppose as much in proportion as the south was rendered deficient. To the shameful errors of the census may, perhaps, be ascribed in part the really ridiculous estimates the Commissioners of Patents have been making of the extent of the Alabama cotton crop. Tho' they are entitled to no credit for their research, as the prices currents here, without including in them the Eastern and North Alabama receipts, would have shown them the utter destitution of correctness in their reports and estimates.

From my knowledge of the present production of most of the counties named above, on the Chatahoochee, I judge them to yield 80,000 bales. Add to that 10,000 bales which I think go from Macon and Pike counties to the Chatahoochee, we have 90,000. From this deduct 25,000 coming out of that section to the Alabama river, and it leaves 65,000 bales of Alabama cotton, as per estimate above, going down the Chatahoochee, &c.

The cotton crop of Alabama, 312,240,015 lbs., it sold at what the average price our exports from this port, of 527,000 bales, commanded, say 6½c., amount to 19,515,063 47; or, exclusive of 12,000 bales manufactured in the State, 305,869,702 lbs. at 6½, amounted to \$19,116,676 37.

Sept. 14, 1849

ALABAMA.

Transactions of the British Association.

DISTRIBUTION OF GOLD ORE OVER THE SURFACE OF THE GLOBE.

Sir R. I. Murchison drew attention to "the distribution of gold over the surface of the globe, and a comparison between the auriferous of the Ural Mountains and California." Sir Roderick stated that, this subject having excited considerable interest, he took occasion to bring it before them—not only to develop his own views and those of other authors, but also to elicit by discussion the knowledge of the geologists, mineralogists, miners, and statisticians, who might be present. An enlarged Mercator's projection of the world was exhibited, on which all the leading ridges which had afforded gold ore, in times past or present, were marked.—Referring to the works of Humboldt and Rose on the Ural Mountains, as well as to those of Hemersen and Hoffman—the former of whom some time ago made a map of all the gold tracks of Siberia, and also citing the numerous contributions of M. Adolf Erman, and particularly the last—Sir Roderick gave a condensed view of his own observations in the gold regions of the Ural Mountains. The exploration of that chain, with his associates, M. de Venneuil and Keyserling, had led him to form the opinion that gold veins had generally been produced wherever certain rocks of intrusive character—namely, greenstones, porphyries, sienites, granites, and serpentines—had been intruded through palæozoic rocks, particularly as affected the Ural among those of the Silurian epoch. It was, in short, where clayslates, limestones, and grauwacke sandstones had been penetrated by such igneous rocks, that quartz veins abounded, and with them a diffusion of gold ore in grains, leaf, and veins. To the general view of Baron Von Humboldt, that the richest gold deposits were those which were derived from ridges having a meridian direction, M. Adolf Erman was decidedly opposed; but Sir Roderick was of opinion that, although they might be unable to explain the cause, it was a fact that the greatest quantity of gold ore had been obtained from chains having a nearer relation to north and south than to equatorial, or east and west directions—due perhaps

to the general form of the chief masses of land, and the prevailing strike of the palæozoic rocks. He thought, however, that these terms, meridian or equatorial, were used in the more general terms employed by miners. He next pointed out the error into which some persons had fallen, of supposing that the Uralian mines were worked underground—the only small subterranean work there yielding a very slight profit. All the other mines there were simply diggings and washings, which were made in the detritus, or shingle, accumulated on the slopes of the ridges and in the adjacent valleys, and, with one exception, were all upon the east side. This phenomenon in the Ural Mountains was a necessary result of the structure. Exhibiting maps and sections, and views of the Ural Mountains, and referring to the description of California by Erman and others, he entered upon a comparison between the two countries, and showed that there was a very great coincidence of mineralogical structure; and that with these "constants" the same results obtained in America as in the Ural. He contended, however, against the inference that any large tract of California would be found to be as uniformly auriferous as the banks and slopes of the upper tributaries of the Sacramento. The breadth of the auriferous detritus of California had yet to be ascertained. As, however, the lower or coast ridge, which passed by San Francisco, seemed to be in miniature, what the higher parallel mountains were upon a larger scale, in being composed of greenstones, porphyries, grauwacke, sandstones, and quartz rocks, it was probable that very much of the great intervening valley of the Sacramento might be strewn over at intervals with auriferous detritus. He glanced at the various modes of procuring gold; and, advertent to the fact that in the Ural Mountains the veinstones, *in situ*—in this case little or no admixture with other ore existed—had proved very slightly remunerative, when worked further downwards; he remarked on the view of Humboldt, who, looking to the great lumps, or "pepites," occasionally found in the surface rubbish, supposed that there might have been some connection between the production of gold and the atmosphere, since, judging from these specimens, it was from the superficial extremities of these quartz veins that the richest branches of gold must have been derived—the veinstones which followed downwards, having usually proved unproductive. Notwithstanding that there were cases, chiefly on a small scale, as in Hungary, where gold ore continued to ramify in veinstones of great depths, yet it was a statistical fact that all the great masses of gold ore had been, and were, deprived from superficial rubbish. The major part of detritus he carefully distinguished from modern alluvia. The existing rivers had little more to do with the phenomenon than that they had, by terrestrial action, occasionally laid bare the edge of the previously formed gold accumulations. He did not deny, however, that where streams flowed directly from rocks, *in situ*, which were impregnated with gold, that auriferous detritus would be the natural result. Sir Roderick then traced the history of gold and its development, as known to the ancients and our ancestors of the middle ages. He glanced at the operations of gold finding in Wales, in Scotland, and Ireland, which had at one time been worked, and were now abandoned. The Scythian tract had remained unknown till this country. The Russians were similarly ignorant till the same recent period. These Russian mines that formerly afforded £500,000 sterling annually, now yielded nearly £4,000,000. As for California, he speculated that judging analogously, it would only be in certain patches that very great wealth would be discovered; and that it would be hasty to conclude that, because gold detritus had been discovered near the sources of the Sacramento, that all the intermediate tract should be equally productive. The California discovery was not likely to produce any change in the standard. He then shortly adverted to the discovery of gold in Austria. In support of his general views, he called forth the evidence of Professor Rogers, of Philadelphia. The President agreed with the general opinion of Sir R. Murchison; but he thought that, as geologists, they should receive with caution the opinion that gold was more abundant on the surface than at great depths; neither should they take it for granted that the gold bearing mountains had a bearing from north to south rather than from

east to west—as in California, for example, they differed somewhat from the position laid down, and the Pyrenees differed completely. Professor Rogers remarked, that he had invariably in his researches found gold was generally obtained with more facility by washing the alluvium in the beds, or along the banks of the rivers; but these superficial deposits were in general speedily worked out. He did not think that it was at all probable that mining in the solid vein rocks would ever be profitable, not only from the great expense of penetrating for it, but also from the difficulty in separating it from the sulphates of iron, copper, and sometimes lead. He agreed generally in the opinion, that gold was always found in peculiar combinations of strata, and he also thought that the deposits found in the alluvium were merely superficial. The regions in which gold was to be found were much more extensive than was generally imagined. He considered that the whole regions extended from Lower Canada down to the central part of Gorgia, a distance of about 100 miles, through which the gold quarry rocks or auriferous deposits, have been discovered. He thought that the superficial deposits of gold found in these regions and in California would, after the lapse of a few years, be exhausted; and as he conceived that the surface gold was greater in quantity than in veins, there was little fear that more would be obtained than was simply necessary for the purposes of society.—Prof. Sedgwick thought that the condition might be constant, but the age would not be so; but he could not believe, for a hundred different reasons, that gold was more plentiful on the top of veins than in the veins themselves; and lastly, he could not agree that the gold mountains ran from north to south.—Sir H. De la Beche agreed with Prof. Sedgwick, that the gold was not found, as had been stated by Sir H. Murchison, in the older palæozoic rocks, and that it depended more on mineral and physical conditions rather than on the age, inasmuch as metals (and why not gold?) had been found in formation equal to the coal measures. His reason for supposing that gold was not confined to the tops of the veins was, that conditions being the same, the results would follow.—Sir R. Murchison then replied, showing that the theories of those who differed with him with regard to the greater abundance of gold at the surface than in the veins, differed with every practical man on the subject; they differed also in regard to the fact, that the hill ranges were from north to south more than to the equatorial line. This was so in all cases in which large quantities of gold were found, although some modification might be necessary as related to small quantities.—Mr. Darwin stated an instance in which that had occurred.—*Mining Journal.*

On a Method of Supplying the Boilers of Steam-Engines with Water, by Mr. W. S. Ward.—Mr. Ward's suggestion was to use a small supplementary pumping engine, having a working cylinder with valves so arranged that the piston may be put in motion by either steam or water passing through it, to be supplied with steam by a steam pipe, the entrance to which is somewhat narrow, and inserted in the boiler to be supplied a little above the level at which it is desired to maintain the water therein. Such aperture should also be about the centre of a marine boiler. The working cylinder should be attached to a pump of such size as to be easily worked by the pressure of the steam. The exit pipe of the steam cylinder must communicate with the inlet pipe of the pump, so that if the cylinder be actuated by steam, the steam will be condensed, and its heat communicated to the water to be supplied to the boiler; or if the working cylinder be worked by water proceeding from the boiler, a considerable part of such hot water will be returned by the pump. The mode of operation of such apparatus will be, that whenever there is a working pressure of steam in the boiler, the apparatus will be in action; but if the level of the water be below the aperture of the small steam pipe, the action will be moderately rapid, and a supply of water be pumped into the boiler; and when the water in the boiler rises to the aperture, this being small, will be as though choked by the water, which will be forced through the working cylinder, moving the piston and pump very slowly; a portion of the water thus escaping from the boiler will be returned by the pump. Such last mentioned action cannot continue long, inasmuch as the

level of the water must be reduced; therefore the average level of the water in the boiler will be, with slight oscillations maintained at the height of the supply pipe. In the course of a brief discussion which followed, the President said that it was a new and ingenious idea, but one which he was afraid was not practically useful.—*Mining Journal.*

Aerial Nocturnal Excursion from Marseilles to Turin.

Marseilles, Sept. 11.—M. Arban, the aeronaut ascended in his balloon from the Chateau de Fleurs (the Vauxhall of this place) at half-past six in the evening of the 2nd instant, and alighted at the village of Pion Forte, near Turin, the following morning, at half-past two, having accomplished the distance, about 400 miles, in eight hours. The particulars of this voyage are related by M. Arban himself, in one of our morning papers, as follows:—

"I ascended from the Chateau de Fleurs on Sunday evening, the 2nd inst., at half-past six. At eight, I was over the wood Esteret, where I ascertained I was at a height of 4,000 metres. The temperature of the air was cold, but dry, my centigrade thermometer marked four degrees below zero. For the wind was south west, and sent me over Nice. For nearly two hours surrounded by very dense clouds; my cloak no longer sufficed to keep me warm; I suffered much from cold feet. I, nevertheless, determined to proceed and to traverse the Alps, from which I knew I was not far distant.

"My provision of ballast was enough to raise me above the highest peaks. The cold gradually increased, the wind became steady, and the moon lighted me like the sun (*comme le soleil en plein jour*) I was at the foot of the Alps; the snows, cascades, rivers, all were sparkling; the ravines and rocks produced masses of darkness, which served as shadows to the gigantic picture.

"The wind now interrupted the regularity of my course. I was occasionally obliged to ascend in order to pass over the peaks. I reached the summit of the Alps at eleven o'clock, and as the horizon became clear, and my course regular, I began to think of supping.

"I was now at an elevation of 4,600 metres. It was indispensably necessary for me to pursue my journey and reach Piedmont. Chaos was only under me, and to alight in these regions was impossible. After supper, I threw my empty bottle into the snow beneath, where possibly some adventurous traveller will one day find it, and be led to conclude that another before him had explored the same desert regions. At half-past one in the morning I was over Mount Misso, which I knew, having explored it in first journey to Piedmont. There the Durance and the Po take source. I reconnoitered the position, and discovered the magnificent plains of the mountain. Before this certainty, a singular optical delusion, occasioned by the shining of the moon upon the snow, was like to make me think myself over the open sea. But as the south west wind had not ceased to blow, I was convinced by this fact as well as by others I had noticed, that I could not be over the sea. The stars confirmed the accuracy of my compass, and the appearance of Mount Blanc satisfied me that I must be approaching Turin. Mount Blanc to my left, on a level with the top of which I was, being far above the clouds, resembled an immense block of crystal sparkling with a thousand fires.

"At a quarter to three, Mount Viso, which was behind me, proved to me that I was in the neighborhood of Turin. I determined to alight, which I did without any difficulty, having ballast enough to go further. I alighted near a large farm yard, where I was surrounded by several watch dogs, from whose caresses I was protected by my cloak. Their barking awakened the peasants, who were more surprised than frightened at seeing me. They admitted me to their houses; informed me that it was half past two, and that I was in the village of Pion-Forte, near Stubini, six kilometres from Turin.—*Irish Railway Gazette.*

Improvement in Rotary Engines.

Several private trials took place last week, at Taplow-on-the-Thames, with a rotary engine, which has been brought to its present working condition by Capt. the Hon. W. E. Fitzmaurice, (late 2d Life Guards,) and his brother-in-law, Mr. Harford.—

The engine is very simple, merely consisting of 2 pieces so mathematically arranged that the interior part works in the outer with the greatest ease, being free from dead points, and without the slightest vibration, however great the velocity. It has no springs of packing, and the parts meet each other so harmoniously as only to give a humming noise like a spinning top; and it is not in the least liable to get out of order, the wear being perfectly uniform throughout. The entire motion being a rolling instead of a cutting one, the engine will last long without repair, as the surfaces become case hardened in a very short space of time. The trials took place in the presence of several scientific gentlemen and engineers of eminence in their profession, in a frigate's pinnace, the engine being constructed for the government.

The boat is ten tons burden, carrying 5½ tons drawing 4 feet of water. She is 32 feet long and 8 feet breadth of beam, made for carrying men and cannonade, but not in any way calculated for speed, and yet the engine of 10 horse power, occupying a space of 21 by 7 inches, drove a screw propeller of 3 feet in diameter and 4 feet pitch with such velocity as to make 200 revolutions in a minute, the motion being given on the direct action principle. Although the boat was not at all calculated for speed, she was propelled against a stream a distance of 2 miles in twenty minutes, equal, allowing for the strength of the current, to 8 miles an hour. The engine weighs considerably less than 1 cwt. to each horse power, and requires much less fuel than the ordinary engine, and is so easy set in motion, graduated to any velocity, or stopped, that a boy 12 years of age might manage it with one hand. Cap. Fitzmaurice makes no secret of the invention, but shows its intention freely, as it is intended for the public service. An engine of 100 horse power on Capt. Fitzmaurice's construction would only occupy a space of 4 feet by 2 feet.—*London Times, Sept. 10th.*

Pacific Railway in Illinois.

At a meeting recently held at Chicago, to appoint delegates to the St. Louis convention, the following resolutions were submitted by the Hon. S. A. Douglass U. S. Senator, and adopted the meetings.

Resolved, That we cordially approve of the general proposition of connecting the navigable waters flowing into the Atlantic and the waters of the Pacific, by means of a national railroad.

Resolved, That in the prosecution of a work so eminently national and useful, all local and sectional feelings and interests should be laid aside, and that plan and route selected which are best adapted to the object in view.

Resolved, That the line and termini of the road should be definitely established by a vote of Congress, after the survey and estimates shall be made, and not before.

Resolved, That from explorations heretofore made and from all other reliable information within our possession, we are inclined to the opinion that the route from Council Bluffs on the Missouri river, through the South Pass of the rocky mountains, to the Pacific Ocean, will be found to possess more advantages than any other, for the following reasons:

1st. The South Pass is the only place where it has been ascertained to be practicable to construct a railroad across the rocky mountains.

2d. The South Pass is central as it respects our possessions on the Pacific, it being on the dividing line between California and Oregon.

3d. The vicinity of Council Bluffs is the nearest and most eligible point on the navigable waters of the Missouri river to the South Pass of the rocky mountains.

4th. Council Bluffs are already connected by steam boat navigation with St. Louis, Memphis, New Orleans, Nashville, Louisville, Cincinnati, Pittsburgh, and, in short, with all the towns and cities upon the Mississippi and its tributaries.

5th. The Bluffs being on the west bank of the Mississippi river, beyond the limits of any State of the Union, no question can arise respecting the constitutional power of Congress to construct the road.

6th. The entire line of the road will be in the Territories of the United States, where the jurisdiction of Congress cannot be questioned, and where the right of way, the materials, and all the lands are

still the property of the Union.

7th. Council Bluffs will be a central and convenient point, where all the great lines of railroads now progressing from the Atlantic to the Mississippi valley can concentrate and connect with the great national road to the Pacific.

Resolved, That Congress should encourage the construction of three branch roads from Council Bluffs (or such other points as shall be selected for the commencement of the national railroads) to wit: one to Chicago, one to St. Louis, and one to the north of the Ohio or Memphis, by making liberal grants of land on the lines of said branches to the States respectively through which the same shall pass, to be applied by the Legislatures of the respective States to the construction of said branch roads, and to no other purpose whatever.

Resolved, That our delegates to the St. Louis convention be instructed to harmonize their action in said convention with the principles set forth in the foregoing resolutions.

We look upon the above as an important movement, and as indicative of the course to be pursued by Mr. Douglass, who at the present time is a leading man in the politics of the west. It is a proposition for a compromise between the rival interest of Chicago, St. Louis and Memphis, by which all those interests can unite in support of one trunk line, being connected with it by branches, the construction of which is to be aided by the general government. Nothing is more likely than that these rival interests should unite upon the proposition of Mr. Douglass; contenting themselves with a connection with the main line with a branch, rather than to run the risk of losing such connection by each one seeking to make itself the exclusive terminus, Mr. Douglass will assign as an additional reason for making Council Bluff the terminus, the unconstitutionality of the general government constructing such a work within the limits of the state. To our minds, the probabilities are that a scheme similar to the one proposed above will unite the extreme west, and that if this section could have the power, the eastern terminus would be a matter of bargain between different quarters of that country; and proves conclusively at this early day, that the decision of the question should never be a matter of bargain and sale by the politicians of the country, but should be entrusted to a body of men competent to decide, and who have no personal interest in the results of their decision.

Railroad through Texas.

At a convention assembled at Gonzales on the 18th ult., to appoint delegates to the Memphis Convention, the following resolutions were passed:

Resolved, That the Legislature of the State of Texas be, and the same is hereby requested, at as early a day as practicable, at the next session, to take suitable measures, by the employment of competent engineers, etc., to ascertain the practicability for railroads of those portions of Texas where most obstacles have been heretofore supposed to exist, and to lay the same before the next Congress of the United States—and to adopt such other measures as in its wisdom may seem best, to secure the passage of the great national railroad through the inhabited portion of Texas.

Resolved, That in the opinion of this convention, the most practicable route for the construction of a national railroad to connect the Pacific with the Mississippi, upon the territory of the United States, whether it regards distance, climate, face of the country, or cheapness, is from San Diego on the Pacific to the Passo del Norte on the Rio Grande, thence by a line through or South of the San Seba Pass, to Memphis, or some point south of it.

Georgia.

The Georgia railroad company on Tuesday declared a dividend of three dollars and a half per share from the business of the last six months, upon their entire stock of four millions.

East Tennessee and Georgia Road.

We were pleased to find, on a recent visit to Dalton, that the workmen employed on this road are progressing very rapidly. Already about 70 miles are graded. Gen. Greene is erecting a saw mill, capable of cutting 10,000 feet a day. So soon as this gets in operation he expects to begin to lay the rails on the road already graded. A tender, it is expected, will be running on it to convey materials forward, on or before the first of January next. The completion of this road will give a new impulse to the spirit of enterprise in East Tennessee and Northwestern Georgia, and draw still closer the chords that bind in one the interests of the States in which it lies.—*Allanta Intelligencer.*

Alabama.

Selma and Tennessee Railroad.—In addition to the Mobile and Ohio railroad, which is now engrossing so much of the attention of Mobile and the western portion of this State, another very important work is projected, and a portion of it already in process of construction from Selma, a town situated on the most northwesterly angle of the Alabama river, about 230 miles from Mobile by this river, and running through the counties of Dallas, Bibb, Shelby, Talladega and Benton, to Gadsden in Cherokee county, there to intersect the Nashville and Chattanooga railroad, a distance from Selma, of about 180 miles; opening in connection with the Alabama river a very direct communication between Mobile and the central and eastern portions of the State, and the railroads of Georgia and Tennessee. This road is hardly less important to the State and Mobile, than the Mobile and Ohio road. The proposed line traverses one of the finest portions of the south, equal to any in the the fertility of its soil, and superior to any other in its vast mineral resources.—The great length of the Mobile and Ohio railroad, and the limited means of the inhabitants along a considerable extent of its line, must render the completion of this road a work of time. The construction of the Selma and Tennessee road is within the ability of those immediately interested in it, and may be completed at an early day, if pushed with the vigor and energy which we have a right to expect.

A meeting was held at Selma on the 21th of Sep. last, being an adjournment of one held at Shelby Springs on the 27th of Aug., to promote the construction of this road, at which were represented the counties of Dallas, Bibb, Shelby, Talladega, Benton, Montgomery, Coosa and Autauga, Cherokee, Mobile, Marshall, Perry, and St. Clair, at which P. Phillip, Esq., of Mobile, presided.

A difference existed at this meeting upon the question of the southern terminus, it being divided between Montgomery and Selma. A large majority of delegates were in favor of Selma, which is on the most direct line, although Montgomery is by far the most important town, and is the capital of the State. Upon the general object of the meeting the delegates were cordially united.

Relative to this matter, we copy the following from the Alabama Planter, giving an account of the meeting:—

At Montevallo it enters the entire of the immense iron, coal, and marble formations, and with this means of quick transportation to market, a large amount of capital and labor would speedily be invested. From Montevallo to Centreville, Bibb county, taking the course of the Cahawba river and tributaries, the distance is about 40 miles. At the distance almost of every mile, sites for mills and manufactories can be had, where there would never be any interruption from lack of water. Both sides of the river throughout, abound in the richest deposits of coal, iron, marble, etc., and as if nature designed it for an extensive manufacturing district, the best

kind of timber—pine, cedar, ash, walnut, poplar, oak and hickory—are abundant, and extensive quarries of limestone exist everywhere. There is also distributed throughout this section, tillable land sufficient for producing food for a large population; and to crown all, there is not a more healthy region on the continent. The most distant point of this section is only twenty miles from Montevallo, and of course the principal products of it will be conveyed there for transportation to market. In regard to some of the minerals of this region, we have before us a letter which says: "The Cahawba coal beds are from 4 to 10 feet thick. There, too, is the marble of almost every shade in the wildest profusion, and the limestone. The lime burnt from it is equal to the best Thomaston." The coal beds and iron mines of portions of Jefferson county are also convenient to Montevallo, and in that vicinity thicker strata of coal have been found than elsewhere, and the richest description of iron ore is abundant in every direction.

On the line beyond the Coosa, minerals are abundant, and the agricultural and manufacturing capacities of the country are superior. On reaching the upper terminus, the teeming products of North Alabama and Tennessee will find their way by this road to our port.

The travel on this road will also be an important item, and when finished will form with works now complete and in progress in Tennessee and Virginia very direct and eligible route to the east. An eminent engineer speaking of this very enterprise says—"a look at the map of the United States will satisfy any one that no route, taken as a whole, can be projected, which can compete with this in directness of course and easy grades."

From Selma to Montivello the work is nearly half done, having been surveyed and 27 miles graded.

Kentucky

Railroad from Henderson to Nashville.—We give below the proceedings of a meeting held at Henderson, Kentucky, for the purpose of promoting the building of a railroad from that place to Nashville, Tennessee, from which latter place, a road is in a state of great forwardness to Savannah, Georgia, and Charleston, South Carolina. Evansville is the southern terminus of the Michigan Canal, and of the Evansville and Mount Carmel railroad, which will eventually be pushed north to intersect the lines of railway running east and west through Indiana and Illinois. A glance at the map of that section of the country will impress every one with the importance of the road proposed, as the only remaining link between the extreme south on the one hand, and the extreme north on the other. The route presents remarkable facilities for railway construction, being unaffected by frosts, remarkably level, and running through a well wooded country. We think that the inhabitants along its line have sufficient strength to build this road; if not, we apprehend that after they have done what may reasonably be expected of them, they will have no difficulty in obtaining the necessary additional aid from the roads below Nashville interested in the one proposed. From the importance of this road, we can assure those persons interested, that if they will go vigorously to work, the means to build will be forthcoming as fast as they can be judiciously expended.

At a meeting, in the town of Henderson, on Monday the 21th day of September, 1849, composed of the people of Henderson county, Ky., and of citizens of the city of Evansville and Vanderburg county, Indiana, H. J. Eastin was appointed Chairman, and D. Banks, Secretary. The Chairman having stated the object of the meeting, introduced the Hon. Sam'l. Hall, President of the Evansville and Mt. Carmel railroad who addressed the meeting. Judge Lockhart and Messrs. Jones, Carpenter and Ingle, of Evansville, and Col. E. H. Hopkins, of Henderson, having been called upon, also addressed the people—

Whereupon, Hon. A. Dixon moved the following resolutions, which were seconded and sustained by

L. W. Powell, Esq., in a speech, and unanimously adopted:

Resolved, That in the opinion of this meeting, it is all important to the commercial, manufacturing and agricultural interests of the people of the Western States, that the railroad now being constructed from the cities of Charleston and Savannah to the city of Nashville should be extended to some point on the Ohio river.

Resolved further, That in the opinion of this meeting, the town of Henderson is the most eligible point on the Ohio river for the terminus of said road. First, because the country over which the road would pass from Nashville to Henderson is almost a continued level, and the cost of construction would be less per mile than to any other point on the river, and secondly because it would bring the terminus of said road within twelve miles of the city of Evansville, Indiana, at which point the great central canal, from the lakes through the State of Indiana terminates, and which is also the terminus of the contemplated railroad from Evansville, to Mt. Carmel, branching and terminating at different points on the lakes, and thus with the aid of the Ohio river from Henderson to Evansville, a distance of only 12 miles, and navigable at all stages of water by the largest class of steamboats, securing a continued chain of railway and canal communication from the great lakes in the North to the cities of Charleston and Savannah on the shores of the Atlantic in the south.

Resolved further, That the citizens of South Carolina, Georgia, Tennessee, Kentucky and Indiana have a common interest in the construction of the proposed road, and that they be respectfully invited to co-operate with us in procuring from the Legislatures of Kentucky and Tennessee, a suitable charter, and of procuring subscriptions for the amount of stock necessary to its completion.

We copy the following from the Henderson Kentuckian, giving an account of the above meeting:—

A practical engineer, well acquainted with the region of the country over which the road must pass, estimated the whole cost of construction—with the engines and cars placed upon it ready for operation—at \$11,000 per mile. At this rate, supposing the distance to be 130 miles, the whole road would cost \$1,430,000. It is stated on reliable authority that the opening of the Nashville and Chattanooga railroad in Tennessee, on the average, added \$5 per acre to all the land within ten miles on each side of the road. But supposing the opening of a road from this place to Nashville were only to add 1 dollar per acre to the present value of land ten miles on each side of the road? At that rate the rise in the value of that belt of land along the line would more than pay the estimated cost of the road by 234,000 dollars. Let us make the calculation: A strip of land 20 mls. in breadth and 130 in length, contains 1,664,000 sq. acres. Increase the value of this land 1 dollar per acre, and it would give us 1,664,000—thus leaving a balance of 234,000. But is there any one in his senses who does not foresee at a glance that one dollar per acre would not be the half of the increased value it would give to the land thus located along the line? And is there any one so blind as not to see that the simple advance in the price of land is not a tithe of the benefits resulting to the people from such a road? It will open to the farmer a ready and speedy market for every species of produce at all seasons of the year, and to any part of the Union—so that the farmer in the interior can come then into successful competition, and stand upon an equal footing with his more favored neighbor, located upon the margin of our beautiful rivers. It will give increased facilities to mercantile operations and the mechanic arts, open to the markets of the north and south the vast coal fields in which the Green river country abounds, create a wide spread market for the lumber in our interior forests, place every man along the line within three days' journey of the extreme portions of the Union, fill up our towns and country with an active, industrious, thriving population, spread the spirit of enterprise and intelligence as upon the wings of the wind, and banish ignorance from our borders, and infuse new life and increased vigor into every species of trade and all branches of industry. These are some of the benefits which this improvement would bring to the Green river people. Are they not worth striving for? and will

not all our citizens in this portion of the State make an effort to secure them? If they will, now is the acceptable time. A road from Nashville to some point on the Ohio river will be built in a very short time. And it we of the Green river country do not take hold of it now, the citizens of Louisville or some other point above us will take advantage of our lethargy and wrest it from our grasp, with all the advantages and blessings it would bring us. Let the people in Hopkins, Christian, Todd and the counties contiguous to them, take hold of the question with the same zeal and resolution that our citizens have manifested, and the work will be built.

Indiana.

Central Railway.

Mr. Smith, President of the Indianapolis and Bellefontaine railway, is pushing the work on with great energy. In a late public address at Winchester, Indiana, says the Patriot of that place,

"He exhibited to the audience a map of the railroad lines and connections, from Boston, N. York, Philadelphia, and Baltimore, through the States of Massachusetts, New York, New Jersey, Maryland, Virginia, Pennsylvania, Michigan, Ohio, Indiana, Illinois, and Missouri. He traced the lines, and showed their relative position and importance with reference to the line of the Indianapolis and Bellefontaine railroad. He said that this road was a part of the great line of railway running from Philadelphia through Pittsburgh, Beaver, Canton, Massillon, Wooster, Mansfield, Marion, Bellefontaine, and Sidney to the State line of Indiana. He spoke at length of the great importance of this line to the cities of Philadelphia and Pittsburgh, as well as to other cities, and the whole country on and near the line—said that this was to be the great thoroughfare of business and travel between the cities of Philadelphia and Pittsburgh, and the Mississippi at St. Louis, and ultimately the Pacific, as he had no doubt but that St. Louis would be fixed as the starting point in this valley, of the Atlantic and Pacific railroad. He pointed to the map and showed that the Sandusky line would intersect this line at Bellefontaine, and the Cleveland line would unite with it west of Mansfield. He said that this line would be a straight line in Ohio, through Sidney, to the point on the Ohio line to which the Indianapolis and Bellefontaine railroad had been located. He said he was happy to inform the people, that in a recent visit to Ohio, he had ascertained that the straight line had been adopted, and that it was resolved there, in the right spirit, to put the line under contract, without further delay, clear through to the Indiana line."

Ohio.

The Zanesville Courier of the 11th inst. has the following paragraph:

The Central Railroad Secured.—An additional subscription of 140,000 to the stock of this company was voted by the counties of Muskingum and Licking, on Tuesday last. The aggregate amount now subscribed is about 350,000, leaving but 150,000 to be obtained, to complete the amount which, it is estimated, will with the contemplated loan, build and stock the road from Zanesville to Columbus. This 150,000 dollars is apportioned, one-third to Licking county and two-thirds to Franklin, and we anticipate no difficulty in getting it as soon as wanted.

The way is now clear for effective operations.—The engineer will proceed with and complete his surveys by spring. The road will be immediately after put under contract, and in about a twelvemonth after that—look out for the locomotive.

Hillsborough and Cincinnati Railroad.

But few of our people know the rapidity with which the Hillsborough and Cincinnati railroad is progressing. We were almost astonished ourselves when we learned the facts which we now submit. The directors are using their best exertions to forward the work.

The grubbing, clearing, grading and masonry has been let out from a point about one mile and a half west of this place, to a point about three miles west of Blanchester, except about one mile and a half near Lynchburg. The whole distance under contract is between twenty-one and twenty-two miles. The work is let in small contracts, and generally to farmers through whose land the road pas-

ses, or who live in the immediate vicinity, and are to receive one-half of their pay in the stock of the road. The contractors are nearly all actively at work. Mr. Duckwall who has the first contract west of this place, finished the grubbing upwards of a week since.

By an advertisement in our paper to day, it will be seen that the grubbing, grading and masonry of the balance of the line to the Little Miami railroad, will be let out at a public letting on the 19th of November next, except one mile and a half adjoining Hillsborough, which will be delayed to give time for full and careful examinations and surveys, so as to determine the best location and termination for the road in town. The time fixed in the contracts for making the road ready for the wooden superstructure, is the first day of December, 1850, which will give time for completing it ready for running to the Little Miami railroad in two years from the present fall.

Efforts are making to obtain further subscriptions of the stock, and it is hoped and believed that the means of the company will be largely increased during the fall and winter. All friends of the road should exert themselves to aid in this matter. It is of the utmost importance to the progress of the work that the instalments already called in, should be paid without delay. To induce promptness as well as to equalize all stockholders, the board of directors have resolved to allow interest, payable in stock, on all instalments paid, or advance payments, until the completion of the road.—*Hills. Gaz.*

OHIO AND PENNSYLVANIA RAILROAD.

A letting on this road of 22 miles of light work in Stark county, extending from Mt. Vernon road by Louisville and Canton to Massillon, and five sections of heavy work in Wayne county, extending from the Sugar Creek summit to a point near Wooster, took place at Massillon, Sept. 29th. The number of bids presented were numerous, and the work was let at fair prices, somewhat below the engineer's estimate.

The depot is to be located at Canton. The contractors are at work upon the line in Beaver county, Pa., which was let on the 4th of July, and the location through Columbiana county is rapidly progressing.—*Cleveland Herald.*

Cleveland and Pittsburgh Railroad.

The lettings on the Northern Division of the Cleveland and Pittsburgh Railroad advertised by Messrs. Chamberlain & Co. to take place on the 1st inst. were all made, and the contractors will immediately enter upon their jobs. The sections let from 22 to 48, include much of the heaviest grading on this portion of the line, and the work will be vigorously prosecuted. The lateness of the season, and the slow working of the present pile driver, will prevent much progress on the road along the lake bank before spring. Messrs. Chamberlain & Co. intend to have a steam pile driver in operation then.

A further letting on the Middle and Southern Divisions will take place on the 10th inst., at Salineville, Columbiana county.—*Cleveland Herald.*

North Carolina.

RALEIGH, October 1st, 1849.

The Internal Improvement association for the county of Wake, met this evening at the court house at the usual hour, agreeably to adjournment.

The President called the meeting to order, and after the proceedings of the last meeting were read, it being understood that Ex-Governors Graham, Morehead and Swain were in the city, and would, it invited probably favor the meeting with their presence, on motion a committee was appointed to wait on these gentlemen, and request them to attend and address the meeting. Soon after the committee returned accompanied with these gentlemen, and on being introduced to the meeting by the President, Governor Morehead being first called out, proceeded to address the large and waiting audience, on the subject of the Central railroad scheme, in a speech of great eloquence and power, in which he fully demonstrated the practicability of this great work.

Governor Swain, likewise, in a speech of unsurpassed ability and power, convinced, it is believed, every one present that this road ought and must be built; and that its construction is essential to the best interests of North Carolina.

The following gentlemen responded to the call and came forward and subscribed for stock in the road viz:

Governor Morehead,	\$10,000
Governor Swain,	10,000
Charles L. Hinton,	10,000
Dr. J. O. Watson,	10,000
William Boylan,	10,000
John D. Hawkins;	10,000
	<hr/>
	\$60,000

Other gentlemen also came forward and subscribed to the amount of \$1,100 more, thus making at this meeting, the respectable amount of \$61,100.

Massachusetts.

Boston and Maine Railroad.—Mr. Wilbur, lately a clerk in the Treasurer's office of the Boston and Maine railroad, was, at a meeting of the directors on Monday last, unanimously selected as treasurer of the corporation, in place of Mr. Pickering, resigned. The time at which the new Treasurer will enter upon his duties is fixed at November 1st, but the salary has not yet been agreed upon. Mr. Minot, the superintendent of the road, resigned his office a week or two since, but his successor has not yet been designated.—*Cour.*

Worcester Railroad.—Rumors are rife in the community, in relation to reported speculations among the employers of the Boston and Worcester railroad corporation. The depot master at Boston has resigned, and rumor charges him with a defalcation of some twenty or thirty thousand dollars. Other similar charges are made, but no facts have come to our knowledge to warrant anything more than this brief allusion to the rumors. One thing is certain, that public confidence, owing to some cause or other has received a shock, in relation to this shock, which on Saturday, went as low as 94, when there can not be a doubt, that under good management it would be worth far more than that in comparison with the prices at which other stock sells.—*Worcester Whig.*

Norfolk County Railroad.—The directors have made arrangements to mortgage the road and franchise for \$700,000, and have made Robert G. Shaw, J. Amory Davis, and Charles T. Russel the trustees for that purpose. By this arrangement all the subsequent mortgages and attachments are to be removed, so that the creditors will be enabled to obtain bonds for their debts, as soon as the necessary papers are completed.

Maine.

The Androscoggin Railroad.—Our readers will have noticed that the contracts for the grading and masonry of a portion of this road were advertised a few weeks ago. We learn that the letting of the first fourteen miles has just taken place.

This line is one of much interest, and the enterprise promises to be highly useful and successful.—The Road is designed for the accommodation of the immediate valley of the Androscoggin, above Lewiston, and forms a part also of a projected improvement extending to Wilton, Farmington and Phillips on the Sandy river. The charter was granted in 1848, and the route then designated commences at a point some miles north of Lewiston, on the Lewiston and Waterville road, and passes upon the east side of the Androscoggin river to Jay Point. At that time, in consequence of other projects, the Legislature did not permit this company to go north of the last mentioned point—but, at the recent session, an extension was authorized, so that this company may now embrace all the interests, as far as the upper portions of the Sandy river valley.

Should the plans thus projected, be realized, this Road will become one of the most important lines in the western part of the State, and will open a country as rich in her natural resources, as can be penetrated by any road of equal extent, in this region. The water power upon the Androscoggin and its tributaries is very great, and the agricultural reputation of the western part of Kennebec county, and the adjacent portions of Oxford and Franklin—particularly of the Sandy river towns—is universally known.

The contracts just concluded embrace the grading and masonry of the first fourteen miles, beginning at Monmouth. Careful estimates place the extent of this work (exclusive of ballasting) at only about \$30,000—showing a remarkably favorable line. This division extends as far as Benjamin's Brook in Livermore. It is expected, as we learn, to contract also at an early day, for grading six miles further to Livermore Falls.

The contract for the first division has been taken by Messrs. Sherrill & Myers of this city. From the ac-

tivity and skill which these gentlemen have displayed in executing contracts in this city, and in completing the work at the Presumpscot bridge for the Atlantic road, the most favorable anticipations may will be entertained of the efficiency and fidelity with which they will carry on this work.—*Advertiser.*

AMERICAN RAILROAD JOURNAL.

Saturday, October 20, 1849.

TO CONTRACTORS.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.—Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYN,

Chief Engineer J. R. & K Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. }
Newark, Ohio, October 17, 1849. }

SEALED PROPOSALS will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (55 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEORGE W. PENNEY,
Superintendent, etc.

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO. PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.

CHARLES F. M. GARNETT,
Chief Engineer.

Prospects of the Future.

The completion of the Erie Canal was an era in the progress of New York, and that portion of our country to which it opened the means of a cheap and easy communication with the seaboard. This great work has made New York the Commercial Emporium of this continent, and one of the leading cities of the world. It has brought into existence a constant succession of beautiful and flourishing towns and cities along its line, and the whole country within reach of its influence, has advanced in population, in wealth, in intelligence, in all that constitute the real good of society, in a vastly more rapid rate than has been witnessed in any other portion of the country, distinguished as the whole is, above any other, for its rapid growth. In the blessings it has showered over the land, in the wealth it has created, in the comforts and luxuries it has brought within the reach of myriads, in the mighty

change it has wrought in the aspect of a large portion of our country—no public work of a similar kind can present any parallel; results, to the value of which, the cost of the work bears no comparison.

Stimulated by the success of this great work, a large number of the States commenced works of a similar character, without taking into consideration that the causes of this success depended upon conditions which were to be found nowhere else in this country. No section of equal extent offered such facilities for the construction of a canal, and its completion connected vast inland seas with the ocean. Such have been the obstacles encountered by the other Atlantic States, that Pennsylvania alone has extended her canals to the western waters. Maryland has abandoned the idea of pushing the Chesapeake and Ohio further, and we think it very doubtful whether the James river and Kanawha Canal is carried beyond Buchanan. Since these works were projected, new modes of travel and transportation have been developed, which are fast superceding the use of canals; and those States that sought to rival New York in the construction of canals, in a contest where success was impossible from the very nature of the case, are now seeking to accomplish the same result by the construction of railways. Here is a field where to a certain extent all the States stand on an equal footing.

Pennsylvania is now laying down a railway on the bank of her canal, from Philadelphia to Pittsburgh. Maryland is straining every nerve to push the Baltimore and Ohio railroad to the Ohio river. In the south, the cities of Charleston and Savannah are making every effort, by a line of railway thro' Tennessee, to connect their road with the lower Ohio. In the north, Maine is constructing a road from Portland to Montreal. Boston will soon have a similar connection with the St. Lawrence by the Ogdensburgh railway, and New York, notwithstanding her splendid canal, has been driven by the action of rival States, to commence the construction of a railroad from New York to Buffalo, to protect herself against the public works of other States, a triumphant proof of the superiority of railways over canals.

It is a remarkable fact, that these six great lines of railway, all having similar directions and objects—the three northern seeking the St. Lawrence and the great lakes as their western terminus, and the three southern the Ohio river—will all be completed about the same time. Three years from the present date will undoubtedly witness the completion of the whole. To meet these great trunk lines the inhabitants of the different sections thro' which they will run, are busily engaged in the construction of branch lines to the main trunks, and thus a perfect net work of railways is spreading itself over the Union, which, although at the present time appears to be progressing without any order or unity of design, will, when completed, assume as much order and symmetry as if projected and executed by one controlling mind. In all this apparent chaotic state of things, the laws of trade and the wants of the different sections, are the influences which direct all these movements to results which are as harmonious in their character, as the causes which produced them. When completed, these great roads with their branches, will resemble vast rivers, which, through innumerable feeders, receives the surplus waters of the regions they traverse, and bear them in mighty volume to the ocean.

If the Erie Canal, sectional in its design and influence, gave such an impetus to the business of the country, what results have we not a right to expect

from the simultaneous opening of so many vast lines of railway with their numerous branches? At the present time, the cost of transportation of many articles sent to market is greater than the cost of production. Every cent, therefore saved by diminished cost of carriage, is so much added to the wealth of the country. Railroads, therefore, exert as direct an influence in the production of wealth as the soil itself, and they are frequently the only means by which the richest soils can be rendered worth the expense of cultivation. By opening to such lands the means of cheap conveyance to a market, production is stimulated to an extraordinary extent, in sections that would have remained untouched without such means. The opening of these numerous roads, therefore, will not only in many cases double the value, but it will infinitely increase the amount of agricultural productions. The capacity of the country will apparently be doubled at once. All the various sections of it will receive the same impulse as did New York when the Erie Canal poured into her lap the products of the rich soil of the west. We shall then, and not till then, begin to realize the influence of railways upon the resources of a country situated like our own. They will then exert upon every part of it the same magic effects, in increasing the value of property, as they have done in the limited sphere in which they have been confined.—Added to the impulse we shall receive from the causes enumerated, will be the additional impetus given by the rapid growth of our possessions on the Pacific, and the receipts of gold from that quarter. While the effects of railroads will be to develop the resources of the newer portions of our own country, our vast possessions on the Pacific must for many years receive all the supplies from the Eastern States. For similar reasons, the commerce of that section must be carried on by eastern shipping, thus giving full employment to the industry of the older States. We are soon to commence a new era in the business of the country. The long continued pressure and embarrassment under which the community have been laboring, is the price that it has been paying in advance for the reward that is now opening before us. Courage, then, all classes, for the day that is drawing near will be as bright and lasting as the night has been long and dark.

Georgia

Memphis Branch Railroad.—We have heretofore omitted this road in our list. It extends from Kingston, on the Western and Atlantic road, to Rome, on the Casa river—a distance of 18 miles. It is laid with a flat bar, weighing 30 tons to the mile, and cost about \$6000 per mile. To Kingston, the Coosa is navigable by small class steamboats, which adds materially to the business of this road. C. M. Pennington, Esq., is chief engineer.

SHIP CANAL—LAKE SUPERIOR.

A public meeting has been holden at the Sault Ste. Maria, for the purpose of bringing before Congress the importance of a canal around, or rather past, the Falls Ste. Maria, and erecting piers and break waters at certain points on Lake Superior.

That this great work might be properly appreciated, and the great interests involved in its construction properly represented, the meeting appointed three delegates to proceed to Washington at the ensuing session of Congress. The delegates are John W. Allen, D. R. McNair and Samuel Ashman.

Ohio.

Columbus and Lake Erie Railroad.—A gentleman connected with this road, writes us as follows: "We anticipate the completion of our road from Newark to Mansfield early next season."

Boston, October 12, 1849.

To the Editor of the American Railroad Journal:

Sir—Accept our particular thanks for your kind attention to our suggestion under date 1st inst., and for your flattering comments on our city in its railroad enterprises. You suggest one single point of difficulty in the plan of P. P. F. Degrand, viz: "The selection of an enlightened board of directors." We do not perceive why this difficulty should apply to this plan, more than to any other. Indeed, we think it would be less, by the fact of the selection of two-thirds of the directors, with the natural vigilance of the owners of the \$2,000,000, paid in by private stockholders, added to the vigilance of government, in the selection of the other one-third of the board.

As to the fears which you express, we think that a study of the history and practise of the railroads in N. England will easily dissipate them. That study will convince you that the New England railroads are conducted, as an enlightened shop keeper conducts his shop. The shopkeeper tries to make money, by making himself useful and agreeable to his customers, and accommodating these customers at the lowest rate at which the shopkeeper can make a living profit. Just so do our railroads, and they are enabled to make a living profit, at low rates of freight, by judicious economical arrangements in their own business.

As to the suggestion you make of the importance of paying in a larger amount of private capital, we think you undervalue the mischiefs arising from abstracting this capital from the channels of business.

We wish, however, to be distinctly understood that we are very glad to find every objection to P. P. F. Degrand's plan presented to the public. We move for it, because we think it will stand the test of scrutiny, of talent and of time.

Receive our friendly wishes.

WILLIAM INGALLS,
E. H. DERBY,
JAMES C. DUNN,
S. S. LITTLEHALE,
P. P. F. DEGRAND,
REBERT F. FISK,
O. D. ASHLEY,

Committee.

CANADA.

Quebec and Melbourne Railroad.—A meeting, numerously attended by all classes and parties of the citizens of Quebec was held on Thursday last, in the Quebec City Hall. His Worship the Mayor in the chair. A perfect feeling of unanimity prevailed throughout the whole discussion prior to the passing of resolutions to carry out the project. The Quebec morning Chronicle says:

"There was just opposition enough to show that even those who were opposed to the advance of £100,000 were convinced that the railroad would pay, and that opposition was only because it was jealously supposed one part of the country would reap even greater benefit than another."

In the course of his speech, J. B. Forsyth, Esq., observed that from his acquaintance with the topographical nature of the country between Quebec and Melbourne, the abundance of timber, cheap labor, and small cost of land for right of way, he felt certain the road could be made for from £3,500 to £5,000 per mile. The road from Montreal to Portland cost fully 40 per cent over that estimate, as large embankments, and extensive bridging will have to be made; whereas the country from the St. Lawrence to Melbourne is flat and level, and is represented as highly favorable for the line contemplated. He stated that Mr. Patterson, of Montmorency, had authorized him to subscribe for £1000 of stock and he had no doubt the British American Land Company would become largely interested, as well as the Seigneurs of St. Croix De Lotbin ere, and proprietors of lands in the townships; and that the Legislature as proprietor of the Seignior of Lauzon, would come forward with an open hand.

John Jones, Esq. was in favor of the road, but tho't it expedient to know the cost of it, and that the cheap plan should be decided upon.

Dr. Morrin was not opposed to the construction of a road from Quebec to Melbourne, but was not prepared to say that he approved of the city being taxed £100,000 for the sake of the Pointe Levi, which place would be the construction of a railroad, be made a town, and receive infinitely more benefit from the undertaking than Quebec. He had no objection that 25,000 or £30,000 should be granted.

"About \$500,000 stock has been subscribed, and voted by the several counties to be subscribed, to the Scioto and Hocking Valley railroad, extending from Newark via Lancaster, Circleville and Chillicothe, to Portsmouth; and the engineers are surveying and locating the route preparatory to letting contracts.

"A sufficient amount of stock has been subscribed to the Central Ohio railroad or secured beyond a question, to grade the road and furnish the timber for superstructure—from Zanesville via Newark to Columbus. The engineers are in the field preparing the work for letting. The people have generally voted for counties to subscribe stock to railroads at the recent elections."

To the Editor of the American Railroad Journal

DEAR SIR:—Glancing over the last report of the 'Commissioners of Railways' (part 2) I find the following, which I think will prove interesting to some of your readers.

Respectfully yours,

L. J. F.

"WATERFORD AND LIMERICK RAILWAY.—(Linerick to Tipperary.

"These bridges are the principal feature in the railway. They have been introduced by Mr. Osborne, the engineer of the line, from the United States, where the principle is of common application in timber structures.

"It is there known as Howe's patent, and is a modification of Col. Long's trussed bridge. It consists of trusses, between or upon which timber platforms for the roadways are supported, formed each of a top string or chord, as it is termed, of wrought iron with a cap of cast iron, and a bottom chord, entirely of wrought iron, running the whole length of the trusses parallel to one another. These chords are kept apart by cast iron braces and counter braces, crossing each other at angles of 60°, butting at top and bottom against skew backs or wedge-shaped blocks fixed by bolts to the chords; these skew backs are exactly over one another, and a wrought iron bolt passes through them, and by means of a nut and screw on the underside, forces the braces firmly against their respective skew backs.

"The weight coming upon each tension-rod is referred to the braces and counter braces, which, acting in contrary directions against the same skew back, support one another, and which refer their pressures to the adjoining bolt, and the weight is transferred from bolt to bolt through the bridge.—The chords being of wrought iron, receive, and are capable of resisting, the horizontal strains upon them, and the pressure on the cast iron braces, being in the direction of their axis, they are thus placed in the most favorable position.

"I tested these bridges with two locomotive engines, which completely covered them, and found that the deflection produced on the span of 86 feet was 5-16 inch, and on that of 50 feet 3-16 inch.

The strength of the bridge where the pairs are of sufficient dimensions depends entirely on the workmanship and materials.

"The carriages adopted are peculiar, being also introduced from the United States, consisting of a body about 40 feet in length, supported on two bogie frames, one at each end, which are free to turn round spindles, fitting into sockets in the under framing of the body.

These carriages are well adapted for going round curves, the bogie frames being short and wheels close together, but I think it yet remains to be proved whether they are adapted to very high speeds."

Capt. Simmon's Railway Report.

Several other gentlemen spoke strongly in favor of the project.

A set of favorable resolutions were then adopted, a committee formed, and the following stock immediately taken up:

P. Patterson, Esq.,	100 shares,	£1250
W. J. C. Benson, Esq.,	80 shares,	1000
J. Jones, Esq.,	40 shares,	500
H. Noad, Esq.,	10 shares,	125
W. S. Henderson.	5 shares;	62 10

—Mont. Transcript.

Pacific Railway--St. Louis Convention.

We give the proceedings of this convention as reported by telegraph to the city papers. A gentleman attended the convention on behalf of the Journal, from whom we hope soon to have a full report of its proceedings.

St. Louis, Tuesday, Oct. 16.

The convention assembled at 12 o'clock yesterday and was organized by the appointment of Judge Lewis of Vincennes, Ia. as temporary chairman.—A committee of one from each State was appointed to designate officers of the convention, after which a motion was made to adjourn until 9 o'clock this morning, and carried.

SECOND DAY.

St. Louis, Tuesday, Oct. 16.

The convention reassembled at 9 A. M. with a very full attendance. The committee, pursuant to adjournment, reported as permanent officers of the convention the following named gentlemen: President, Senator Samuel A. Douglass of Ill., Vice Presidents, L. Totten of Penn., S. Foster of Ohio, Samuel Emerson of Ind., H. J. Eastin of Ky., J. Williams of Iowa, C. Branker of Wis., Henry S. Greer of M., J. Riddle of Mich., H. K. Williams of N.Y. and Bryce Steward of Tenn.; Secretaries, M. G. Miron and A. B. Williams of Mo., A. S. Stewart of Ill. and H. W. H. Wallace of Iowa.

Hon. S. A. Douglass, President, after being conducted to the chair delivered a short but eloquent speech. There was much discussion on a motion from the chair to appoint a committee on resolutions. The motion was finally carried, and the chair appointed three from each State. The resolution having been introduced calling on Congress to act promptly in regard to the Pacific railroad, Mr. Benton rose and read a letter which has just been received from Col. Fremont, stating that the convention should designate no route across the rocky mountains. He believed the pass between the head of the Arkansas and the Rio Del Norte, the most practicable and nearest to the Pacific. General Persifer F. Smith has sent an exploring party with a view to report before the termination of the next Congress.

He (Mr. Benton) dwelt long and eloquently on the importance and nationality of the road. During his speech he was repeatedly and loudly cheered. Four hundred and sixty-four delegates were present, of whom seventeen were from Missouri, three from Pennsylvania, twenty from New York, thirteen from Ohio, thirty one from Tennessee, three from Indiana, two hundred and sixty four from Kentucky, forty seven from Illinois, three from Iowa,—from Wisconsin, and five from Michigan. A recess was here taken.

On reassembling, Mr. Lathrop was admitted as a Vice-President. A Delegate from Louisiana offered a resolution, which was passed, that a committee of one be appointed from each State, to draft a memorial to Congress, in which should be presented the objects designed by the convention. Judge Birch here presented a resolution, recommending the 38 parallel of latitude as the best route for the railroad. He was replied to by Gov. King of Mo. who spoke in a warm and stirring manner. The project being opposed to that of Benton, a political division of Loco Focos was here manifested. Mr. Clark of Mo. interfered to quell the dispute, and words followed in a most formidable manner, by Judge Williams.

On motion of Mr. Lathrop of La. the resolution was laid on the table. Order being temporarily restored, letters from several distinguished persons from various parts of the Union were ordered to be printed. The report of the topographical engineers, as to the various routes for the railroad, was referred to a committee.

Hon. Mr. Douglass having resigned the chair, Henry S. Greer of Mo. was appointed in his place. He subsequently withdrew, and Mr. Darsie of Penn. was appointed in his place. The committee on resolutions reported a series of resolutions for consideration, setting forth the object and spirit of the convention as truly national, and observing neither party, sectional or local interests, and recommending Congress to make immediate provision for the construction of a great trunk road to the Pacific, in California, with a branch to Oregon, from some point on the Mississippi, or frontier, as may be found eligible. All the Eastern lines now tending toward the West may be considered parts of the same. Also that Congress establish military posts for the protection of settlers and emigrants, and that grants of land be made encouraging population, and that Congress be memorialized to construct a Telegraph on the road, and that a committee of five be appointed to prepare and publish an address to the people of the Union, urging the Corporation to procure the action of Congress.

Hon. J. W. Thompson of Ind. addressed the convention in an able and eloquent manner, and offered the following amendment: That the grand trunk railroad be constructed with branches to St. Louis, Memphis and Chicago, and that a committee of fifty be sent to the Memphis convention, requesting the corporation of that body.

THIRD DAY.

St. Louis, Wednesday, Oct. 17.

The Virginia and New Jersey delegates to the convention have arrived—Lieut. Morie of Va., and Robert Chambers of N. J. are pronounced as Vice-Presidents from those States. Various resolutions touching the route for the road were referred to the committee on resolutions.

A flare-up here occurred, on account of a resolution being introduced that congress be memorialized to favor the immediate commencement of the road at a point west of the organized States, to be continued to San Francisco. Senator Smith, of Indiana, opposed the resolution in a speech of an hour, setting forth the impracticability of the resolution. He said if it was unconstitutional for Congress to authorize the construction of the whole road, it should be memorialized to amend so as to meet the objection in view.

Mr. Greer of Missouri was again installed President of the convention. Mr. Douglass is now speaking in reply to Mr. Smith of Indiana. The road west of the organized States will be completed within ten years.

St. Louis, Oct. 18.

The Pacific Railway Convention adjourned at noon to-day, after adopting a resolution to re-assemble at Philadelphia on the first of April next, to resume the consideration of the subject.

Senator Benton is to address the citizens of St. Louis to-night.

To the Editor of the American Railroad Journal.

Atlantic and Pacific Railroad.

There has been so much said and written on the above subject, as to render it almost impossible to get the majority of the people of the United States agreed to any definite plan of operations, in regard to the same. All the projects as yet suggested, of which there are several, have warm advocates and opponents, which must be expected in all human projects of so vast magnitude.

Let me suggest, through your columns, that said undertaking will probably never be commenced and finished as a whole, it being too great an undertaking for a single enterprise. The only possible way to accomplish said desirable project, in the opinion of the writer, will be for the State of Iowa or Missouri to charter and construct a railroad from East to West across their confines, and when Nebraska shall be organized as a territory, or independent State, together with New Mexico, California, etc., let them continue the chain westward, until the Atlantic and Pacific Oceans shall be connected by several great links, forming altogether a magnificent line of about 3,000 miles of railroad.

At either end may, and will be lines diverging to the different ports on both oceans—thus forming an union of interest which no rival or local prejudice can destroy—the interest and good of the whole Union being bound together by one great

ROAD OF IRON.

The Legislature of Vermont are to have a deal of railroad legislation before them at their present session. Among the published applications are the following:

For a railroad from Burlington to the Canada line—from Montpelier to Wells river, or near Haverhill, N.H.—from some point on the Connecticut river convenient to connect with New Hampshire roads to the Rutland and Burlington road in Chester or Cavendish—from Weathersfield four corners (or near there, connecting with the New Hampshire Central road,) thence through Weathersfield and Cavendish to the Rutland and Burlington railroad—from West Poulney through Wells Pawlet, and Rupert, to connect with the Troy and Rutland railroad. Also to revise the charter of the Western Vermont railroad company, and for an amendment of the charter of the Rutland and Washington company.

A railroad case of some local importance—being a question of right on the part of the prosecutors of the Rutland and Whitehall railroad to build a road in opposition to that of the Rutland and Washington company—was to come before the U. S. Circuit Court at Rutland last week.

Alabama.

Mobile and Ohio Railroad.—Messrs. Riddle and Co., contractors for grubbing, grading, etc., of sections 16 to 23 of the Mobile and Ohio railroad, broke ground on Monday last. One hundred men are now at work, and as tools and implements are received the force will be increased. This is the beginning of a work, which, when completed, will make Mobile, what we all desire to see, the second city at least on the Gulf.—*Mobile Tribune, 20th.*

Pennsylvania.

The Philadelphia North American says that the Pennsylvania railroad company have concluded an arrangement with the Harrisburgh and Lancaster railroad company by which the cars of the former will also run upon the road of the latter. Passengers and freight can now be conveyed the entire distance without change or transshipment.

Iron Manufacture.

The following is a description of a new process for the production of iron.

There has just gone into operation at Booneton, N. J., a triple chamber, the invention of Mr. S. S. Salters, of Newark, into the upper chamber of which good iron ore (any of which does not turn out a great deal of slag) and anthracite coal, pulverized and mixed, are placed, and, fire being applied, the coal is consumed and the ore melted; whereupon it is allowed to descend into the next, (but not exposed to the air at any time,) and finally drawn off at the bottom, fully transformed into Malleable wrought iron or blooms, ready to be rolled or hammered as may be desired. It is asserted by the patentees that good wrought iron, such as would now command \$45 in this market, can be manufactured by this process at \$30 per ton. Some very fine samples of this iron are now on exhibition at the fair.

New Hampshire.

New Hampshire Central Railroad.—Directors for the ensuing year:—David Steele, of Goffstown, President; Moses A. Hodgdon, and Moses Sawyer, of Weare; Horace Childs, of Henniker; Perry Richards of New Boston; Bartholomew Smith of Bradford, and George W. Pinkerton, of Manchester.—Sainuel H. Price, Agent. The reports presented an encouraging account of the progress and prospects of the enterprise. The work is more than three-fourths done on the entire line from Manchester to Henniker. About sixteen miles of the road will be opened for travel this fall, and to Henniker early next season. The cost from Manchester to Henniker, including the rails and bridge across the

Merrimack, comes within \$15,000 per mile. The bridge cost less than 26,000 dollars.

Gold in Indiana.

Gold is known to exist in Morgan county, Indiana. The particles of the precious metal are found in the soil, from which they are separated by washing. The largest piece which was yet found weighed a pennyweight and a third. The particles are generally very small, and do not weigh over the thirtieth of a grain. They are scattered everywhere through out the tract of country. Where the most abundant, two quarts of earth yield from twenty to fifty particles.

NEW-LONDON, WILLMANTIC AND PALMER RAILROAD.

This Railroad, extending 62½ miles from the harbor of New London on Long Island Sound, to Palmer, on the Massachusetts Western Railroad, 15 miles east of Springfield, is rapidly approaching completion, and finishes the series of Railroads running north and south through the natural valleys into which the State of Connecticut is divided, namely:

1. The *Housatonic Valley*; traversed by the Housatonic Railroad, from Bridgeport to West Stockbridge, (95 miles.)
2. The *Naugatuc Valley*; traversed by the Naugatuc Railroad from Stratford on Long Island Sound, north to some point on the Western Railroad, (about 50 miles opened.)
3. The *Farmington Valley*, in which is located the Canal Railroad, from New-Haven north, crossing the Western Railroad, to Northampton, Mass.—31 miles opened.
4. The *Connecticut River Valley*, traversed by the New-Haven and Hartford, and Springfield Railroads, from New Haven to Springfield, Mass.—60 miles.
5. The *Thames and Willimantic Valleys*, traversed by the New London Willimantic and Palmer Railroad, extending from New London via Willimantic, to Palmer, on the Western Railroad—62½ miles.
6. The *Quinnabaug Valley*, traversed by the Norwich and Worcester Railroad, which extends from Allyn's Point, on the River Thames, 7 miles below Norwich, to Worcester, Mass.—66 miles.

The total length of these Railroads, when all are extended to the Massachusetts Western Railroad, will exceed 420 miles, and their whole cost will be \$10,000,000.

The New London Railroad, was chartered in May, 1847; the line put under contract in 1848, and the work commenced in August of the same year. It has been carried forward with great success and economy, and is now so far completed that cars will be run on the road from New London to Norwich (12 miles) before the 1st of November ensuing; to Willimantic (28 miles from New London) on or before the 1st of December, and to Stafford Springs, near the north line of the State, about the 1st of January, 1850—leaving about 16 miles to the Palmer depot, to be completed early next Summer.

The estimated cost of the Railroad and equipments was \$1,182,000, but in consequence of a saving of \$150,000 on the estimated cost of the iron rails, and advantageous contracts, the Directors contemplate keeping the total cost of the work below \$1,000,000, or a little over \$16,000 per mile; while the average cost of ten of the cheapest Railroads hitherto constructed in New England has been over \$35,500 per mile.

The New London Railroad will connect at Willimantic, manufacturing borough, with the Hartford, Providence and Fishkill Railroad, which will be completed from East Hartford to Willimantic, as we are informed, before the 1st of December next, thus opening the facilities of Railroad communication to New London, Norwich and other sections of the eastern part of Connecticut with Hartford, New-Haven and New York; beside furnishing the most convenient route to Albany, Troy and the West, and affording to many now sequestered towns the same advantages which have been enjoyed by larger cities and towns on the most favored routes.

At Norwich Landing the New London and Palmer and the Norwich and Worcester Railroads are located within a quarter of a mile of each other, and it is thought by those interested that the mutual interest of both Companies will soon cause a junction of the roads to be constructed at that city.

The general valley in which the New London

Railroad is located is well defined by natural boundaries—namely the ranges of mountains and hills on the east and west. The western range extends from Cobalt Hill, near Middletown, to the interior of the State of Massachusetts. The eastern range is somewhat broken, and extends from the bluffs at Norwich to Mount Adams, also in Massachusetts. The immediate region thus bounded is the channel through which several rivers flow to the oceans. These with their tributaries, furnish a large amount of water power. This Railroad connects the great northern and central valleys of New England with New London, the only feasible ship harbor in the State of Connecticut—a harbor not surpassed in magnitude, ease of access in all seasons, depth of water and safe anchorage, by any harbor in the Northern States.

The work owes its origin, progress and flattering prospects mainly to the enterprise of the people of New London, and will add greatly to the convenience of the traveling and business public, as well as aid in farther developing the resources of an interesting section of New England.—*N. Y. Tribune.*

The Late Accident at the Britannia Bridge.

At the request of Mr. Webster, Mr. Robert Stephenson, gave a brief account of the accident to the hydraulic press which lifts the tube at the bridge across the Menai Straits. He proceeded to explain the precautions that had been taken to avoid the consequences of any accident. It was originally intended that the tube should be lifted 6 feet, that a link should then have been taken off, and the space built up. This was happily not carried out, and such was the care taken, that as the tube rose, men were stealing in, so to speak, small planks of timber. But for these precautions the fall would have been fatal to the whole structure, for as it was, it fractured bearers of cast-iron upwards of 500 tons weight. The tube was never for a moment suspended in air, and he had since taken the additional precaution of packing the space between the cross-heads and the pump with small iron wedges. No accident could now take place. The fracture in the cylinder occurred in what might have been considered the very strongest place. The pressure at the time was no more than 3½ tons to the square inch, no means an unusual pressure. As connected with the cause of the accident, he might state that a short time previously, when the presses on both ends were working simultaneously, it was remarked that the tube had a strange tremulous motion along its whole surface. In a short time it increased, until the vibration assumed the character of a short wave. At every action of the pump the whole mass seemed to acquire a state of pulsation, comparable to nothing but the pulse of a man's arm. The presses were stopped and since they have only been worked at one end. With respect to the immediate cause of the accident, he might state that the shape of the cylinder-square was not the best, and no doubt the weakness had arisen from unequal cooling. Only one of the presses was at work when the accident occurred.—Dr. Robinson, in moving the thanks of the meeting to the President, remarked upon the singular fact of the vibration spoken of by Mr. Stephenson. He (Dr. Robertson) presumed that the motion in the end of the tube being raised, was reflected from the fixed end, and hence the vibration.—Mr. Stephenson said that the fact of his having allowed the damaged cylinder to be used after he knew it was faulty had been strongly commented upon. In answer to that accusation of indiscretion, he begged to state that the fault lay in the collar of the casting, where no pressure came.—Mr. Roberts, remarked that the way to obviate vibration was to work the engines at unequal speed. He considered that the shape of the casting was bad, and the mode of casting also not the best. It would greatly improve the strength of such work if spiral casting were to be adopted; that is, to pass the metal into the mould in a spiral direction.—Prof. Willis and Mr. Webster, followed with some remarks on the interesting subject of vibration; the latter gentleman considering that the pulsation spoken of might have had some influence in causing the fracture. There might be a conspiracy of vibration in the tube and the press which would destroy the cohesion in the particles of the metal, and cause the fracture. After few other conversational remarks from Mr. Eaton Hodgkinson and others, the subject dropped.—*Mining Journal.*

To the Editor of the American Railroad Journal.

Londoning Oct. 10, 1849.

Sir—The apparent anomaly of the greater density of fluid cast iron over the same iron when in the solid state, referred to in the letter from N. M. Stratton, to Horatio Allen, Esq., published in your No. 38, is fully susceptible of explanation.

When crude iron is exposed to a high temperature, it follows the same invariable law of expansion as other bodies, until it reaches a degree of heat (generally estimated a little below 3000° Fahrenheit,) when its crystalline structure is destroyed and when it passes into a fluid state—at that moment it changes from a state of its greatest expansion into a state of greatest density. In that state of fusion solid crude iron of the same quality will float upon it, but not until by the heat of the melted iron the solid piece has been greatly expanded; cold iron will sink at first.

At the moment of solidification of fluid cast iron it assumes a crystalline structure, and therefore expands, the same as water when it freezes into ice, a circumstance familiar to every one. Bismuth, zinc and sulphur are possessed of the same quality, and it is just this quality that makes crude iron so applicable and valuable for castings—inasmuch as by this momentary expansion, at the instant of solidification, it fills all the forms and minutest impressions of the mould. Having done this in the act of crystallization then the ordinary law of contraction by diminution of temperature comes into action and causes the diminution of bulk or shrinkage, which relates however not to the iron in the fluid state, but only to the iron at the moment of solidification or crystallization when it has its greatest bulk or expansion. C. E. DETMOLD.

Ship Building in New York.

The amount of tonnage launched from the various yards of New York city and its suburbs, since 1st of January last, or now on the stocks:

	Tonnage Launched.	Tonnage on Stocks.
Total.....	20,251	28,960
" for the whole year ending Jan. 1st., 1848.....	36,649	15,710
" for the whole year ending January 1st, 1847.....	39,718	29,870

—showing a fair amount of tonnage on the stocks, (a large proportion of which will come off before January next,) especially as contrasted with last year, when the shipping interest suffered a very apparent collapse from the heavy freighting business of the year of the European famine, and consequently but little disposition to build was manifested.

The above enumerated vessels may be recapitulated in the following synopsis of the classes:—

	Steamships	Steamboats	Ships	Barks	Schooners	Ferry Boats	Barge
Launched...	2	6	9	2	3	6	1
On Stocks...	3	5	12	1	—	—	—
	5	11	21	6	3	6	1

Making a total of fifty vessels, the value of which is not far from three millions and three hundred thousand dollars. It is noticeable that a more than usual number of the larger class are constructed with 3 decks, which may be attributed to the passenger law of 1847, regulating the number of passengers by a vessel's measurement, and not by her tonnage. Each individual is allowed by this fourteen superficial feet, so that by slightly increasing the depth of hold, a third deck is added, and an increase of capacity for passenger carriage given her far exceeding the increased custom house measurement.—*N. Y. Jour. of Com.*

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse, NO. 19 NASSAU STREET, NEW YORK.

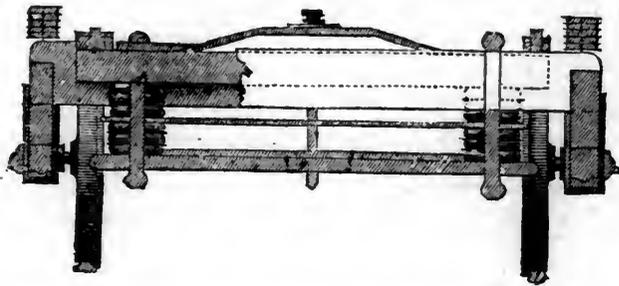
Articles which this Company has the exclusive right to make comprise in part

- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggins, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Water Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Matrass Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Shower Baths, |
| Pants, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders, |

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

* * * All orders for special articles to be manufactured, should be accompanied with full descriptions and drawings. October 20, 1849.

**FULLER'S PATENT
INDIA RUBBER CAR SPRINGS.**



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorised to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised), was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York, General Agent for the U. S.; and JAS. LEE & Co., 18 India Wharf, Boston. JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
580 " " 53 " "

of the latest and most approved patterns. For sale by BOORMAN, JOHNSTON & CO., 119 Greenwich street.

New York, Oct. 13, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffer's MUNICH GLASSES, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip. New York, May 19, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

RAILROAD

India-rubber Springs.

IF any Railroad Company or other party desires it, the New ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS, }
Philadelphia, April 2, 1849. }

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings.

NORRIS, BROTHERS.
For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

141f

**NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.**

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
Chilled Wheels for Cars, Tucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Braas Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. M. M. White, Agent,
au7f No. 74 Broadway, New York.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1849. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
A Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the deli-
very of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms. **ILLIUS & MAKIN.**
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Merrill & Co., New
York; E. Pratt & Br: 1 et al, Es. Annapolis, Md.

**LAP—WELDED
WROUGHT IRON TUBES**
FOR
TUBULAR BOILERS,
FROM 1 1/2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron. **THOMAS B. SANDS & CO.,**
22 South William street,
February 3, 1849. New York.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potte-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Rail-
er rivets; Copper; Pig Iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
leghany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.

October 30, 1843.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

- 150 tons No. 1 Boonton Foundry Pig Iron.
 - 100 " No. 2 do. do. do.
 - 300 " Nos. 2 & 3 Forge do. do.
 - 100 " No. 2 Glendon do. do.
 - 140 " Nos. 2 & 3 Lehigh Charcoal do. do.
 - 100 " No. 1 Pompton Charcoal do.
 - 100 " New-Jersey Blooms
 - 50 " New-Jersey Faggoting Iron, for shafts
 - Best Bars, $\frac{1}{2}$ to 4 inch by $\frac{1}{4}$ to 1 inch thick.
 - Do do Rounds and Squares, $\frac{1}{2}$ to 3 inch.
 - Rounds and Squares, 3-16 to 1 inch.
 - Half Rounds, $\frac{1}{2}$ to 1 in. Ovals & Half Ovals $\frac{1}{2}$ to 1 $\frac{1}{2}$ in.
 - Bands, $\frac{1}{4}$ to 4 inch. Hoops, $\frac{1}{2}$ to 2 inch.
 - Trunk Hoops, $\frac{1}{2}$ to 1 $\frac{1}{2}$ in. Horse Shoe & Nut Iron.
- DUDLEY B. FULLER & Co.,** 139 Greenwicht-st. and 85 Broad-st.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.,
 63 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. **D., B. & Co.**
 Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
 Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from $1\frac{1}{2}$ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
 May 28, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete
 Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

- 300 Tons A 1, Iron Dale Foundry Iron.
 - 100 " 1, " " " "
 - 100 " 2, " " " "
 - 100 " " Forge " "
 - 400 " Wilkesbarre " "
 - 100 " "Roaring Run" Foundry Iron.
 - 300 " Fort " " "
 - 50 " Catoctin " " "
 - 250 " Chikiswalungo " " "
 - 50 " "Columbia" "chilling" iron, a very superior article for car wheels.
 - 75 " "Columbia" refined boiler blooms.
 - 30 " 1 x $\frac{1}{2}$ Slit iron.
 - 50 " Best Penna. boiler iron.
 - 50 " "Puddled" " "
 - 50 " Bagnall & Sons refined bar iron.
 - 50 " Common bar iron.
- Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, Hot Blast Charcoal Pig Iron made at the Catoctin (Maryland), and Taylor (Virginia), Furnaces; Cold Blast Charcoal Pig Iron from the Cloverdale and Catawba, Va., Furnaces, suitable for Wheels or Machinery requiring extra strength; also Boiler and Flue Iron from the mills of Edge & Hillis in Delaware, and best quality Boiler Blooms made from Cold Blast Pig Iron at the Shenandoah Works, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.
 American Pig Iron of other brands, and Rolled and Hammered Bar Iron furnished at lowest prices. Agents for Watson's Perth Amboy Fire Bricks, and Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from $1\frac{1}{2}$ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

WILLIAM JESSOP & SONS'

CELEBRATED CAST-STEEL.
 The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other purposes.
 German Steel—flat and square, "W. I. & S." "Eagle" and "Gos" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of Rolls (Rollers), both chilled and dry-sand, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.
FRANKLIN TOWNSEND & CO.
 Albany, August 18, 1849.

Norwich Car Factory,

NORWICH, CONNECTICUT,
 AT the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of
RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ:
PASSENGER, FREIGHT AND HAND CARS,
ALSO, VARIOUS KINDS OF
ENGINE TENDERS AND SNOW PLOUGHS.
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.
 Orders executed with promptness and despatch.
 Any communication addressed to
JAMES D. MOWRY,
 General Agent,
 Norwich, Conn.,
 Will meet with immediate attention. 1y8

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,
SUCH AS
PASSENGER, FREIGHT AND CRANK CARS,
— ALSO —
SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.
CAR WHEELS and AXLES fitted and furnished
 at short notice; also, **STEEL SPRINGS**
 of various kinds; and
SHAFTING FOR FACTORIES.
 The above may be had at order at our Car Factory,
REUEL DEAN,
ELIJAH PACKARD, } **SPRINGFIELD, MASS.**
ISAAC MILLS, } 1y48

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL
 superior quality for Locomotives, for sale by
H. B. TEBBETTS,
 No. 5 $\frac{1}{2}$ Pine St., New York. 1ml9
 May 12, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains. They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,** Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.
or, **L. CHAMBERLAIN, Sec'y,** at Beaver Meadow, Pa.
May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—*Fowler's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.
HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them. It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable. Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:
2 Wrought Iron Cranks, 60 inches from centre to centre.
1 Do. do. Connecting Rod Strap.
2 Do. do. Crank Pins.
1 Eccentric Strap.
1 Diagonal Link with Brasses.
1 Cast Iron Lever Beam (forked).
The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to
HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.
Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.
P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.
Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.
In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.
An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.
All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained. Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.
HART & MUNSON,
Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.
This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationery Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.
JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, BALTIMORE, MARYLAND.
Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)
They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.
All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.
Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of **RAILROAD CARS, Viz:**
Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.
They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.
All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.
For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of **SCHOOLS** and **SELF-INSTRUCTION**, containing:
1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.
2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.
3d. An introduction to *Isometrical drawing*, with 4 plates of examples.
4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.
5th. Examples for the projection of shadows.
The whole illustrated with 50 STEEL PLATES.
Published by **WM. MINIFIE & CO.,**
114 Baltimore St., Baltimore, Md.
Price \$3. to be had of all the principal booksellers.

To Engineers and Surveyors.

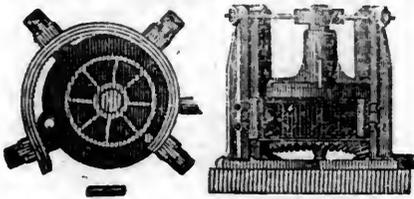
E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

F. S. & S. A. Martine,

IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc., 122 William Street,
Ferdin'd S. Martine, N. York. Steph. A. Martine.
3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting, Plushes, etc.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

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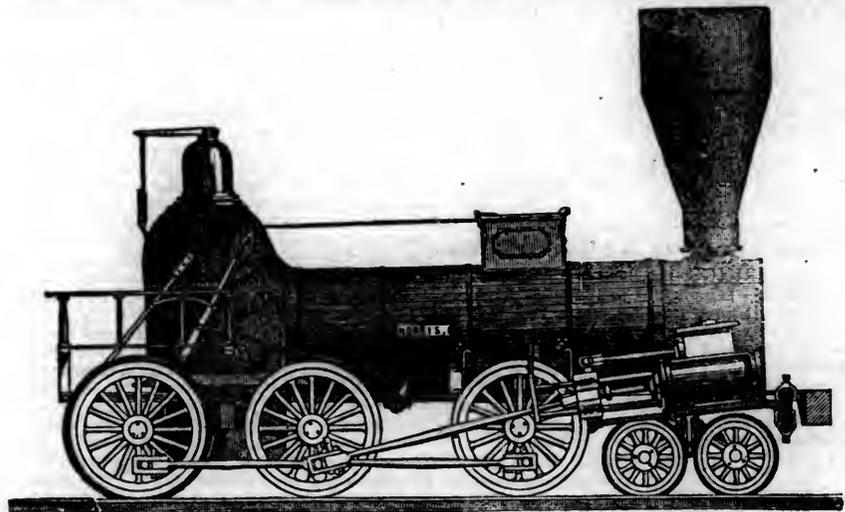
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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, October 27, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 657.

NEW YORK

ST. LAWRENCE DISTRICT.

The principal establishment making use of the specular ores is the furnace at Rossie, ten miles from the St. Lawrence river, belonging to George Parish, Esq. Formerly there were two furnaces here, but in 1843 they were converted into one. This is a large stack 45 feet high, and 10 feet across the boshes, and is blown with the hot blast. The machinery is of the most perfect construction, and the water power on Indian river ample for the work. The accompanying outline represents the form of the furnace. The mines, distant 12 miles from the furnace, have been already described. The transportation of the ores is effected principally in the winter, at an expense not exceeding one dollar per ton. Mining the ore is estimated at the same price.— Their yield is at least 60 per cent., and consequently less than two tons are required to the ton of iron. The charcoal is prepared from hard wood, delivered

at the kilns near the furnace at a cost not exceeding one dollar per cord. Of these kilns there are nine,



holding about 60 cords each. The abundance of wood near the works will long ensure supplies of fuel at

the lowest rates. The flux is clay with a little sand.

In the furnace the ores work hard, but when the heat is once up they make iron fast. The blast is found to do best with the pressure of only nine-tenths of a pound to the square inch. I have not the size of the nozzles. The cinder is small in quantity and thin. The yield of the furnace is about ten tons a day, mostly of foundry iron; some No. 3 iron is made, but it is a poor quality of forge pig. The iron is carted two miles, and then put on board of steamboats for Buffalo and other ports; the cost of transportation varies from \$3 to \$4—probably averages \$3 50 per ton; but for five or six months in the year the navigation of the St. Lawrence is closed. Some of the iron is sold in Canada. The new railroad in progress to Ogdensburg creates a new demand for large supplies of castings, and when completed will afford new facilities of transportation.

From the resemblance of the ores to those of the Island of Elba, it is probable that such furnaces as are in use for smelting these, as at Follonica in Tuscany, would prove highly successful in St. Lawrence county. The remarkable workings of these furnaces have been particularly described in the numbers of this Journal for the month of May last. The furnaces of the Iron Mountain, Missouri, also make use of similar ores, and are constructed after the plan of the Tuscany furnaces. Though only seven feet across the boshes and twenty-seven feet high, they make as much iron as the Rossie furnace, which is as capacious again. The Missouri iron is beside good forge pig.

The furnace of Messrs. Skinner & Blish in Rossie, I am informed is supplied with ores from the Kearney and Sterling beds, three and five miles distant, and makes about 1800 tons of iron per annum.— The cost of ore is estimated at from \$2 75 to \$3 00 per ton.

The Fullerville furnace in Fowler is an old stack, and is run only a few months in the year. Professor Emmons states in his report, page 345, that good tough and soft bar iron has been made here from the specular ores. Quantity estimated at 600 tons per annum.

Of the Canton Falls furnace the only data I have are those comprised in the table on page 497.

The Brasher furnace, owned by Wm. H. Alexander, Esq., of Syracuse, according to data furnished me by Hon. J. G. Hopkins, makes from bog ores 800 tons of pig metal per annum, at the following estimate of cost:

Ore, 5 tons at 1 50.....	\$7 50
Coal, 200 bush. at 4 1/2.....	9 00
Labor.....	5 00
Repairs.....	1 00
	\$22 50

Two forge fires in Brasher, owned by Isaac W. Skinner, Esq., make use of the same ores for the manufacture of bar iron, of which they produce about 100 tons per annum, at the following items of cost:

Ore, 8 tons.....	\$12 00
Coal, 500 bush.....	22 00
Labor.....	2 00
Repairs.....	2 00
	\$56 00

The *Antwerp and Sterlingville furnaces* are both owned by James Sterling, Esq. The former was built in 1847. It makes use of the same ores as the Rossie furnace, being only five miles from the Parish bed. There is also within a mile of the furnace another bed of "Red Paint ore," as it is called, known as Weeks'. This is of shelly structure and pure quality. It is used mixed with equal quantities of the Parish ore. It has the advantage in cheapness, and is thought to melt more easily than the Parish ore. The furnace is run with cold blast, and makes more hard iron than the Rossie furnace.

It is esteemed sufficiently good for the manufacture of bars for car axles, for which purpose it is used at Rochester. Wood is obtained at similar cost to that at Rossie; but the furnace having no kilns, charcoal probably stands somewhat higher. The iron is hauled 16 miles to Sackett's Harbor, and there shipped.

The *Sterlingville furnace* is within eight or nine miles of Sackett's Harbor, and about sixteen miles from the Parish bed, and ten from Weeks'. These ores are drawn mostly in the winter at a cheap rate. The former ore, however, is not much used. The furnace is run by water power and with hot blast. It makes from three to four tons a day, principally foundry iron: a portion is run directly into castings; the remainder into pigs, which are re-melted in a foundry on the spot.

At *Carthage* there are two old furnaces, but only one is used. This is leased by Dr. Budd and Wm. Bones, Esq. It is situated on excellent water power and is run either with hot or cold blast. With the former it makes about four tons a day, and with the latter about four and a half tons. The ore is supplied principally from the Parish bed; bog ores were used some time ago, but are now exhausted. Perhaps no ores in the country are hauled so great a distance over common roads as those used by this furnace—the distance to the Parish bed being 24 miles. The expense of this transportation is \$3 per ton of ore. One ton and three quarters are required to the ton of iron. This item, including mining, is then about \$7, beside the cost of the ore in the bed. The furnace makes foundry iron only, all of which is sold to the foundries near by.

Of the *Scriba furnace* I have no details beside those included in the table of the New York furnaces, on page 497.

Several forge fires beside those mentioned are in operation in this county, but the amount of bar iron they produce is not large.

ONTARIO DISTRICT.

The district of iron ores, I have designated by the name of Ontario, is a narrow strip of territory a few miles south of Lake Ontario, and nearly parallel with its southern shore. Where the lake shore, however, trends towards the northeast near Oswego, the outcrop of the geological formation containing

the ores continues an easterly course including Oneida lake in its range; against which is its greatest width. Though the same formation may be traced parallel with the Mohawk river, and a few miles south of it, as far to the eastward as Sharon (south of Canajoharie), and westward as Niagara river, it appears to be only about Oneida lake, and thence to the Genesee river, that it is productive in iron ores in the State of New York. The formation is that group of red and variegated slates, and shales, called in the New York Reports the *Clinton group*, and in the Pennsylvania Reports, *Formation No. V.* Its geological position in the series of secondary stratified rocks is, generally described, above the Trenton limestone, and below the Niagara limestone, which is itself below the old red sandstone.—Like all the strata of this region these slates and shales have a general dip towards the south; but this is so slight, that seen at any one locality only, they generally appear to lie horizontally.

The ore is called in the New York Reports, *lenticular clay iron ore*. In Pennsylvania it is generally known as the *fossiliferous iron ore*. It is interstratified with the slates, generally in two beds or layers, one of which is about twenty feet above the other. In some instances in Oneida county three beds have been found; but in many places the ore is worked from only one. Its greatest thickness does not exceed three feet, and would probably not average over one foot. Though so thin a stratum, it is by no means expensive to mine, when it is found spreading over the country but a few feet below the surface. As its depth increases, however, it ceases to be followed. Maintaining its thickness and character with remarkable uniformity over large districts a few exposures afford sufficient data to determine with accuracy the number of tons in any number of acres; and the cost of extraction at any given depth is already pretty accurately ascertained by experience.

In composition the ore is a peroxide of iron, with a large but varying percentage of carbonate of lime and other earthy matters. Its proportion of iron is also very variable, as seen in the two analysis given below. According to a chemical examination made by Prof. J. C. Booth, of Philadelphia, of the same variety of ore found in Pennsylvania, an account of which is given in the 28th vol. of the Journal of the Franklin Institute, it would appear to contain a small percentage of titanate acid. The two following analyses are published in the State Mineralogical Report of Dr. Beck, p. 28. The one is of a specimen from Wolcott, Wayne county, the other of one from Rochester.

I.	
" Peroxide of iron.....	51.50
Carbonate of lime.....	24.50
Carbonate of Magnesia.....	7.75
Silica.....	6.00
Alumina.....	7.50
Moisture and loss.....	2.75

II.	
Peroxide of iron.....	42.93
Carbonate of lime.....	28.33
Carbonate of Magnesia.....	10.40
Silica and alumina.....	17.66."

The percentage of iron in the one is 36; in the other, 30. In Pennsylvania this ore varies from 30 to 58 per cent. of iron.

From its large proportion of calcareous matter, it is evidently an ore that must work freely in the blast furnace, and require mixtures of siliceous matters as fluxes, rather than limestone. Iron pyrites is of frequent occurrence scattered in the ore; and according to its quantity must serve to impair the

quality of the bar iron. In color and general appearance the ore is not much unlike some varieties of the peroxide, already described, of the St. Lawrence district, particularly when in a powdered state—like this staining whatever it comes in contact with, and being suitable for the manufacture of red paint. It has not, however, the hardness of the specular ore, and is of very different structure. This is what is called oolitic—made up of fine rounded grains like the roe of a fish. Specimens from the lower bed display this structure more particularly; but those from the upper are of coarser texture, and contain many fossil remains of shell fish, corals and encrinites. It is these which give it its name of fossiliferous ore in Pennsylvania. The iron made from it is found to be better adapted for foundry than for forge purposes, and it meets with a ready sale at the different foundries in the principal towns of this part of the country.

Charcoal is not expensive in this district, as one would suppose from the country having been so long settled. The forests of heavy hard wood timber are still very extensive; and as they are cleared off the fuel can be afforded at low rates in consequence of the increased value given the land for purposes of cultivation. The price of charcoal delivered at the furnaces varies from four dollars to six dollars per hundred bushels; and as yet there is no scarcity of it.

Fire stones for hearths and excellent building stones are obtained from the sandstone formations contiguous to the strata containing the ores.

The names of the furnaces using these ores have been given on page 497 of the Journal. Others have been in blast, of which I have no certain account, as in Sodus, Westmoreland, Franklin and Lennox.

Constantia Furnace.—This is in Oswego county, on the shore of Oneida lake; it was built about 30 years since. The stack is 32 feet high and 9 feet across the boshes. These slope, like the boshes of some of the furnaces in the Lake Champlain district, at three angles of 60°, 55° and 50°. The hearth is five feet high. The furnace is run by water power with hot blast. The ores are from Clinton and Verona; those from the latter are considered more calcareous than those from the former. Obtained for the most part near the surface, they cost for mining about half a dollar per ton. The owner of the land receives twelve and a half cents, and thirty seven and a half cents are paid for transportation to the canal; thence to the furnace the charges are seventy five cents more. It would be about a fair allowance to rate the ore at \$2 10 per ton at the furnace. Charcoal costs delivered from five to six cents per bushel. Freight on the iron to Syracuse is seventy five cents.

The yield of the ore, as I am informed by Jonas Tower, Esq., who has charge of the furnace, is from 48 to 52 per cent. of pig metal; and the production per week has been from 16 to 28 tons a week, until by the use of his patent mode of grouting the flux, he has brought it up to from 33 to 40 tons per week. The quality is foundry iron only. It is taken to Syracuse and Utica and sold to the foundries for the manufacture of castings, bringing heretofore from \$28 to \$30 per ton.

With a consumption of 150 bushels of charcoal, the following will represent about the cost of production:

Ore, 2 tons at \$2 10.....	\$4 20
Charcoal, 150 bushels at 5 1/2 cts..	8 25
Flux, 25 cts., Labor \$2 50.....	2 75
Repairs, superintendence & int..	2 50

\$17 50

Taburg Furnace, in Oneida county is of similar character to the Constantia furnace, and makes use of the same varieties of ores, with about the same cost of materials.

Clinton Furnace, Wayne county, two miles from Lake Ontario; built in 1848; owned by Messrs. Bacon & Cheney. It is 35 feet 6 inches high, and 8 feet 9 inches across the boshes; these slope 55°. The hearth is 5 feet high. Tunnel head 2 feet in diameter. It is blown with hot blast through two tweres. The production is at the rate of about 2000 tons per annum of foundry iron. The ores, belonging to the company, are obtained near the furnace.

The bed averages about three feet thickness, and lies within three feet of the surface; it furnishes oolitic ore, not fossiliferous, which is used without being roasted. From the prevalence of sulphuret of iron in the ores of this formation, they would all seem to require this preparation for the furnace.—The expense of mining is only 33 cents per ton; and the whole expense of the ore delivered at the tunnel head is estimated at only 62½ cents per ton. Charcoal, a part of which is made in two kilns belonging to the furnace, costs delivered only four cents a bushel. The flux is sand and a little clay. The iron is hauled to Rochester, 18 miles distant, for \$2 50 per ton. Allowing two and a half tons of ore to the ton of iron, the following is an estimate of the cost of manufacture:

Ore, 2½ tons at 62½ cts.....	\$1 56
Charcoal 150 bush. at 4 cts.....	6 00
Flux, 25 cts., Labor, 2 50.....	2 75
Supl., repairs and interest.....	2 50
	\$12 81

This estimate is remarkable for the extremely low amount of its items. The locality possesses advantages rarely combined, enabling the company to furnish iron at as low a rate probably as any charcoal iron in the United States.

Ontario Furnace.—This is the old Ontario furnace, rebuilt in 1848 by Messrs. Titus & French of Rochester. It is a mile and a half from Lake Ontario, and a mile and a half from the Clinton furnace. It is 28 feet high, 8 feet bosh, with a hearth 5 feet 6 inches high, 2 feet square at bottom, and 29 inches at top. It makes five tons of foundry iron a day. Ore is from the Clinton furnace bed, a mile and a half distant, and from another bed near by; which is mentioned by Prof. Hall in the State Geological Report, as being three feet thick, and fifty feet above the level of Lake Ontario—the ore fossiliferous. The cost delivered is estimated at 75 cents a ton. Charcoal being rated at \$4, the cost of the ton of pig metal is not materially different from that of the Clinton furnace, the estimate of which is just given.

Wolcott Furnace, Wayne county, Messrs. Livingston & Hendricks proprietors. This is an old furnace, situated about four miles from the Clinton furnace, with whose ores it is supplied. It is run with water power and with hot blast. Ores estimated to cost from \$1 25 to \$1 50 per ton delivered. Charcoal of good quality \$4 per hundred bushels. The furnace makes about three and a half tons of iron a day. It uses the same weight of flux (which is loam) as of ore. This proportion, unless the ores are of unusual richness, would seem to bring down the per centage of iron in the whole solid materials employed, to a very low figure—except, indeed, the loam itself is highly ferruginous. The iron is hauled—a part of it five miles, and a part nine miles to the railroad, to be there transported to Geneva and Rochester. H.

Southern and Western Agricultural Interests.

SKETCHES OF TEXAS.

Alluvial Prairie—Sugar District—Climate.—The agricultural importance of Texas is attracting much attention, and nowhere is the subject more interesting than in this city, which is to be the commercial entrepot of the products of that fertile region. The writer of this article having had the opportunity of making a personal examination of a considerable part of Texas, and of comparing its productiveness with that of other Southern States, is enabled to furnish some details that would doubtless be interesting to many. The sugar region is the low alluvial prairie extending along the coast of the Gulf from the Sabine to the Nueces river, and from the coast into the interior, a distance varying from thirty to one hundred miles. The whole of the prairie being, as is supposed, of alluvial formation, is, with the exception of a small proportion, less than the average in Mississippi and Louisiana, susceptible of cultivation, and some portions have a depth of soil and exuberance of fertility that is unsurpassed by the choicest lands to be found on the Mississippi river. The wooded bottoms on the rivers and small streams have the preference, from the fact that by frequent overflows the accretion of vegetable soil is greater than in the open prairie. Nothing, indeed, can exceed the beauty of the forests that skirt the rivers on both sides several miles in breadth, the magnolia, wild peach and cane, being intermingled in profusion, and furnishing evidence of an exhaustless fertility. Such especially is the character of the forests on the Trinity and Brazos. But although a discrimination is made in favor of these lands by most purchasers, so far as it respects the price, yet it is questionable whether the prairie is not, on the whole, more desirable for agriculture in the early settlement of the country. The depth of soil is sufficient—the expense of clearing off a heavy growth of timber is avoided—and the danger of health, which exists in every new country on first turning up the soil for cultivation, is much less. The lands in the vicinity of Galveston Bay have been found well adapted to the raising of sugar. On one plantation between the Bay and Trinity river, a secluded piece of ground in the open prairie, which had been cultivated on experiment, produced the last season two hogsheads of sugar to the acre, as I was credibly informed. Kennedy states, in his History of Texas, that 3,500 lbs. of sugar to the acre had, within his personal knowledge, been raised on a sugar estate.

A statement was recently published in Galveston, showing the products, during the last season, of six sugar plantations in the neighborhood of the Brazos river, exhibiting an average of one and a half hogsheads to the acre, estimating 1,000 lbs. to the hogshead; but the proportion in some of them was much greater. Indeed, the cultivation of sugar is yet in too imperfect a state to admit of an exact estimate of what the capacity of soil will be under a more improved system of agriculture, such as has been attained on the best plantations in Louisiana. It is a fair result, from all the statistics that I have seen, that under all the present advantages of sugar culture in Texas, the average production of the lands under cultivation is 1,800 lbs. to the acre—which I believe, is greater than the ordinary production of Louisiana estates.

The climate of this part of Texas has been supposed to be oppressively warm; but this is not the case. The range of the thermometer is higher than it is in this latitude, taking the whole season together; but the heat of summer is by no means so prostrating as it is here at the same temperature. Indeed, the summer months are considered in Texas as agreeable, and a residence there during July and August is recommended to invalids as being more salubrious than during winter. This is owing to the constant breeze which comes up from the south-east, and which is so bracing that exercise in the open prairie is not attended with the same dangerous consequences that it is in other parts of the south in the extreme heat of midsummer. Any one, whose habits are good, will find a sense of enjoyment in that climate hardly experienced elsewhere—an elasticity of feeling that incites to enterprise and makes life agreeable. But, in order to attain this, temperature is a requisite; and it is worthy of remark, that the vice of excessive drinking, which

formerly prevailed in Texas, has latterly abated under the influence of the Sons of Temperance and the better knowledge of the means of preserving health, and we may hope soon to see the same standard of respectability, in this respect, that we are accustomed to at the North.—*De Bow's Commercial Review.*

Ivory as an Article of Manufacture.

At a meeting of the West-Riding Geological and Polytechnic Society, Mr. Dalton read a paper on this subject. He said there were several sorts of ivory, differing from each other in regard to composition, durability and external appearance, and also in value. The principal sources from whence ivory was derived were from the western coast of Africa and Hindostan. Camaroo was generally considered the best, on account of its color and transparency. In some of the best tusks the transparency could be discovered even on the outside of the tusks. Gentlemen were apt to be deceived with regard to transparency, because the manufacturer could mislead them by making it transparent by a process of his own. But the finger of time would soon indicate the deception. It was as well not to insist on having the most transparent kind; for if they got the genuine article, though somewhat brown at first, it would eventually become white. The African was the kind of which the best cutlery was made; and though its degree of transparency was not so great as the Camaroo, it was sufficiently beautiful in its color and fineness of grain as to render it suitable for the best kind of cutlery. But there was a third description, called the Egyptian, which had lately been brought into this country, which was 15 per cent. lower than the Indian, but was very wasteful in working. Mr. Dalton next gave a description of the specific gravity of the different kinds of ivory he had referred to. He had been furnished with an analysis to show the relative amount of animal matter in the three principal varieties of ivory. The African showed a proportion of animal over earthy matter of 101 to 100; the Indian, 76 to 100; and the Egyptian, 70 to 100. Thus, though the composition was much alike, yet there were those differences between the animal and earthy matter. He also showed the difference as to the quantity of dust used in the manufacture of gelatine. With respect to the increase in the manufacture of ivory, he said that it was now within the memory of man that there were not more than 15 per cent. workers of ivory in Sheffield; but now were upwards of 40 per cent. Forty years ago, there was only one dealer of ivory in Sheffield; at present there were five or six. The value of the animal consumption in Sheffield was about £30,000, and about 500 persons were employed in working it up for trade. The number of tusks to make up the weight consumed in Sheffield, about 180 tons was 45,000, the average weight of each being only 9 lbs. Many weighed from 60 to 100 lbs., so that some must be very small indeed. According to this the number of elephants killed every year was 22,500; but supposing that some tusks were cast and some animals died, it might be fairly estimated that 18,000 were killed for the purpose. This was a matter which was not generally known, it being a prevalent opinion that the tusks used for ivory were such as were cast by the elephants when alive.—*Min. Jour.*

Ship Building in the West.

The Cincinnati Atlas, of the 21st ult., has a summary of all the steamboats built in the United States from 1824 to 1848, inclusive. The entire number is estimated at 2,310. The present rate of steamboat building is about 200 per annum, of which more than two-thirds are built upon the lakes and western rivers, having no connection with the tide waters of the ocean. The official returns show for 1848 the amount of ship building and tonnage on the lakes and western rivers:

	No.	Tonnage.
Lake Ontario.....	35	3,727
Lake Erie.....	68	12,194
Lake Huron and Michigan.....	30	5,301
Mississippi river.....	38	6,256
Ohio river.....	150	25,253
Cumberland river.....	1	51
Total.....	302	52,688

Of the above there were—ships, 2; brigs, 13; schooners, 62; and steamers 130—making a total of 207. The total of the tonnage on the lakes and western rivers is about one-sixth of the whole of the tonnage of the United States, with an annual increase in a much larger proportion than on the tide water.

The Great Dam across the Connecticut River.

The event anticipated with so much interest, by all in this vicinity, and by multitudes in distant portions of this and the adjoining States, transpired yesterday. The dam was closed at twenty-two minutes before one o'clock in the afternoon. The prospect of a rain, and the possibility of a rise in the river, determined the agent of the company and the engineer engaged in its construction, upon shutting the gates without further delay. Notwithstanding the brief notice given of this decision, there were thousands upon the ground, on both sides of the river. In the course of the morning nearly a thousand eager witnesses arrived from the north, and express trains immediately commenced running from Springfield and Northampton, every one of which went packed to the fullest extent. Yet had the occurrence taken place on Tuesday, as was generally anticipated, the number must have been doubled. There were few ladies on the ground, owing, doubtless, to the state of the weather.

There were forty-four gates, each eighteen feet long, and sixteen feet wide. Alternate sections of these were closed at a given signal, by means of levers. They went down with an almost simultaneous plunge. Very soon the others followed, in the same order, and the Connecticut river was declared dammed. The water rose more slowly than was anticipated. At half past two the water was rising at the rate of one foot in forty minutes.

Almost immediately after the closing of the gates, the rocky bed of the river below was left dry, and the workmen on the dam with many of the spectators rushed in to make discoveries. Many of the tools lost in the water, while constructing the dam, were found, and some that were quite valuable.—The fish, eels, etc. that were left without a sufficient covering of the watery element, were taken out by the hand in quantities. The man who fell off the dam a few days ago, and who so narrowly escaped death, among the rocks and waves below, explored the route of his former journey with evident satisfaction, and doubtless regarded himself the hero of the day.

The dam is upon an average thirty feet in height from the bed of the river. In some places more and in some places less, according to the inequalities of the river's bed. A rough calculation of the amount of lateral pressure which the dam will be obliged to sustain gives nearly twenty-nine million pounds while the vertical pressure is about three times that amount. There have been used in its construction nearly four million feet of timber. In the construction of the abutment, guard gates and lock wall, at the head of the canal, there have been used 10,000 perches of stone. The measure is by what is termed the "railroad perch," each perch containing twenty-five cubic feet. The dam is 800 feet long, and the slope from the top to the bed of the river is 90 feet. The dam leaks a little, and but a little—not so much as the one which went of last year.—This is considered no fault, as a sufficient leak is necessary to keep all the timbers of the dam bathed in water, to prevent rot. If it does not leak enough for this, it will be made to leak more, by boring holes through it.

The magnitude of the work, and the immense results which will ultimately flow from it, constitute the peculiar charm which is attached to it, by many minds. The structure, however, considered alone, is a legitimate object of interest and admiration. There has not been a stone placed nor a timber laid, but what has been adjusted upon scientific principles, and the faithful and critical manner in which it has been reared to its completion, is, and will be, a lasting credit to the engineer, Mr. Anderson, and the contractors and mechanics under him.

At 7 o'clock last evening, the water lacked 10 feet of running over the dam, and was filling very slowly. At that time the water had fallen about 5 feet in the river at Cabotville, and opposite Springfield

between three and four feet, with scarcely a perceptible current.

POSTSCRIPT.—The water over—all right!—At six minutes before ten o'clock, last night, the dam was filled, and the water went over in good style. It began first on the east side of the dam, but was followed very rapidly throughout the entire length.—From the time the gates were closed till the water went over the dam, was 9 hours and 16 minutes.

YORK AND CUMBERLAND RAILROAD.

We find in the York Republican the recent annual Report of the President and Directors of this Company. It presents the following succinct and very satisfactory statement of the condition and progress of this important work:

The termination of the first corporate year of this Company being closed, in compliance with our charter requiring "the President and Directors of the preceding year to make a statement of the condition of the Company," this Board respectfully reports, that although the Company was organized on the 22d of September last, yet, that in consequence of the limit fixed by common agreement to our action, by a refusal to proceed until \$400,000 were subscribed, which point was not arrived at until nearly six months had elapsed, in consequence of which, we have had an actual corporate existence but for about half a year. In that period we have contracted for the construction of our Road, as already in a previous Report was stated to the stockholders, for \$525,000, of which sum, \$100,000 is payable in the stock of this Company. The work has since been re-let by the contractors, with the exception of the tenth section, which being very light work, has not been pressed. A large portion of the grading, which consisted of side cutting, has been executed, and some work done on the through cuts. The timber for the Bridges has been contracted for; some portions of the Masonry progressing, but owing to the extraordinary unhealthiness of the country for some weeks past, possibly owing to an unusually severe and protracted drought, it has become difficult to maintain a sufficient force upon the line to carry on the work with energy. It is hoped, however, that a few weeks more will find the healthfulness of the country restored by the salutary action of approaching Equinoctial gales and that our labors will not be interrupted hereafter by the prevalence of any general sickness, so that a sufficient force may be maintained upon the ground to insure the earliest possible completion of the work.

The books of the Treasurer exhibit as paid in upwards of \$120,000, out of which has been paid for engineering expenses \$6,928.40; for damages \$39,780.30; for incidental expenses, including \$1,500 paid to Mr. Keener, \$2,067.22; for salaries \$1,999.97; for construction \$28,313; and for purchase of real estate \$3,075.70; leaving a balance in hand of \$36,835.41. The purchase of this real estate, it had as well be remarked here, was made to avoid excessive damages, and reserving the ground for our track, will be resold as speedily as practicable, and it is believed with a considerable saving to the Company. The chief contractors, upon whom falls the duty of the purchasing the rails, have reported to us a contract with Bayley, Bios & Co., of England, a manufacturing establishment of the best repute in Europe, for the requisite quantity of rails, at the low rate of \$23.60 per ton there, and costing a fraction less than \$40 here. These rails are to be 61 pounds to the yard, of the U or bridge pattern, of the best material, and subject to the inspection of our Engineer on their arrival and subject to rejection if not approved of and we have no reason to suppose that their quality will not equal that of any American rail.

This Board was exceedingly anxious to adopt American Iron, for our common country's sake, but after every effort had been made to secure an American contract, and even after our contractors had offered to lose a dollar or two per ton in favor of American Iron, when the Board satisfactorily ascertained that would make a difference of over Twenty Thousand dollars to the Contractors, we felt ourselves obliged to yield the field to English Iron. These rails will arrive in this country between this and March, and be ready to commence laying with the opening of the Spring. Our solicitude about the quality of our Iron had prompted the inspections, both in England and this country, which are arranged for, by which we deem ourselves sufficiently guarded, whilst the experience of the Baltimore and Susquehanna Railroad Company, which has been running on English rails for sixteen years, almost twenty five per cent. lighter than our own, yet with entire satisfaction, induces us to say that we feel assured that we shall secure as good an article as can be manufactured at home or abroad.

So far, therefore we have met with no untoward or seriously embarrassing difficulties, and we sincerely hope before the close of an another year to invite our Stockholders to witness a full and complete opening of

the Road. In the meanwhile, it should not be forgotten that renewed efforts must be made to secure a sale of sufficient stock to complete this work without debt, and to do that will require further subscriptions to the amount of sixty or eighty thousand dollars. The Central or Pennsylvania Railroad will, in thirty days more, be opened for eighty miles beyond our terminus, and if we wish to secure an early and advantageous opening to the North and West, we must not flag when so near the end our labors. In the hope that at the right time the right spirit shall be found in our stockholders, and that we shall not be required to labor wearily and uncheered on our way, we respectfully submit to their consideration this Report.

By order of the Board,
THO. C. HAMBLY, President.
York, September, 1849.

Novelty Iron Works, October 24, 1849.

MR. EDITOR: I have just seen your number of 20th instant, in which I find an article from C. E. Detmold, Esq., which commences with "The apparent anomaly of the greater density of fluid cast iron over the same iron when in a solid state, referred to * * * is fully susceptible of explanation." As he has merely iterated Mushet's theory, without noticing any of the difficulties shown to be connected with it in my former article, and as he seems to have been himself very much misled, I shall endeavor to show his mistakes, in the hope that he may in a future number explain the anomaly with greater satisfaction.

He asserts with Mushet that "iron in a fluid state attains its greatest density, and in that state of fusion solid iron will float upon it, but not until, by the heat of the melted iron, the solid piece has been greatly expanded; cold iron will sink at first."

Mr. Detmold, in this statement, has not only made the iron at its greatest density refuse to float its solid at a less density, but he has asserted that which a few experiments will convince him is a mistake.—The only cause of solid iron sinking in liquid iron is the momentum which the piece receives in the act of immersion, this it immediately recovers and floats about 1-130th of its weight above the liquid. A piece of solid iron of sufficient bulk to secure it from immediate expansion, carefully lowered into a ladle of liquid iron, will not sink below the surface.

He says, "at the moment of solidification of fluid cast iron it assumes a crystalline structure and therefore expands, the same as water when it freezes into ice," thereby assuming one of the very points at issue. I think I have fully shown that it does not expand, and that the analogy of ice cannot be sustained.

But even admitting that it *does* expand at this point, the anomaly still exists, and the analogy ceases; for after this, iron contracts until it becomes three per cent. smaller than when it was liquid (unless it can be shown that liquid iron never fills a mould in which it is deposited) and yet it floats upon the liquid.

He further says, "it is just this quality that makes crude iron so applicable and valuable for castings; inasmuch as by this momentary expansion at the instant of solidification, it fills all the forms and impressions of the mould." This is a mere assumption, for which direct proof is beyond a possibility, while that of a presumptive character is all against it. It is a fact as old as the art of moulding, that if a moulder has a piece of casting to make, having minute members, he will select his iron when at the highest temperature, or greatest liquidity; well knowing that if he poured in the metal at a medium temperature he might look in vain for the momentary expansion at crystallization to fill that which the sluggish fluid refused to penetrate.

My only object in this discussion is to obtain an elucidation of this difficult subject, and trust

your columns may yet be the medium for that end.
Yours, etc., N. M. STRATTON.

North Carolina.

Wilmington and Raleigh Railroad.—We have intended, for some time past, to lay before our readers, an abstract of the last report of the directors of this road, which is destined soon to acquire a much greater importance from being a great connecting link between the northern and southern railways. The report was made on the 10th of November last, and presents the following state of the working of the road for the year prior to that date:—

The receipts during the year have been as follows, viz:

From Through Passengers	\$113,078 22
“ Way “	53,092 04
“ Steamboat, freight, &c.	12,466 63
“ Railroad “	51,534 51
“ Transportation of mail, Rents, &c.	77,344 99
“ Sale of old iron and copper	9,943 31
	<hr/> \$317,459 70

The EXPENDITURES during the same period have been.....

Showing a balance of.....	\$79,325 79
Of this balance, there has been applied to the pay't. of interest, on the debt of the company, the sum of \$35,909 69	<hr/> \$35,909 69

Leaving as the net profit realized during the year....

Of which amount there has been applied to purchase new iron rail, &c.	37,195 07
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During the past year the operations of the company have been carried on with uniform regularity—our trains have run with but few accidents, and our boats have performed their trips successfully. We have progressed in improving the road bed, and in repairing the bridges and trestle work. It is true that much yet remains to be done, but by pursuing a uniform system of repairs, the road will be continually improving, and eventually rendered nearly perfect; at least so far as the road way is concerned.

It will be seen by a reference to the foregoing statement of the accounts, that a large sum has been expended for new iron. This was found to be absolutely necessary to maintain the road in safe running order, for without this outlay, the operations of the company must have necessarily been greatly embarrassed, if not entirely suspended; as we could not have continued to run our trains over it with regularity or even with safety. Being satisfied that it was indispensably necessary to the operations of the company, if not to its very existence, that the road should be preserved in good condition, your board has applied to the purchase of new iron, all the means at their disposal, not required for the necessary current expenses of the company; and being further satisfied that it was false economy to continue the use of the light bar, first laid on our road, and that permanence and stability could only be hoped for, by adopting a heavy rail in its stead, they have not hesitated to substitute the one for the other.

We copy the following for the purpose of calling to it the particular attention of such companies that contemplate laying down the flat bar. They will see in this report what they will experience upon their own roads, and they will do well to avoid the inconveniences under which this road is laboring by using the heavy rail in the outset:—

It is the opinion of the most eminent engineers of our country, that it is impossible for a road to be profitable with the light flat iron rail; and the statistics of the railroads in our country, with but few exceptions, fully confirm this opinion. When we compare the expenses of road repairs, and the ex-

pense of locomotive, coach and car repairs, on roads using the light strap rail, with the like expenses on those having a heavy rail, the truth of this opinion is evident.

We find the expenses of the road repairs where the heavy rail is used, varying from 120 to \$300 per annum on northern roads. But as the damage from frost in winter on these roads, has to be estimated to arrive at a true comparison of the expenses incident to the different forms of rail, we will for the purpose of instituting such comparison, take the road from Branchville to Columbia in South Carolina—it being a southern road, and not differing to any great extent from our own, in the amount of transportation.

By a reference to the report of the board of directors of the South Carolina railroad company for 1847, we find that “the maintenance of way on the Columbia road constructed on cross ties, with a T rail of 57 lbs. to the yard (though the timber of a considerable portion of the lower section had to be renewed) did not exceed \$160 to the mile.” Now, the expenses of maintenance of way on our road during the year ending October, 1847; was equal to \$510 per mile, and during this year, (if we include the cost of the new iron) \$624 per mile; or about \$400 per mile exclusive of the cost of iron.—Had we the heavy rail, and assuming the expense of repairs to be the same as on the South Carolina Road, viz, \$160 per mile on our road of 162 miles, the whole cost of maintenance of way would be \$25,920, and this sum being deducted from the cost of our present road repairs, as shown per statement preceding, viz: \$101,172 11 gives us a difference in favor of the heavy iron of \$75,252 11. To which add at least one third of the expense of repairs of locomotives and cars, as exhibited in foregoing statement, and we have the sum of \$86,252 11, which would be saved to the company annually by the use of the heavy rail instead of the present light flat rail.

This may appear to be a large difference, yet it is sustained by facts. In addition to which, the heavy iron rail, preserves an uniformly regular surface which, with its greatly increased strength and stability, while it gives safety and security to the traveller, insures certainty and regularity in the work of the locomotive, with an ability to carry over it, fully one third more than over the rail now used by us.

The cost of relaying our road (162 miles) with an iron rail of 52 lbs. to the yard, at the present price of iron, would be about \$600,000; from which deduct the value of the old iron about 84,000, and we have the sum of \$516,000. The interest on this sum at 6 per cent. per annum, would be \$30,960 00, which being deducted from \$56,252 —the difference in the expense of the two kinds of rail as before ascertained, and we should make a saving annually of \$55,252 11—a sum nearly double the interest of the cost of the heavy iron. To this add the great additional facilities which such a road would give to their transportation, and it must be manifest to any one who examines the subject, that true economy of the company would be to substitute the heavy rail.

During the past summer, a heavy rail weighing 52 lbs. to the yard has been purchased for the purpose of relaying the whole track, thus giving the road capacity equal to any in the country. The great obstacle to the prosperity of the road has been the want of a connection with the roads of South Carolina and Georgia. This is soon to be remedied by the construction of the Wilmington and Manchester road. A continuous line of railway will then exist from Maine to the navigable waters of the Gulf of Mexico, and passengers who now for the want of such connection take the steamers from New York for the south will generally take the land route. To a person looking at a map, the route through North Carolina would strike him as one of the most important in the country; and we see no reason why it should not do a profitable business.

The Directors of the road are—
E. B. Dudley, Jacksonville, Onslow County.

- James S. Battle, Nashville, Nash County,
James Griswold, Goldsboro', Wayne County.
A. G. Derosett, Jr., Wilmington, N. C.
P. K. Dickinson, “
Gilbert Potter, “
James T. Miller, “
Oscar G. Parsley, “
Wm. A. Wright, “
Edwd. P. Hall, “
President, Gen. Alex. McRae.
Treasurer, James S. Green.

Ohio.

Cleveland and Pittsburgh Railroad.—At the annual meeting of the Cleveland and Pittsburgh railroad company, held at Ravenna on the 15th inst., the following gentlemen were elected directors for the ensuing year:

- Cleveland—Zalmon Fitch, Ellery G. Williams, Henry W. Clarke.
Hudson—Henry N. Day, James Butler.
Ravenna—Cyrus Prentiss, John B. King.
Salineville—James Turner.
Wellsville—James Stewart, John S. McIntosh, Duncan McDonald.
Pittsburgh—Charles Knapp, Jr.
The following officers were elected by the board: Cyrus Prentiss, President.
Samuel Foljambe, Secretary.
William Wadsworth, General Treasurer.
William H. Stanley, Local Treasurer, Cleveland.

John S. McIntosh, Local Treasurer, Wellsville.
This company is progressing. The work has been commenced at Bedford, at the Yellow Creek Summit, and several other important points. The force is being increased every week. The determination is, to push the work with vigor.

South Carolina.

Charlotte and South Carolina Railroad.—At a recent meeting of the stockholders of this company at Winstonsboro', on the 10th instant, the Chief Engineer made a very encouraging report, stating that the road was progressing finely; and would be completed by next summer.

Officers for the ensuing year were nominated. Mr. Scott of Columbia, offered the following resolution: Resolved, That the President and directors of this company be requested to prohibit the running of the cars on this road on the Sabbath day, when the same or any part thereof may be concluded. which, on motion of Dr. Fox, was laid over until the next annual meeting of stockholders.

This road, as we understand it, is to run from Charlotte, in North Carolina, to Columbia, in South Carolina.

Sale of a Railroad.

Yesterday at noon, a sequester, under a special act of the legislature, sold at the Exchange in this city, the Williamsport and Elmira railroad, in Lycoming county, in this state, valued at \$7000,000, to Archibald Robertson, for \$1,000! Should the purchaser fail to complete the road, so as to connect with the New York and Erie road. within 5 years, the stockholders resume the franchises of the corporation by paying back the amount expended by the purchasers.

It is further one of the conditions of the act under which the road is sold that none of its materials shall be removed, nor the line of the road used for any other purpose than a railroad.

Twenty-five miles of the road, from Williamsport to Ralston, are finished, and locomotives are running on it daily.

The sale was ordered on the complaint of creditors, representing more than three-fourths of the liens, declaring that the annual receipts are insufficient to defray expenses, keep the road in repair, and pay interest on the debts due by the company. —Philadelphia Ledger.

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per m.i.e.	Capital stock paid in.	Debits more than surplus.	Ruling grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Atlantic and St. Lawrence	146	....	47	1,405,476	2992	864,914	460,562	35	.....	.....	.....	.....	78 a 81	
Androscoggin & Kenneb.	55	....	26	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
Albany and Schenectady.	16½	....	16½	31,606,196	100,000	.....	.....	..	.....	.....	.....	1 5-9	82	
Auburn and Rochester...	78	....	78	2,644,520	34,000	.....	.....	..	175,922	.....	.....	8	86	
Auburn and Syracuse...	26	....	26	1,125,886	43,300	.....	.....	..	454,721	.....	.....	2 9-10	77½	
Attica and Buffalo...	31½	....	31½	821,313	26,000	.....	.....	..	172,185	.....	.....	4½	.....
Alleghany Portage...	36	....	36	.....	.....	.....	.....	..	150,959	.....	.....	.....	.....	Leas'd to Western railroad.
Albany and W. Stockb...	38½	....	38½	1,924,701	50,000	.....	.....	..	.....	.....	.....	.....	.....
Annapolis and Elkridge.	21	....	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Bangor and Oldtown...	11½	....	11½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Boston and Lowell...	25½	1	27½	2,013,637	73,200	1,800,000	.....	10 up, 30 down.	461,339	268,707	192,631	8	116 a 147	
Boston and Maine...	74½	5	79½	3,571,832	45,000	3,249,804	249,715	47½	511,627	264,534	247,893	8½	104½	
Boston and Worcester...	44½	22	66½	4,950,000	74,700	4,500,000	460,000	40	716,284	406,303	310,080	8½	99½	
Boston and Providence...	41	6½	47½	3,031,106	63,800	2,893,300	26,878	37½	354,375	183,361	170,013	6½	91	
Bost., Concord and Mont.	90	....	38	In progress	.....	.....	.....	..	.....	.....	.....	.....	.....
Berkshire...	21	....	21	600,000	28,500	.....	.....	..	.....	.....	.....	7	.....
Buffalo and Niagara...	22	....	22	250,396	11,500	.....	.....	..	60,014	.....	.....	6 1-3	.....
Buffalo and Black Rock.	3	....	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Susqueh'a.	36	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Beaver Meadow...	26	....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Buck Mountain...	.....	....	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Baltimore and Ohio... } Washington Branch... } Frederick Branch... }	..... } ..... } ..... }	178 } 31 } 3 }	..... } ..... } ..... }	13,136,940	61,900	.....	.....	..	1,468,826	805,530	663,196	.....	43½ a 44	
Calais and Baring...	3	....	3	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Concord...	34	....	34	.....	.....	1,350,000	.....	..	318,257	179,872	138,385	10	121	
Cheshire...	54	....	54	2,584,143	48,000	1,453,379	1,140,764	60	.....	.....	.....	.....	67 a 67½	
Connecticut and Passump.	115	....	40	1,161,669	29,000	980,090	458,569	26	.....	.....	.....	.....	78	
Connecticut River...	50	2	52	1,588,184	30,500	1,234,970	426,013	32	45,652	23,724	421,936	2	93 a 94	
Cape Cod Branch...	28	....	28	60,000	21,400	343,000	257,000	40	.....	.....	.....	.....	62	
Corning and Blossburgh.	.....	....	40	.....	.....	.....	.....	..	18,069	.....	.....	.....	.....
Cayuga and Susquehanna	29	....	29	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Amboy... } Trenton Branch... } New Brunswick Br... }	61 } 6½ } 29 }	..... } ..... } ..... }	96½ } } }	3,200,000	33,000	.....	.....	..	.....	.....	.....	.....	140 a 142	
Columbia...	82	....	82	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Camden and Woodbury...	9	....	9	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Cumberland Valley...	.....	....	52	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Carbondale & Honesdale.	26	....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Chesterfield...	12	....	12	150,000	13,500	.....	.....	..	.....	.....	.....	.....	.....
City Point...	92	.....	9½	118,060	15,919	.....	.....	70	.....	.....	.....	.....	.....
Central of Georgia...	191	....	191	3,222,289	16,800	.....	.....	30	516,252	266,450	250,226	.....	80	
Central of New Jersey...	63	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Dorchester and Milton...	3½	....	3½	114,224	35,100	72,990	41,234	39	.....	.....	.....	.....	74	
Detroit and Pontiac...	25	....	25	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Eastern...	54	19½	73½	.....	.....	.....	.....	40	.....	.....	.....	8	100½	
Essex (Salem to Law.)...	22½	....	22½	421,574	18,700	263,746	160,958	55	.....	.....	.....	.....	.....
Erie and Kalamazoo...	33	....	33	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Fall River...	42	....	42	1,145,982	27,300	1,050,000	83,177	45	184,344	109,390	74,953	7½	85	
Fitchburgh...	49½	6½	56	2,945,630	52,300	2,735,910	67,504	..	486,265	286,046	200,219	8½	108½	
Franklin...	.....	....	22	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Greensville and Roanoke.	21	....	21	283,917	13,500	200,000	400	96	309,82	200,34	10,949	2½	40	
Germantown Branch...	6	....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Gaston and Raleigh...	96	....	96	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Georgia (Augusta to At'a)	171	....	.....	.....	.....	.....	.....	40	477,052	267,173	209,879	.....	121	
Athens Branch... } Harrisburg and Lancaster } Hartford and New Haven }	39 } 37 } 62 }	210 } 37 } 62 }	..... } ..... } ..... }	1,183,257	31,979	609,550	573,707	49	121,350	37,386	83,963	6	96 a 97	
Housatonic...	74	....	74	.....	.....	.....	.....	17	.....	.....	.....	.....	107	
Hudson and Berkshire...	31½	....	31½	818,983	26,500	.....	.....	..	.....	.....	.....	.....	85	
Hazleton and Lehigh...	10	....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Jackson and Brandon...	13	....	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Lexington and W. Camb.	6½	....	6½	252,680	38,900	.....	.....	55	.....	.....	.....	.....	.....
Lowell and Lawrence...	12½	....	12½	283,248	22,650	.....	.....	45	.....	.....	.....	.....	85	
Long Island...	98½	....	98½	2,173,646	22,100	.....	.....	..	.....	.....	.....	.....	17	
Lockport and Niagara...	23	....	23	221,000	9,700	.....	.....	..	.....	.....	.....	.....	.....
Lewiston...	34	....	34	33,673	10,300	.....	.....	..	.....	.....	.....	.....	.....
Lykens Valley...	16	....	16	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Little Schuylkill...	23	....	23	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Louisa...	50	....	50	474,137	9,482	.....	.....	..	.....	.....	.....	.....	.....
Lexington and Frankfort.	29	....	29	450,000	15,600	300,000	.....	61	50,000	30,000	10,000	.....	82 a 85	
Little Miami...	84	....	84	1,513,402	18,000	.....	.....	..	.....	.....	.....	.....	.....
Machiasport...	8	....	8	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Morris and Essex...	.....	....	45	.....	.....	.....	.....	80	.....	.....	.....	.....	100	
Mauch Chunk and R. Run	36	....	36	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mine Hill & Sch. Haven.	25	....	25	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mount Carbon...	7	....	7	.....	.....	.....	.....	..	.....	.....	.....	.....	136	
Mt. Carbon & Pt. Carbon	2½	....	2½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mill Creek...	6	....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Montgomery & W. Point	67	....	67	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

Railway Share List,

ON A PAR OF \$100 ACCORDING TO THE LATEST SALES.—CORRECTED EVERY WEDNESDAY.

NAME OF COMPANY.	Length of line.	Length of branches.	Miles finished.	Cost of road and equipment.	Cost per mile.	Capital stock paid in.	Debts more than surplus.	Ruling grade.	Earnings 1848.	Expenses 1848.	Net earnings 1848.	Rate of dividend in 1848.	Price of shares.	Remarks.
Madison and Indianapolis	86	...	86	.....	.....	.....	.....	..	.....	.....	.....	.....	112	
Mad River and Lake Erie	102	.....	102	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Mansfield and Sandusky.	56	.....	56	\$1,106,121	19,700	.....	.....	..	.....	.....	.....	.....	81	
Michigan Central.....	221	.....	221	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Michigan Southern.....	70	.....	70	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tecumseh Branch.....	10	.....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Macon and Western.....	101	.....	101	328,091	6,218	.....	.....	30	140,970	63,243	78,722	.....	48a48½	
Mississippi.....	30	.....	30	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Nashua and Lowell.....	14½	.....	14½	525,063	36,200	525,000	.....	13	169,187	109,599	59,588	10	.....
Northern (Ogdensburg).....	25	.....	25	In progress.	.....	.....	.....	..	.....	.....	.....	.....	.....
" (Concord to Leb'n.)	69½	.....	69½	2,762,500	34,000	.....	129,978	50	408,455	241,370	167,277	.....	64½	
Bristol Branch.....	12½	.....	12½	.....	.....	.....	.....	..	.....	.....	.....	.....	105	
N. Bedford and Taunton.....	20	.....	20	499,065	24,998	400,000	.....	40	136,151	96,220	39,225	6	.....
Norfolk County.....	26	.....	26	621,488	23,900	414,256	.....	35	.....	.....	.....	.....	30a33	
N.Y. & N. Haven (14 mis. Har RR)	62	.....	62	.....	.....	.....	.....	..	.....	.....	.....	.....	93	
New Haven Canal.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Norwich and Worcester.....	59	7	66	2,187,829	33,100	.....	.....	32	218,073	170,297	.....	.....	36	
New York and Harlem.....	80½	.....	80½	3,579,567	44,600	.....	.....	..	.....	.....	.....	.....	50	
New York and Erie.....	200	.....	200	.....	.....	.....	.....	..	.....	.....	.....	.....	61½	
New Jersey.....	29	.....	29	.....	.....	.....	.....	..	.....	.....	.....	.....	107	
Newcastle & Frenchtown.....	17	.....	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
N. Orleans and Carrollton.....	5½	.....	5½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Old Colony.....	37½	7½	45	2,080,903	46,200	1,601,415	683,648	40	227,350	139,592	87,757	6½	77½	
Oswego and Syracuse.....	41	.....	41	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Portland, Ports, and Saco.....	51	.....	51	1,350,000	26,400	.....	.....	..	.....	.....	.....	6	98½	
Peterboro' and Shirley.....	12	.....	12	208,311	17,300	.....	.....	..	.....	.....	.....	.....	.....
Pittsfield and N. Adams.....	18½	.....	18½	447,755	24,000	.....	.....	66	.....	.....	.....	.....	.....
Providence and Worcester.....	43½	.....	43½	1,873,895	43,000	.....	573,058	26	193,844	83,889	109,954	.....	82½	
Paterson and Hudson R.....	16½	.....	16½	.....	.....	.....	.....	..	.....	.....	.....	.....	110a111	
Philadelphia and Trenton.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	10	30 a 140	
Philad. Wilm. and Balt.....	97	.....	97	6,173,851	66,000	.....	.....	..	638,142	382,608	.....	.....	55	
Philadelphia City.....	6	.....	6	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philad. Germ. and Nor.....	17	.....	17	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Philadelphia and Reading.....	93	.....	93	.....	.....	.....	.....	..	.....	.....	.....	.....	33	
Penn Township.....	2	.....	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Petersburg.....	59	.....	59	946,361	16,040	.....	.....	..	163,092	87,131	.....	.....	.....
Ponchartrain.....	4½	.....	4½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Pt. Hud., Jack. and Clint.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rensselaer and Saratoga.....	25	.....	25	661,910	26,400	.....	.....	..	.....	.....	.....	.....	80	
Ramapo and Patterson.....	15	.....	15	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Rich. Fred. and Potomac.....	75½	.....	75½	1,474,004	19,459	.....	.....	..	206,658	100,568	.....	.....	.....
Richmond and Petersburg.....	22	.....	22	877,484	39,886	.....	.....	..	.....	.....	.....	.....	.....
Sullivan.....	28	.....	28	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
South Shore.....	11½	.....	11½	255,748	22,200	135,935	128,075	35	.....	.....	.....	.....	33½	
Stony Brook.....	13	.....	13	246,659	19,000	216,829	29,189	40	.....	.....	.....	.....	.....
Stonington.....	50	.....	50	.....	.....	.....	.....	..	.....	.....	.....	.....	52	
Saratoga and Washington.....	40	.....	40	948,372	23,700	.....	.....	..	.....	.....	.....	.....	.....
Syracuse and Utica.....	53	.....	53	1,968,036	37,060	.....	.....	..	677,671	.....	.....	.....	120 a 121	
Schenectady and Troy.....	20½	.....	20½	659,668	32,100	.....	.....	..	47,025	.....	.....	.....	.....
Saratoga and Schenectady.....	22	.....	22	331,036	15,000	.....	.....	..	57,018	.....	.....	.....	.....
Summit.....	2	.....	2	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Schuylkill Valley.....	14	.....	14	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Shamokin.....	23	.....	23	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Swatara.....	4	.....	4	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Seaboard and Roanoke.....	76½	.....	76½	1,519,140	20,460	.....	.....	..	.....	.....	.....	.....	.....
S. Carolina Main Stem.....	136	.....	136	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Columbia Branch.....	68½	242	68½	5,943,678	24,500	.....	.....	..	800,073	308,802	401,271	.....	.....
Camden Branch.....	37½	.....	37½	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Sangamon and Morgan.....	56	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Taunton Branch.....	11	.....	11	305,085	27,600	250,000	.....	35	108,101	90,485	17,615	.....	.....
Tonawanda.....	43½	.....	43½	974,865	22,400	.....	.....	..	218,301	.....	.....	.....	.....
Troy and Greenbush.....	6	.....	6	273,625	45,900	.....	.....	..	60,055	.....	.....	.....	70	
Tuckahoe & James River.....	4½	.....	4½	69,322	14,999	.....	.....	..	.....	.....	.....	.....	.....
Tallahassee and Port L.....	26	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Tuscumbia and Decatur.....	44	.....	44	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Utica and Schenectady.....	78	.....	78	3,161,688	40,500	.....	.....	..	795,239	.....	.....	10	122	
Vermont and Mass.....	69	.....	69	.....	.....	.....	.....	55	.....	.....	.....	.....	29½	
Vermont Central.....	131	.....	69	In progress.	.....	.....	.....	..	.....	.....	.....	.....	45½	
Vicksburg and Clinton.....	46	.....	46	.....	.....	.....	.....	..	.....	.....	.....	.....	71	
Western.....	117½	.....	117½	7,975,452	67,700	.....	.....	83	1,332,068	.....	.....	8	101½	
West Stockbridge.....	21	.....	21	41,515	15,000	.....	.....	..	.....	.....	.....	.....	.....
Worcester and Nashua.....	45	.....	45	.....	.....	.....	.....	48	.....	.....	.....	.....	50a51½	
Wrightsv, York & Gettys.....	13	.....	13	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Whitehaven and Wilkes.....	20	.....	20	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Williamsport and Elmira.....	26	.....	26	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westchester Branch.....	10	.....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
West Feliciana.....	24	.....	24	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Winchester and Potomac.....	32	.....	32	509,415	15,919	.....	.....	..	.....	.....	.....	.....	.....
Wilmington and Weldon.....	163	.....	163	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Westminister Branch.....	10	.....	10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....
Western and Atlantic.....	100	.....	100	In progress.	.....	.....	.....	..	.....	.....	.....	.....	.....
York and Maryland Line.....	21	.....	21	.....	.....	.....	.....	..	.....	.....	.....	.....	.....

AMERICAN RAILROAD JOURNAL.

Saturday, October 27, 1849.

Railroad to the Pacific.

We must find an apology in the continued discussion of this subject, in its great importance, in the prospect of speedy action in relation to it, and in the erroneous views which so generally prevail in reference to it—its route, mode of construction and management, costs, and the office it is to perform as a commercial agent between the Atlantic and Pacific oceans. Our only object in the discussion is to develop the best plan by which this great object can be effected. We have already laid before the public what we believe to be the best plan for the construction of this work. But we do not profess infallibility. If we are wrong, the sooner our mistakes are corrected the better. If right, the sooner our views are adopted by others, the sooner will the work be accomplished. To make the discussion of this subject of any profit, we must subject it to the ordinary rules of common sense. Otherwise we can have no confidence in the results of our decisions, and shall be much more likely to be led astray than guided right; and we feel that we cannot render a more useful service to this great project, than in inducing the community to make use of the same common sense in its examination, as they do in the ordinary affairs of life. We shall then feel some confidence that we are really making progress toward the end we are all seeking to accomplish.

In every undertaking of magnitude, business men have a regular way of going to work. The first question to be settled by them is the practicability of the scheme proposed. The next, will the ends to be accomplished justify the outlay? Then come the subordinate ones relating to the manner in which the work shall be executed. All these questions as they arise, are referred for a decision to persons competent to decide upon the matters submitted to them. If questions arise in engineering, the opinion of a competent engineer is taken as conclusive upon these points. Those involving financial skill are referred to men of mercantile experience. Each are referred to the decision of men who, from their training and experience, are better qualified than all others to decide correctly upon the matters submitted to them. Such is the method of proceeding which is absolutely necessary to success, and to secure the confidence of sensible men; and just in proportion to the magnitude of the work, should be the care with which these indispensable rules should be strictly followed.

This is the ground which we have taken from the first in relation to the subject of a railway to the Pacific. We have been the more anxious to insist upon this plain common sense way of proceeding, for the reason that in the schemes which have heretofore been pressed upon public attention, not the slightest regard has been paid to principles of so necessary and obvious an application. On the other hand, the plan which has received very strong demonstrations of popular favor, we mean that of Mr. Whitney, claims it as its chief merit, and to which, marvellous as it may seem, we think it mainly indebted for success, that it puts all these rules at defiance, and admits that an adherence to them would be fatal to the work! A most extraordinary recommendation truly. Mr. Whitney says it will not do to wait till surveys are completed before the work is commenced, for if this is done, the land which must furnish the means to build the road will be sold, and the work consequently rendered impossible. Infinitely absurd as are such arguments as

these, we think that they are the very ones that have chiefly recommended it to popular favor.

Mr. Whitney had no experience in railway affairs nor in engineering to correct or control his theories. Having committed himself to his project, all the vast intermediate unknown between the Mississippi and the Pacific, became mere plastic material in his hands, to be moulded into any shape to suit his fancy. He saw no obstacles, because he did not appreciate what constituted such. He affirmed just what he chose in relation to the capacity of railways, as commercial agents, from the want of practical knowledge of their operation.—Enthusiastic to the highest degree, he infused others with his own spirit, and his untiring energy placed his views before almost every person in the country. The subject of a railway to the Pacific is one of universal interest. Every person gave a willing ear to his propositions, and their apparent plausibility secured their favorable reception. In his scheme everything was sunshine. There were no obstacles—no delay. No money was required then to build the road. This scheme was the Philosopher's Stone, which transformed the land into gold as he proceeded on his course; and in return for what was worthless, gave us what was of inestimable value, and a surplus of wealth, where nothing existed before. In addition to this, over this new channel, the commerce of the world was to flow, which we were to tax to an extent sufficient to realize in this country a perfect millennium of wealth and luxury. What wonder is it, that people, before they had time for reflection, should be carried away and blinded by such dazzling prospects?

It is a law of nature that what acquires the most immediate popularity possesses the least lasting excellence. A subject becomes popular because its most attractive features only are presented to the public. In any sensible project for a railway to the Pacific, arguments in favor of it are met at every step with opposing arguments, which though not insurmountable, nor entirely fatal to such a scheme, are such as will divide, to a certain extent, public opinion, and bring the opposing views so nearly into a state of equilibrium, as to preclude any very great enthusiasm in favor of it, and render progress in carrying out the work very slow. The rapid popularity of Mr. Whitney's plan arose from its very imperfections. If he had presented the plan which is ultimately destined to succeed, and candidly admitted all the difficulties to be overcome, and that with the very best plan, and with all the means of the country at command, the success of the work might be problematical, his plan would have made but little noise in the world. If further, he had in the outset submitted his scheme to the opinion of a competent engineer, and followed his advice, only two persons in the country would have ever heard of it.

The "Boston plan" is never destined to make any headway, and therefore requires but little notice.—It is we think as absurd as that of Mr. Whitney; and as his has exhausted public credulity, nothing remains upon which this scheme can gain a footing. We are at loss, however, to see how any men should be willing to hazard a reputation they really possess in railway affairs, in connecting themselves with a scheme so utterly absurd and so universally repudiated.

Railroad Across the Isthmus.

We are happy to learn that the Panama railroad company have put under contract that portion of their railroad across the Isthmus which lies between the Chagres river and the bay of Panama, about 21

miles, the whole distance from Panama to Limon Bay being 46 miles. The contractors are Messrs. Totten and Trantwine, whose proposals are most favorable, and who possess the great recommendation of having been employed for the last four or five years in the territories of New Grenada, in constructing a canal ninety miles long, to connect two branches of the Magdalena river. They have accomplished this work entirely with native labor, and though at first encountering great difficulty, they have succeeded in training the natives into expert workmen, and will be able to carry over with them a large force. Thoroughly acclimated, and with a perfect knowledge of the character and habits of the people, they will begin the railroad with the advantage of all the experience acquired in constructing the canal. Their bid was the lowest received, which is good evidence that the difficulties are not so great as has been supposed by those less acquainted with the character and resources of the country. They expect to break ground about the 1st of December ensuing. We also learn that the government of New Grenada has determined to give the company additional facilities, so as to ensure the route by the way of Panama, being the first opened, and the leading communication between the two seas.—*N. Y. Jour. of Com.*

Indiana.

Terre Haute and Richmond Railroad.—This road, in addition to its local objects, is one of the links in the great line of railway running through Indiana, which is to unite the lines from Boston, New York, Philadelphia, and Baltimore, and the Mississippi roads from these various points, will all form a junction in the State of Ohio; and from thence will proceed in one grand trunk link to the Mississippi. The link which the proposed road is to supply, extends from Indianapolis to Terre Haute, a distance of 72 miles. It occupies the most direct line, and we understand, the most favorable route between these two places, which must protect it against merely rival routes. It runs through one of the finest parts of Indiana, and in addition to local trade and travel, which we think will be sufficient to give it a good business, its through travel must be immense; and we know of no new undertaking of the kind that offers greater inducements for the investment of capital.

The following extract from the report of the president shows the present condition of the work.

The estimate shown by this report, reduces the cost of construction on the whole line from Terre Haute to Indianapolis, ready for the superstructure to less than \$318,000. That part of the line between Terre Haute and Greencastle, embracing a distance of 32 miles, was in pursuance of your further orders, let to contractors in December last, at an aggregate sum of near \$145,000, being about 6 per cent. below the estimate of the engineer. The contractors immediately commenced operations, and have continued to prosecute their work with much energy. This entire division is now more than half completed, and I have no doubt, that most of it will be finished by the first of December next, so as to be ready for the superstructure early next spring. I have received several propositions from good and responsible contractors for contracts on that part of the line from Greencastle to Indianapolis. They propose taking the work at the engineer's estimate, and in payment to receive 40 per cent. in stock of the company and 60 per cent. in cash. Permit me to recommend that 15 or 20 miles of the road be put under contract, as early as practicable, and I think there will be sufficient stock taken to justify putting the whole line under contract next winter. There has been about \$185,000 stock subscribed, and the county Commissioners of Vigo county have agreed to subscribe \$50,000 in stock of the company at their next meeting, which takes place early in September. This, together with the increased subscriptions we may reasonably anticipate as the work

progresses, I think will enable us to proceed rapidly with the work.

It affords me pleasure to state, that a large majority of the persons through whose lands the road has been located have freely given the right of way to the company without compensation.

Sites for depots, very conveniently situated, including ground for machine shops, have been obtained at Terre Haute and Indianapolis at a cost of only one thousand dollars. The order passed at a former meeting of the board, allowing interest on all payments made on stock, from the date of payment until the road is finished to Greencastle, has given another inducement to subscribers, and will, I think promote the interest of the company.

The following recapitulation, [from the report of the engineer, shows the leading physical characteristics of the road.]

Length of line from Terre Haute to Indianapolis.....	72.2 miles
Total cost of grubbing, grading and bridging.....	\$317,188 00
Average per mile.....	\$4,393 18
Length of curved line, radius 5730 feet.....	6.62 miles.
Length of curved line, radius 2565 feet.....	4.14 miles.
Length of curved line, radius 1910 feet.....	1.93 miles.
Length of straight line.....	59.51 miles.
Level grade line.....	5.93 miles.
Inclined from 0 to 5 feet per mile..	4.23 miles.
Inclined from 5 to 10 " ..	5.52 miles.
Inclined from 10 to 15 " ..	5.85 miles.
Inclined from 15 to 20 " ..	3.50 miles.
Inclined from 20 to 25 " ..	3.95 miles.
Inclined from 25 to 30 " ..	4.27 miles.
Inclined from 30 to 35 " ..	5.22 miles.
Inclined from 35 to 40 " ..	33.68 miles.

ESTIMATES OF COST OF THE ROAD.

In the estimates here presented for the iron rail, the sizes both of the flat and T rail, are the same as are now used on the Madison and Indianapolis road. Although an estimate is given of each kind of track, I feel very sure that the amount of business that your road will command, will justify, as a matter of economy, an expenditure for a substantial heavy bar. The experience of the country is the best guide, as to the particular pattern to be used.

The prices here given of each bar, have been kindly furnished me by Mr. Jackson, the Secretary of the Madison company. They include all expenses necessary to deliver the iron at Indianapolis.

The estimate for one mile of flat bar will be, for timber, ballasting spikes and all mechanical work.....	\$2,250 00
26½ tons iron, at \$58 per ton.....	2,117 00

Track complete, per mile.....	\$4,367 00
The estimate per mile of track with T bar, weighing 60 lbs. to the yard will be—	
For timber, ballasting, &c., comple..	\$1,810 00
Chairs and spikes.....	491 00
105½ tons of iron at \$49.....	5,169 50
Track complete per mile.....	\$7,470 50

TOTAL COST OF ROAD.

The total cost of the road, completed and ready for locomotive power from Terre Haute to Indianapolis, will be as follows:

<i>Flat Bar Track.</i>	
Grubbing, grading, and bridging.....	\$317,188 00
72.2 miles track complete at \$4,367 00 per mile.....	315,297 40
Total.....	\$632,485 40
Average per mile.....	\$8,760 18
<i>For T Rail.</i>	
Grubbing grading and bridging.....	\$317,188 00
72.2 miles track complete at 7,470 50 per mile.....	539,370 10
Total.....	\$856,558 10
Average per mile.....	\$11,863 68
If the total cost of the road as above estimated for T rail be added 5 per cent. on the cost of grading and superstructure, for contingencies and superintendence.....	22,493 00

And a probable sum for engines, cars, depots, shops, turnouts, &c., of....	140,000 00
The total cost of the road, and equipments, ready for transportation will be.....	\$1,018,051 10
Average per mile.....	\$14,112 89

In relation to the business of the road the Engineer says—

"Your road is connected at Indianapolis, with the Madison and Indianapolis road, already completed, and the Bellefontaine, Peru and Lafayette; on all of which operations have commenced with energy, and give assurance of speedy completion. These roads leading to the north, east and south, must of necessity throw an immense business upon your road, which affords the only western outlet.— At Terre Haute, the road is intersected by the Wabash and Erie Canal, and will at no distant day be continued from this point to the city of St. Louis. At this time organized companies are completing the connecting links of this entire chain, from the Atlantic to the Mississippi, with the exception of that from Terre Haute to St. Louis. Such a line when completed, as it must be in a few years, will be unrivalled in importance, and as a sure and profitable investment for capital, none can be devised that will surpass it.

In addition to all these sources of revenue to your road, the inexhaustible coal fields and fine stone quarries through which it passes, will of themselves afford an immense business. Along the line of the road for about 15 miles, the quality and character of the coal have been fully tested, and found to be superior bituminous coal. Every facility is afforded in the position of the coal, for cheap and successful working. The eastern line of this coal field is about 45 miles from Indianapolis, which will allow it to be delivered at that end of the road, at a price much below that usually paid at points where it is now in general use. The Madison company at this time charge 5 cents per bushel for transporting it from the Ohio river to Indianapolis, a distance of 86 miles, and were it not for ascending the plane of the "Madison Hill" they could probably transport it that distance for 4 or 4½ cents per bushel. Your company could then could transport it 50 miles for about 3 cents per bushel. This would enable the company to furnish coal at Indianapolis at 6 or 7 cents, allowing the prices now charged for working and handling it, at the different pits along the line. It could then be taken to Madison for about 12 cents, which is about the average price now paid for coal at that point. In this view, it appears conclusive to me, that the transportation of coal on your road, for the supply of the country south, east and north, must of itself create a heavy and profitable business.

The stone quarries in Putnam county furnish sand and limestone of such superior quality that the transportation of this item to Indianapolis must afford a business of some importance to the company, and greatly benefit the city. Taking into consideration all the sources of revenue enumerated, I hazard nothing in saying, that, with a substantial, well constructed road, your company cannot fail to realize profits equal to that of any other company in the west.

For the American Railroad Journal.
Boston, October 24, 1849.

In common with most of the citizens of the United States, I feel no little interest in the question of building a railroad from some central point within the United States to the Pacific Ocean. I have endeavored to read and examine the various plans that have been proposed and presented to the public. I can say in truth and candor, that not one, among all that have been suggested, appears to be so feasible as the one proposed by you. Your mode of electing directors, and of procuring officers is coincident with my own views, and I think the one that will be ultimately adopted if the general government should decide to legislate at all on the subject.

The plan proposed by Mr. Whitney grasps at too much land. In this country, such a scheme can never be carried out. When first proposed, the idea

was so novel and interesting, that most persons favored it, and perhaps the Legislatures of a majority of the States passed resolutions recommending its favorable consideration by Congress; the time, however, (if ever it existed,) when that body would pass such a bill has gone by.

The plan proposed by Mr. Degrande, of this city, and sometimes very modestly called by him "The Boston Plan," and sometimes called "my plan"—that is, Mr. Degrand's plan, is also too absurd for consideration. and were it not for the fact, that some few persons sanction it so far as to allow their names to be used in connection with it, the plan would really be beneath criticism.

The presumption that Congress would create an act of incorporation of one hundred millions of dollars, and his whole plan is based on this, indicates a total ignorance of public sentiment, and the history of Congressional proceedings. Mr. Whitney saw that the magnitude of his scheme was such as this would obviously be an objection to intrusting it to one individual; and hence he conceived the idea of associating with himself one or more persons from each State; this was objected to at once by members of Congress, on the ground that they would not under any circumstances give the appropriation if made, the character of an act of incorporation, and here he was obliged from necessity, and not from choice, to bring his bill before Congress in his individual name; indeed it is a "fixed fact" that Congress will not create acts of incorporation, and certainly not one of the magnitude proposed by Mr. Degrande, who ought to have known this ere he presumed to thrust before the public a plan which persons abroad might suppose from its "Boston Plan," to be sanctioned by the business men of this city; then I will venture to say, that not ten judicious, intelligent business men of Boston approve it. But let this pass.

In contemplating a great work or improvement of this character, or in fact of any other, two important primary questions are to be considered.— First is it practicable? Second, can the means be obtained in the manner proposed? In answer to the last question proposed, I would say that Congress will not create the act of incorporation. The fact is obvious to every intelligent man, and needs no comment; and secondly, if they would, in my humble judgment, consent to issue ninety eight millions of script on the terms, and for the purposes proposed, and especially, to be controlled by a directory chosen in the manner intimated. If the directors were chosen in the manner proposed by Mr. Degrand, the whole scheme would soon be a practical speculative mammoth machine for purposes quite different from those contemplated by the people of the country. This you clearly intimated in your remarks on this plan in a recent number of your paper. And secondly, is it practicable to make the road in five years, the time suggested by Mr. Degrande?

This is taken for granted, not only before a survey of a route is made; but prior to the extinguishment of Mt. India, till which exists to a large portion of the territory through which it is proposed to carry the road; and in fact, before we have any knowledge whatever of hundreds of miles intermediate, except that we know that a few companies by suffering great hardships, and by dint of extraordinary exertion, have passed across the country to the Pacific. The knowledge they acquired of the route, however, for the building of a railroad is of but little value. We simply know that the mountains, valleys and rivers are passible, that mules and

men can cross them; but this affords but slight evidence of the practicability of the route for a railroad. Who knows that it will not be necessary to tunnel the mountains for miles? Of course no one. It may be necessary to cut channels of this character, which in the nature of things, will require more than twice the time in which he proposes to build the whole road.

But for arguments sake, we will presume that the most eligible route is selected and properly surveyed, and the ninety-eight millions of script issued, and a company duly organized, and the distinguished author of "my plan" elected President of the same, and his self constituted committee numbered among the board of directors; and even then, the company could not invest with all the power possessed by the autocrat of all the Russians, and with all the gold in the Bank of England at their command make it in five years, (the term proposed for making the road the whole distance, say two thousand miles) the first five miles from San Francisco.—It would not come within the scope of human power to make freemen excavate a railroad track within reach of the glittering dust that is now, and that will in all probability for years to come, attract so much attention: at least, men could not be made to work for less than from \$10 to \$20, and perhaps \$30 per day; and even at these prices, it is very doubtful whether you could get common Irish laborers to work steadily and faithfully, and if they would work, who would undertake to control them? Take 5,000 Irishmen, or common laborers, give them the lowest price named, \$10 per day, set them at work excavating a line of railroad in a new country, surrounded by a reckless mining population, where gambling and drinking are practised *ad libitum*, and where the same class of laborers are making and digging gold from five dollars to one thousand dollars per day, and I think even the originator of "my plan" would shrink from the responsibility; and yet this is precisely what some one must encounter, before the plan is carried out as contemplated.

In what I have said, I do not wish to be understood as opposing the making of a railroad to the Pacific. I believe one will be made, and as soon as it can be in the nature of things, and consistent with the other interests of the country. Neither have I any objection to Mr. Degrand proposing his plan, or one even more impracticable if possible; but I think I have a right to object to his calling his plan 'the Boston Plan,' when there is no evidence that half a dozen men of standing and character approve it. Great pains have been taken to thrust this plan before the general government, and prominent men of the country endure the imposing declaration, that it was not a plan, but the plan of the city of Boston.

Massachusetts having rather taken the lead in the railway enterprises of the country, and having had more experience in building them, and better success perhaps in their management, than the citizens of any other part of the Union, it would be natural for the whole country to give much consideration to any plan suggested by the citizens of Boston for the accomplishment of so important a work as a railroad to the Pacific—consequently, Bostonians must naturally have a wish to be consulted before being pledged for any plan.

Mr. Degrand exhibited a good deal of enterprise, at an early day, in the progress of our railroads, and in promoting the building of a railway from this city to Albany. He is deserving of much credit, and much is awarded to him. He was untiring

in his efforts, and he undoubtedly worked as hard as any man in our community. But he is evidently out of his depth, when he proposes to build a railroad to the Pacific; and I am quite certain that he and his "committee" will be driven to the necessity of seeking fame and of making a fortune through some other channel. As I before said, I of course have no right nor disposition to object to Mr. Degrand and his 'committee' suggesting any plan for a railroad to San Francisco, that they please, but I do object to the plan which he suggested, being called the Boston Plan, and for reasons I have above stated.

SUBSCRIBER.

RAILWAY TO THE PACIFIC.

We cheerfully give place to the following communication, though we cannot, for reasons stated at length in former numbers of our paper, agree with the writer in his plan.

Providence, R. I., October 23, 1849.

H. V. Poor, Esq.,

Dear Sir: Several months since an original manuscript touching the practicability of a railroad to the Pacific was placed in my hands by a gentleman in whose judgment we feel confidence. I then desired to give you a copy for perusal, though investigation, and insertion in the American Railroad Journal; but have been prevented hitherto by reason of the unwillingness of the author to make it known. He has finally been prevailed upon to allow his plan to appear in the Providence Journal, a copy of which please find enclosed.

The feasibility of this plan, in the opinion of engineers and statesmen in New England, so far as I have been able to learn, takes precedence of all others, and throws them into the shade.

In haste thine

ANOTHER PLAN FOR CONSTRUCTING A RAILROAD TO THE PACIFIC.

Now that the public mind is fast approaching the point of decisive action on this important project, suggestions going to give a right direction to such action may be in order. Already we have plans from New York, by Whitney, from Missouri, by Benton, from Massachusetts, by Degrand, and why not one from Rhode Island? Benton would have it entirely a Government work, while Whitney, and Degrand would do it wholly, by private companies, operating with capital furnished them by Government, assuming a capacity for the application of the means superior to the Government.

Between the two extremes we take our position, fully impressed with the decided advantages to be secured by separating the work into two grand divisions: The first to be carried forward as a Government work, by funds derived from the issue of Government stocks. The second, to be accomplished by an incorporated and responsible company operating with their own capital, and not by that drawn from the Government.

Division First, to embrace, Topographical and Geological exploration and survey; Location of line and securing the right of way; The grading of the road, its masonry and bridges; Construction of ample wharves and docks at its terminus on the Pacific. Second Division, to embrace, Laying the track and completing the superstructure; The entire equipment, future maintenance, management and operation of the road, agreeable to the conditions and stipulations of the Government's transfer to the company.

From St. Louis to San Francisco is about 2300 miles. State governments cooperating with Incorporated Companies in about seventeen years have

built in this country more than 5,000 miles of railroad, at an average cost of \$24,500 per mile; and is it extravagant to assume that the Government of the United States, cooperating with a strong company, can finish in eight years 2300 miles, at an average of \$30,000 per mile? making the total cost of first construction, say seventy millions of dollars. Our plan would divide this expenditure about equally between the Government and the Company.

It will be asked, can such a company be formed without injury to the other business interests of the country? We think it can. Let the next Congress meet this project, and by the necessary legislation determine upon the completion of the first division at the earliest day. At the same session let them indicate the terms on which a transfer of the graded line to the right kind of a company would be made. Let those terms be liberal. It would have it in its power to say—"the entire improvements contemplated in the Government Division of the Road shall be transferred and made over to a company that can furnish satisfactory assurance of the fulfilment of its contract for the following considerations, viz: That within six months after the grading is done a locomotive shall traverse the whole line. That the Road shall always be kept in good order, and managed after the model of the best road, and according to the restrictions of the contract. That the company transport forever, free of charge mails, materials, and men belonging to, or employed in, the service of the Government; thus securing between the Atlantic and Pacific States a penny post, and a permanent reduction in the yearly expenses of Government fully equal to the interest of its investment. The insecurity inherent in the institutions of Europe, is inducing her capitalists to seek safe and permanent investments in this country, and here would be presented such a field as they are anxiously looking for, so that instead of an injurious diversion of capital from the channels of the present business of the country, we have secured a great accession to it.

Again, upon the existing Railroads, built at a cost of about \$130,000,000, all of which would be directly benefited by the opening of this, there will result an increase of value of not less than 5 per cent., making about six millions, which would probably equal the amount of stock taken by the capitalists in the Atlantic States.

It is difficult to calculate what amount of stock would be taken by the citizens of the Pacific territories. We know the road to be universally a pet, a favorite project; and it is not improbable that it would become a sort of Savings Bank to the accumulators of gold in those Western mines.

It is not apparent that Congress would have it in its power to insure the formation of a right sort of a company by the liberal nature of its terms?—And Government could well afford to be liberal; for, let it be remembered, there is no disposal of the adjacent lands required on this plan, until after their value has been enhanced by the completion of the work; and it is admitted by all who have examined the subject, that this increase in value, will exceed the whole cost of the road.

Government should send into the field next winter its commissioners, with ample instructions and means to put the entire line under contract at the earliest day. We anticipate the organization of the company within twelve months of that time, or before fifty miles of the line are in readiness for the track, when they should begin to operate from the terminus towards the centre, following close upon the forces at work on the Government division, whose supplies would come over the track thus laid,

A detachment in the Government service composed of land surveyors and receivers, under a Commissioner, should keep pace with the progress of the track, in laying out into sections and quarter sections, the fertile lands on either side, extending back some thirty miles, and bringing the same into market. Thus at a very early stage in the progress of our plan, would a compensating revenue begin to flow back to the Treasury, constantly increasing with the progress of the work, up to its completion; and exceeding the amount of the Government expenditure from 75 to 100 per cent.

Railroad Engineers will perceive that the line of separation between the two divisions are drawn exactly where, in the progress of railroad building, there is a natural division growing out of a change in the character of the work, of the operatives who perform it. This being the case, the forces on each could operate at the same time without interference or competition. It is common to let the work of the first division to one class of contractors, and that of the superstructure to another.

There are two elements not sufficiently appreciated by most that enter largely into the cost of this work; they are interest on the cost, and depreciation in the value of the first constructions, before the line is completed and becomes productive.

Twenty-five years are contemplated in the bill reported last winter for carrying out the plan submitted by Whitney. Annual interest on his expenditures will amount to no less than 25,000,000, and he puts depreciation at \$15,000,000, making an aggregate loss of 40,000,000; the most of which would be saved if 8 instead of 25 years were only allowed.

From this it will be seen, that having regard to the strictest economy in expenses, we must adopt that plan which secures the most speedy completion.

Why then should a plan any longer divide the public attention that fails to meet the daily increasing wants of our citizens; that has not even economy in construction to recommend it; that furnishes no assurance whatever of securing the object; that is strongly marked with features of a speculative character. And why should another plan be advocated that requires an increase of our national debt of 98,000,000, and a donation from Government besides of a half of all the lands adjacent to the Road, when here is a plan that guarantees the completion of the project in the shortest practicable time by the joint efforts of two powerful agencies, each in vigorous operation, for the same result; a plan that while using some 35,000,000 of government funds creates and enlarges the sources of the national revenue to more than double that amount; a plan that secures a national location guided by an enlarged view of the wants of the whole country, and not sectional; as would probably be the case if given into the hands of Northern or Southern capitalists.—What kind of a location are we sure of on Whitney's plan? Is there no risk where the quality of the land adjacent is to effect the value of the locators property; that the strict commercial wants of the country will often yield to the lateral attraction of a range of fertile lands or of gold placers?

Our plan not only secures a national location, but the Road is retained just long enough in the hands of Government to be stamped with all the features of a great national work, and is then passed over to the company, who are to perfect and fill up the outline.

Thus we have sought to develop a mode of operations at once simple and comprehensive, devoid of all complexity, by which this great trunk can be constructed, in the shortest practicable time, and at the

least expense and trouble to Government, and in the right place. Here no chance for extended political patronage is given, because Government ceases to have any part in the management of the Road after the grading is completed. T ALBOT.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5 1/2 Pine St., New York. - 3m

October 27, 1849,

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 1/2 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore STOCKTON & FALLS. October, 1849.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

TO CONTRACTORS.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.— Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYN,
Chief Engineer J. R. & K Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. }
Newark, Ohio, October 17, 1849. }

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,
Superintendent, etc,

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO. PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.

CHARLES F. M. GARNETT,
Chief Engineer.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 5 1/2 Pine St., New York. 1m19

May 12, 1849.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.,
68 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co. Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by

JOHN A. ROEBLING, Civil Engineer,

Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of Rolls (Rollers), both chilled and dry-sand, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burr, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849,

Norwich Car Factory,

NORWICH, CONNECTICUT,

At the head of navigation on the River Thames, and on the line of the Norwich & Worcester Railroad, established for the manufactory of

RAILROAD CARS,

OF EVERY DESCRIPTION, VIZ:

PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF

ENGINE TENDERS AND SNOW PLOUGHS.

TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

JAMES D. MOWRY,

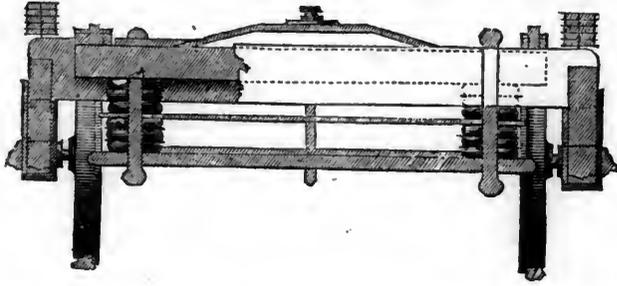
General Agent,

Norwich, Conn.,

Will meet with immediate attention.

1y8

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are
G. M. KNEVITT, 38 Broadway, N. York,
General Agent for the U. S.; and
JAS. LEE & Co., 18 India Wharf, Boston.
JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,
JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Railroad Iron.

1600	Tons,	weighing	60½	lbs. per yard.
185	"	"	57½	"
550	"	"	53	"

of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Oct. 13, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffer's Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

RAILROAD

India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.

E. CRANE, 99 State Street, Boston.

May 24, 1849.

Devlan's Machinery Oil.

THE Subscribers, Agents for P. S. Devlan & Co's "Patent Lubricating Oil"—price 80c. per gallon 4 mos. or 3 per cent off for cash.

We refer to the following certificate of Messrs. Norris Brothers, in whose works, any one by calling can see the oil in use and judge for themselves.

NORRIS' LOCOMOTIVE WORKS.
Philadelphia, April 2, 1849.

We have been using throughout our Works, during the last six weeks, "Devlan's Lubricating Oil," and so far as we have been able to judge from its use, we think it preferable to the sperm oil generally used, for both heavy and light bearings. NORRIS BROTHERS.

For sale by ALLEN & NEEDLES,
22 & 23 South Wharves,
Philadelphia Pa.

14tf

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849.

M. M. White, Agent,
No. 74 Broadway, New York.

au7tf

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac K.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. Burr Hewson, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN:
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
3m37
Sept. 15, 1849.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head from the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Menitt & Co., New York; E. Pratt & Brattle, Baltimore, Md.

L A P — W E L D E D
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.

- FOR SALE,**
 300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " " "
 50 " Catoctin " " "
 250 " Chikiswalungo " " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x 1/4 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.

Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hilles* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *A-*
gents for Watson's Perth Amboy Fire Bricks, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/4 to 15 inches diame-
 ter, and any length not exceeding 17 feet—manufac-
 tured by the Caledonian Tube Company, Glasgow, and
 for sale by **IRVING VAN WART,**
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

Pig and Bloom Iron.

THE SUBSCRIBERS are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared
 to execute orders for the different kinds and sizes of
 iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crane do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
 Do do Rounds and Squares, 1/2 to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/4 in.
 Bands, 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
 Trunk Hoops, 1/2 to 1 1/4 in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st. May 28, 1849.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by **WM. JESSOP & SONS,**
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
S DERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1 1/4 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Amer-
 ican iron, at their works at Jersey City, N.J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,
 MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggings, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Horse Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Mattress Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Shower Baths, |
| Pants, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders. |

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine
 Belting, Suspensers, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
 will be sold to the Trade at Factory prices.

* * * All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
 ings.
 October 20, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND, Prest. Beaver Meadow Railroad & Coal Co., Philadelphia, or, L. CHAMBERLAIN, Sec'y, at Beaver Meadow, Pa.
May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fulmer's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable. Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz: 2 Wrought Iron Cranks, 60 inches from centre to centre.

- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.
Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmund & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,
Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.

P This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationery Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,
BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.
Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. ly25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.
Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price \$3. to be had of all the principal booksellers.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

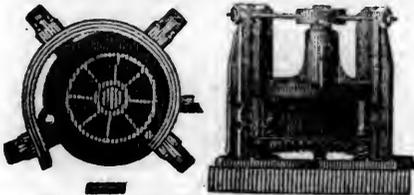
F. S. & S. A. Martine,

IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc.,
122 William Street,

Ferdin'd S. Martine, N. York. Steph. A. Martine.
3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting, Plushes, etc.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE Undersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE Undersigned, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1845. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

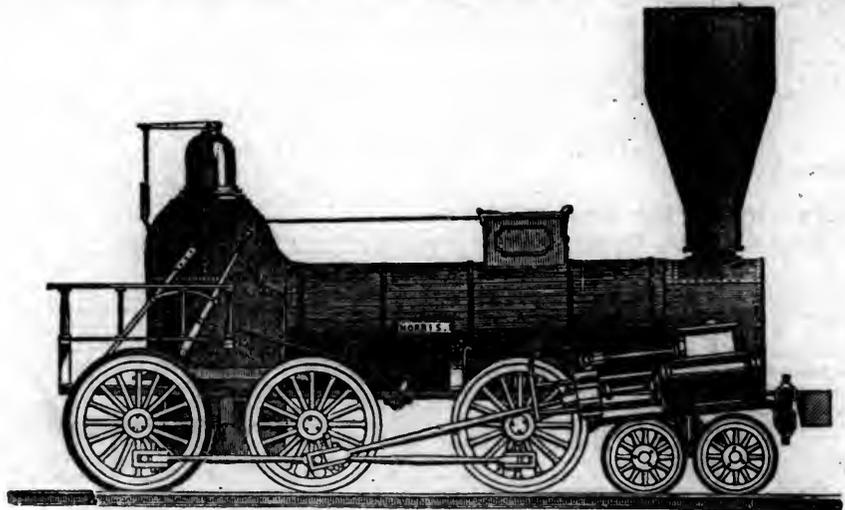
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 136 NASSAU ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 44] SATURDAY, NOVEMBER 3, 1849. [WHOLE No. 706, VOL. XXII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, November 3, 1849.

Lake Superior Copper Region.

Several meetings have been held the past summer in different places about Lake Superior relative to petitioning Congress for appropriations of money for building a ship canal past the Falls of the St. Mary. This subject, of great consequence to this region, has before been presented to Congress, and surveys have been made by authority of government. An act, authorising an appropriation at one time passed the Senate, but was lost in the House. From the energetic measures now adopted, better success is anticipated the coming session of Congress. We were present at the mass meeting at Eagle River on the 11th October, and have prepared the following report of its proceedings.

Appropriations are also required for other points specified in the proceedings. One of these is for piers at the mouth of the Ontonagon river. This river would be navigable for steamboats for twelve miles up, but for the sand bar outside of the mouth, upon which the water is generally about six feet deep, while within the channel is at least fifteen feet. Being at this place we made a survey of the mouth of the river, a sketch of which is here given; the



sea at the time was too rough to admit of obtaining the soundings—strong north and east winds prevailing for many days. The bar is changeable with the effect of the winds upon the water, and at times is so much diminished, that any vessel can enter.—Were one or two piers run out beyond this bar into deep water, which we are told, and which we should judge by the waves, cannot be more than 300 or 400 feet beyond the point, the river would at all times be kept open. The mouth is a place of much importance for the valuable mines near the river, about twenty miles up its course, and also for the fine agricultural and timber lands through which the river passes. Were this improvement made, it would be but a short time before a considerable population had settled along this river, and plank roads, one of which is already projected, would be constructed from the mouth to the mines in the interior. We have in a former number described the Minnesota mine in this district, and of this as well as of other mining tracts in the same vicinity, we are now furnished with further details of no little interest and importance, which we shall soon proceed to lay before our readers.

A mass meeting of the citizens of Houghton and Ontonagon, Lake Superior, was held at Eagle River on the 11th day of October, for the purpose of taking into consideration the urging upon Congress the necessity of making suitable appropriations for the improvement of harbors on the Lake, and especially for a canal past the Falls of the River St. Mary. Levi Hanna, Esq., was called to the chair, and M. W. Kelsey, Esq., was appointed secretary.

Messrs. J. T. Hodge, E. C. Roberts and J. R. Livingston, being appointed a committee to draft an address and resolutions, soon after presented the following report.

Mr. Chairman—The subject we are met to consider can be regarded with but one opinion by all acquainted with the rapidly increasing mining business of this section of the country. From our own observations, and the reports of scientific men, we are persuaded it is wonderfully rich in mines of copper and in iron ores: From actual results the opinion is forced upon us, that in a very short period this region will supply our country with all the copper it requires, which, heretofore, with small exception, has been imported from the mines of Cornwall, Cuba and Valparaiso. The value of these importations according to the Custom House returns is about \$2,000,000 per annum, equivalent to say 6,000 tons of copper. One of our mines is now furnishing nearly *one tenth* of this amount, and another year we believe not far from *one fifth* will be sent from this region—equal in value to \$400,000.

There are also in this same region bodies of iron ore of extraordinary extent and of excellent quality. This ore lies in ledges like common rocks, and the quantities upon the surface might long supply extensive works. It is of a character well suited for the manufacture of bar and boiler plate iron, and must find a large market in the country bordering the lower lakes, where, excepting about Lake Ontario, there are no mines that yield ores suitable for these purposes. Yet the expenses attendant upon the transportation of so heavy an article may long keep these mines comparatively unimproved.

To remove every obstruction in the way of a free communication between this mining region and the great markets of the country is of the last consequence. The most serious obstacle is the Falls of the St. Mary, which cause detention and increased cost to our supplies, and impose a heavy tax upon the metals taken out of vessels and hauled over the

portage. The lands bordering these falls belonging to the United States, no step can be taken towards constructing a ship canal except by act of Congress, and, inasmuch as the United States, the principal proprietor of the mineral lands, would be the party especially benefitted, it seems proper that we should present the matter in its true light to the Senators and Representatives in Congress, petitioning them to take it into consideration and adopt the measures we are persuaded are for the benefit of the whole country. And when we consider that large sums are annually expended for the improvement of harbors and removal of obstructions upon our coast, that foreign products may find more ready access for our use, we cannot but have confidence that so great an object as the development of a new internal resource will be deemed of no less consequence, and no less deserving the fostering care of our government.

We therefore beg leave to present the following resolutions:

Whereas, It has become apparent to all acquainted with the Lake Superior region that its mines must soon furnish the United States with domestic copper in place of the foreign metal hitherto imported, and also add this article to our exports; and that it is upon the iron mines of this region alone that the extensive country bordering the lakes must soon be dependent for its supplies of bar and boiler-plate iron, and

Whereas, A serious obstruction to the development of these mines exists in the interruptions to the navigation at the falls of the river St. Mary, the outlet of Lake Superior, causing delays and additional expenses both in the receiving of supplies and shipment of metals; and moreover rendering wholly useless the great fisheries of the upper lake, which, but for the falls, would long since have been improved to the great benefit of our citizens and the lake country, by the encouragement this business would have given to the settlement of tracts about its harbors; therefore

Resolved, That the time has come when the subject of the construction of a ship canal past these falls should be strongly urged upon the Senators and Representatives in Congress, as a matter highly conducive to the interests of the United States, both as the principal proprietor of the mining lands and as a people rendered thereby independent of foreign resources for so important an article as copper.

Resolved, That we confirm the nomination of the Hon. Messrs. Ashman, McNair and Allen, appointed at previous conventions a delegation to visit Washington to present our petitions, and urge their acceptance; and that moreover we respectfully request all persons in other States, interested directly in this mining region, or more generally in the prosperity of our country, to afford what aid may be in their power in furthering the efforts of this delegation. And that Levi Hanna, Esq., and Judge Wells Hawes, who propose to be in Washington the coming winter, be particularly requested so to time their visit, that they may bring their extensive knowledge of the resources of this country to the aid of the aforesaid delegation.

Resolved, That while we regard the construction of a ship canal past the falls of the St. Mary as the great object to be attained, of primary importance to the whole country, we also strongly recommend the construction of piers at the mouth of the Ontonagon river, a point presenting great facilities for the making of a good harbor at little cost, and the only such point within a range on the coast of 200 miles; viz: from Eagle Harbor to LaPointe.

Resolved, That we also strongly recommend the improvement of Eagle Harbor by the removal of the obstructions at its mouth, a work involving little expense.

The report having been unanimously adopted, a committee was appointed, consisting of Messrs. J. T. Hodge, J. R. Livingston and S. W. Hill to draft petitions to Congress relative to the objects of the meeting—the committee being instructed to ask also an appropriation for a light house at or near the mouth of Eagle River.

A committee of seven was also appointed to circulate the petition thro' different portions of the Lake country. A vote of thanks was passed to Hon. Samuel Ashmun and J. R. Livingston, Esq., delegates from the late convention at the Sault de Ste. Marie, for their attendance; also a request that papers friendly to the interests of this section of the country should publish the proceedings of this meeting.

The meeting then adjourned.

The following is the petition prepared in pursuance of the vote of the meeting, and since circulated through the Lake country.

To the Senate and House of Representatives of the United States in Congress assembled:

Your petitioners, resident, or otherwise interested in the lands on the South Shore of Lake Superior, respectfully set forth—

That the development of the extraordinary resources of this region and the sale of the lands belonging to the United States is much impeded by obstructions to a free communication with other parts of the country, of these the interruption to the navigation by the Falls of the St. Mary, the outlet of Lake Superior, is of the most serious consequence, causing delays and increased expense in the reception of supplies and shipment of metals; that the shores of the river at these falls are well suited for the construction of a ship canal at moderate cost, not exceeding one mile in length, and not requiring more than two locks.

That the river Ontonagon passing through a mineral region of great value, presents at its mouth the only point where a good harbor can be had for a distance on the coast of two hundred miles, viz: from Eagle Harbor to LaPointe: that a sand bar now prevents the entrance of the vessels navigating the lake into this capacious river, which obstruction may be entirely removed by the construction of piers at moderate cost.

That the otherwise excellent harbor, called Eagle Harbor, is obstructed at its entrance by a small rocky ledge, to the great danger of vessels entering, which obstacle may be removed by a small expense in blasting out these rocks.

That a light house is much wanted at or near the mouth of Eagle River, from which point the great proportion of copper hitherto shipped has been furnished.

We therefore earnestly request that the National Legislature grant the necessary appropriations for these several objects.

Indiana.

We feel great satisfaction in publishing the subjoined communication, and we earnestly hope that its recommendations will be followed. The failure of Indiana at the present time to meet her engagements would inflict an injury upon the State twenty times greater than the amount of the instalment due in January. There are now in process of construction over 500 miles of railway in this State. Nearly all these roads will require some foreign aid to complete them, and this can only be obtained by

maintaining the faith of the State inviolate. An English iron manufacturer, in conversation with us a few days since, objected to taking the bonds of the roads in this State, on the ground of her past failure to meet the interest on her debt. This stain she can soon wipe out if she will; and the success of all her public works hangs upon the payment of a paucity sum which she can pay without any inconvenience. We hope that all her citizens will see that they are directly interested in the prompt payment of the January dividend, not only as a matter of justice but of good policy.

INDIANA AGENCY, }
New York, Oct. 8, 1849. }

To His Excellency, P. C. Dunning, Governor of Indiana:

Sir—As the period approaches for the preparation of the material for your annual communication to the Legislature of our State, I have thought that I might be of some service to you, by throwing together such facts and suggestions, connected with the public debt of the State—its present condition and prospects—as will enable you to speak in detail upon that interesting branch of the public service.

In 1847, when the arrangement of the State's debt was made with her creditors, the debt, exclusive of int., was \$11,045,000.

There has been surrendered and converted into new stock to 1st July last,	\$9,530,000
Since July 1st,	33,000
	9,563,000

Leaving yet to come in 1848 bonds or \$1,488,000

These bonds are held in Europe and in this country, and are coming in gradually! I have little doubt that all will be surrendered as soon as arrangements can be made by the holders to obtain the assent of the parties interested in them.

The interest paid July last at this agency, was \$95,300, being two per cent. on \$4,755,000, the debt at that time, under the new arrangement. In January we shall probably have to pay \$100,000, as 235 bonds coming in from July to January will make up that amount.

We commenced paying interest with July 1847, and to the present time have made five semi-annual payments, amounting in the aggregate to near half a million of dollars. Meantime the State Stock has been gradually rising in value until it has advanced to 70 cents on the dollar—its full value, taking six per cent. interest per annum as the standard. This must be gratifying to the friends of our State, as it furnishes unmistakable evidence of an increasing confidence in her resources, as well as a firm reliance upon her integrity.

The large amount of treasury notes which have heretofore been paid for taxes, has somewhat embarrassed the State treasury. We have consequently at times been without the means to pay our interest as it became due. For the past dividends this deficiency has been supplied by borrowing the necessary amounts from our banks. To save us the necessity of borrowing, and to make our dividends, both of them payable after the annual revenues are paid into the State treasury, the legislature, by joint resolution last winter, instructed me to negotiate an extension of the January payment to March. In June last I prepared a circular upon the subject and sent it to the stockholders. In this circular I proposed that our January dividend should be postponed until the first Monday in March, when it should be paid with six per centum per annum interest from 1st of January. To the present time I have answers from 208 out of 549 holders, as shown by our July dividend book.

They, so far, almost unanimously agree to the postponement; some, however, consent on condition that all the others do the same, while several have refused positively to come into the measure. Others expressing an unwillingness to refuse to do anything in reason that the State may desire, reluctantly yield their assent.

The proportion withholding their consent—though ample time has been afforded—raises a fear in my mind that the proposition will not be agreed to by even a majority of them.

Such a state of things would not only be troublesome but perplexing. If the money should not be ready to pay the dividend in January, this agency would have to issue certificates for interest to those who declined the arrangement to postpone, and would have to be prepared to pay in March the dividend to those who had given their assent, and on each one of these payments interest would run against the State from the 1st of January, thereby greatly increasing the complex-

ity of the dividend and interest accounts. To avoid these evils, would it not be better for the State to borrow of the bank enough money for that purpose, and pay the January dividend in cash on the day it matures? By doing so, the State will meet the expectations of her friends, which have been that she would make all her payments, under this arrangement, promptly in cash. Other considerations, also, would seem to make this course preferable. As

1. The State stock is now at a price which places it by the side of the stock of the regular dividend paying States. To withhold or postpone a dividend would inevitably depreciate it, and impair the re-established credit of the State.

2. The State is now deeply interested in the completion of the Wabash and Erie canal. The funds now available for that purpose will hardly accomplish it. If our bondholders by our conduct, are assured of the stability and resources of the State, by having their interest regularly paid them, they would not only be better prepared, but better disposed, to make up the necessary sum under the law, to bring that valuable work in complete connection with the Ohio river at an early day.

3. There is hardly a neighborhood in the State that is not interested in some line of railroad in contemplation. These roads are wanting aid, and seek it away from home. The most certain method of securing this aid will be, to establish to the world that the State is rich in resource and prompt in payment.

4. In borrowing the money from our bank, we pay interest to an institution owned almost entirely within the State—by the State herself and her citizens, who make all the profits accruing from the loan—when by paying interest on the certificates, or on the extension of time, we send money out of the State to persons abroad.

5. By paying in money the State avoids the expense and confusion necessarily growing out of issuing certificates—many of them for ten dollars and twenty dollars—and of keeping complex interest accounts.

I am not aware that a feeling of indifference towards this debt exists in any part of the State. The debt being now arranged, it would be unfortunate if such were the fact. The bondholders have taken the Wabash and Erie canal for one half their debt, the stock of which, with near three years of interest accumulated upon it, is now worth but 17 cents on the dollar. They have advanced \$800,000 to finish the canal, and look to the State for but the other half of the original debt. This debt, I may say, is one of compromise. Favorable to this State, for it enables her to stand up firmly under all her liabilities. We are all, as citizens, parties to this compromise; for the State imposes a share of her liabilities as she sheds a portion of her character upon each citizen. The world looks upon our new stock as being clear of all questions which hung about the old bonds; indeed the State has authorized them so to be regarded. As the debt is without question, and the State without question able, I respectfully submit whether it would not be the better policy to provide the money to pay the interest as it becomes due, rather than to postpone it in part, issue certificates for part, and at the end foot a heavy bill of interest and expenses.

When I began I did not intend to run out in such length, but being familiar with the subject, I have ventured to trespass upon your attention, under a hope that I shall not incur the charge of obtrusiveness.

What I have said here, is in a spirit of anxiety for our State's welfare, and entirely, at your service, to be used as you may deem most proper.

I am your very obt' serv't
JAMES COLLINS, JR.

Ohio.

Scioto and Hocking Valley Railroad.

H. V. Poor, Esq.,

Dear Sir:—I take pleasure in informing you that the preliminary survey of the Scioto and Hocking Valley Railroad is now progressing. J. W. Webb, Esq. and corps, commenced at this place, and have reached Chillicothe, on the east side of the Scioto river, running thro' the towns of Lucasville, Pike-town and Richmondale, and will proceed from Chillicothe to Circleville, thence to Lancaster and Newark; and we hope on the opening of the spring to commence a final location. The route so far is in the highest degree favorable.

Previous to the commencement of the survey the Engineers run over the ground from this place, via the iron and coal region to Jackson, thence to Richmondale to Chillicothe, and found the route so very favorable, and the prospect of an iron and coal bus-

ness so enormous, that we have serious views of reaching Chillicothe by that route. As the work progresses, I will advise you.

Portsmouth, Oct. 20th, 1849.

In addition to the above, we copy the following from the Scioto Gazette:

The party conducting the trial survey of this line arrived in our city on Saturday last. The measured distance from Portsmouth—keeping on the east side of the Sciota, through Piketowa and Richmondale, crossing at Kilgore's ford, and continuing it to the river bridge at Chillicothe—is exactly 50 miles. Mr. Taylor, one of the engineers, informs us that the grade all the way is most favorable—being mainly a gradual rise from the Ohio, with but few depressions. The height of the river bank at the Scioto bridge here, is 225 feet above very low water mark in the Ohio. The party left on Monday, on their way northward.

We learn that the friends of the work, in Pike county, have resolved to raise 50,000 dollars for it by private subscription; and that their success is well guaranteed by what they have actually accomplished.

Pittsburgh and Cleveland Railroad.—We learn from C. Prentiss, Esq., of Ravenna, President of the Cleveland and Pittsburgh railroad, that the whole is now under contract from here to Wellsville.

The contractors are J. S. Chamberlain & Co., of Vermont. Men whose wealth, business capacity and great experience will insure the construction of the road at the time specified and in the best style.

These gentlemen did work on the Wabash and Erie Canal to the amount of one million dollars, about as much on the St. Lawrence Canal—and completed 70 miles of the Rutland railroad in Vermont at a cost of \$1,000,000.

They have now under contract 75 miles of the Ogdensburg railroad, which they will complete by June next.

We mention these things to show that the work is in hands fully able to complete it.

75 miles will be finished from Cleveland south, by November 1, 1850, and the whole by Nov. 1, 1851.

To the present condition of this road, we are almost wholly indebted to the untiring industry, and energy of one man. That man is C. Prentiss, Esq., its excellent President.—*Clev. Free Dem.*

Maine.

Traffic Table of the Atlantic & St. Lawrence railroad, for the months of August and September:—

	Passengers.	Freight.
August.....	\$7,517 55	\$2,714 97
September.....	7,317 76	2,725 43
	14,835 31	5,440 40

Total receipts for freight and passengers.....\$20,275 71

Of the above sums there were received for freight and passengers passing between Portland and North Yarmouth, and transported over the Brunswick and Bath road, the following amounts:

	Passengers.	Freight.
August.....	\$1,819 65	\$21 74
September.....	1,899 95	42 63
	3,719 60	64 37

Total receipts from freight and passengers derived from this source..\$3,783 97

YORK AND CUMBERLAND RAILROAD.

From all that we can gather touching the prospects of the York and Cumberland railroad, we think we are warranted in saying that it is in full tide of success.

At a meeting of the stockholders of Gorham on the 18th inst., to which we referred in a former number of this paper, A. C. Morton, Esq., resigned the situation of director of the road, though he still retains the position of consulting engineer.

Francis O. J. Smith, Esq., was unanimously elected in place of Mr. Morton, as a director of the company, and the board was organized on the 27th inst. as follows:

F. O. J. Smith, President.
John A. Poor, Vice President.
Tappan Robie, Treasurer.
David Hayes, Clerk and Secretary.

The means now at the command of the company will justify the completion of the road to Gorham as soon as the first of July next. A satisfactory arrangement has been made for the iron already delivered, with Messrs. Wainwright & Tappan, of Boston.

The grading of the line from Gorham to Morrill's Corner in Westbrook, is principally accomplished, and the line from Morrill's Corner to the depot grounds in Portland, a distance of about 3 miles, has been carefully surveyed and the right of way secured or arranged on favorable terms for nearly the whole distance.

A lot has been contracted for of Messrs. C. Q. & A. W. H. Clapp, upon their flats now being filled in Back Cove, for a depot, to extend from Chestnut to Pearl streets, 500 feet in length by 120 feet in width with an 80 ft street on each side, to be in common with the Kennebec and Portland road.

Hon. F. O. J. Smith and Messrs. Clapp have contracted to furnish the money to build this depot, and it is intended to make it one of the most spacious and elegant structures of the kind in the country.

We are informed that a circular will shortly be issued to the stockholders giving a full view of the condition and prospects of the company.

Our readers will recollect that a circular was issued by the directors a short time since, in which they expressed their determination not to sell the stock below par, or pay extra interest for money, to go forward with the road. We are gratified to learn that this policy has had the effect to improve the credit of the company. In the negotiations with the land owners, and for the iron the effect of this policy has been most salutary. Additional stock has been taken to a very considerable amount, and the old stockholders come forward with alacrity to meet the calls of the directors.

It may well be questioned whether other enterprises have not materially suffered by a too ready submission to the demand for exorbitant usury.—The instant a corporation becomes a prey to such influences it loses in the confidence of the public.—*Portland Advertiser.*

Institution of Mechanical Engineers.

ON THE EXPANSIVE ACTION OF STEAM, AND A NEW CONSTRUCTION OF EXPANSION VALVES FOR CONDENSING STEAM ENGINES.

By W. FAIRBAIRN, Esq.

The innumerable attempts that have been made to improve the principle of the condensing steam engine since the days of its celebrated inventor Watt, have nearly all proved failures, and have added little, if anything, to the claims, next to perfection, of that great man's ideas. It would be idle to speculate upon the various forms and constructions from that time to the present, which have been brought forward in aid of the original discovery of condensation in a separate vessel. All that has been done is neither more nor less than a confirmation of the sound views and enlarged conceptions of the talented author of a machine, which has effected more revolutions and greater changes in the social system, than probably all the victories and all the conquests that have been achieved since the first dawn of science upon civilized life.

It would be endless to trace the history of the successful and unsuccessful attempts at improvement, which for the last half century, have presented themselves for public approval; suffice it to observe, that no improvement has been made upon the simple principle of the steam engine as left by Watt, and but few upon its mechanism. Among the latter may be enumerated the improvements in the construction and mode of working the valves; and of these, the D valve, by the late Mr. Murdoch, and the use of tappets as applied to the conical valves, appear the most prominent and the most deserving of attention.

In the construction of the parallel motion, the application of the crank, the governor, and the sun and

planet motions, all of which have risen spontaneously from the mind of Watt, there is no improvement. The principles upon which all of them are founded have been repeatedly verified beyond the possibility of a doubt, and their mechanism is at once so exceedingly simple, and so ingeniously contrived, as to limit every attempt at improvement in those parts of the steam engine. What appears to be the most extraordinary part of Mr. Watt's engine is its perfect simplicity; and the little he has left to be accomplished by his successors.

It will be in the recollection of most persons conversant with the steam engine, that the hand gear for working the valves by the air pump or plug rod, gave a self-acting and continuous motion to the machine; and the facility which these means afforded for moving the engine in any direction, and at any required velocity, gave it a degree of docility and power beyond the expectations of its most sanguine admirers.

For a considerable length of time the hand gear was the best and most effective mode of applying the motion of the steam engine to the valves;—subsequently, the oscillating and revolving tappets, fixed upon a shaft, and driven by wheels or by an eccentric, came into use, and, by means of vertical rods, communicated motion to the valves, and thus a similar effect was produced as by the hand gear; next came Mr. Murdoch's D valve and eccentric motion, which, for simplicity, has never yet been equalled. The D valve, and the flat plate valve, are nearly synonymous, with this difference only, that the D valve presses with less force upon the face, and consequently works easier than the flat valve, which in every case is exposed to the full pressure of steam. It is true that means have been adopted to obviate this objection in large engines, by a preparation on the back of the valve which is made steam tight; and, by a communication with the condenser, a vacuum is formed over a proportionate area of surface, sufficient to equalize the pressure, and admit an easy motion of the valve.

The expansive principle upon which steam engines are now worked, and the economy which this system has introduced in the expenditure of fuel, has effected considerable changes in the working of the valves, and has rendered the D and plate valves almost inadmissible for such a purpose. To the skill, ingenuity, and careful attention of the Cornish engineers, we are indebted for many of the improvements connected with the use and application of expansive steam; and taking into account the high price of coals, and the urgent necessity of economy in those districts, which, combined with a system of registry and encouragement held out by premiums, as described by Mr. Jno. Taylor, we may reasonably conclude that other parts of the kingdom have been greatly benefited by the excellent examples set before them by the Cornish miners and engineers.

For a great number of years, and up to a recent period, the economy of steam and the working of the steam engine expansively, were but imperfectly understood in the manufacturing districts; and although the Cornish miner set an excellent example, and exhibited a saving of more than one-half the fuel, there were, nevertheless, few, if any, attempts made to reduce what is now considered an extravagant expenditure in most, if not the whole, of our manufactories. But, in fact, the subject was never brought fairly home to the mill owners and steam navigation companies, until an equalization or reduction of profits directed attention to the saving attainable by a different system of operation.

Ten years ago, the average or mean expenditure of coal, per indicated horse power per hour, was computed at from 8 to 10 lbs. per horse power per hour; but now it is under 5 lbs. per horse power per hour in engines that are worked expansively; and even then they are far below the duty of a well regulated Cornish engine, which averages from 2½ to 5 lbs. per horse power per hour.

This difference in the consumption of coal may be attributed to two causes: first, the conditions under which the duty of two engines (that of the Cornish miner and the manufacturer) are respectively performed. The first being chiefly employed in pumping water, has the benefit of alternate action in overcoming the inertia of a large mass of matter, which, when once in motion, is easier continued, for a definite time, than a continuous power of resistance,

such as exhibited in corn and cotton mills. Another cause is the greater care and attention which the Cornish man pays to his boilers, steam pipes, &c.; they are never left exposed, but are carefully wrapped up in warm jackets, and well clothed, to prevent the escape of heat. Even at the present day, it is lamentable to see (in the coal and iron districts) the great and extravagant waste that is continually going on, for want of a little considerate attention in this respect. The only excuse is the cheapness of the fuel; but that is not an excuse, for if one-half can be saved, and coal could be got at 1s. per ton, it is certainly desirable to save sixpence out of the shilling, when that can be accomplished at a trifling expense. But one of the chief, if not one of the most important reasons for the exercise of economy in fuel, is the reduction of profits on articles manufactured by power; under these circumstances, a saving in coal becomes a consideration of some importance; and to these reductions alone may be traced the powerful stimulus which of late years has been prevalent in that direction. The low rate of profit in manufacturing operations, and a desire to economise and reduce the cost of production to a minimum, has been of great value in its tendency to improvement in the economy and efficient use of fuel;—and also to the use of high-pressure steam, and its expansive action when applied to the steam engine. In France, and most other parts of the continent, the system has been long in use; and although its effects, as well as its economy, have been long known in this country, it was only within the last few years that the benefits arising from it were appreciated.—For a great number of years a strong prejudice existed against the use of high-pressure steam, and it required more than ordinary care in effecting the changes which have been introduced; it had to be done cautiously, almost insidiously, before it could be introduced. The author of this paper believes he was amongst the first in the manufacturing districts who pointed out the advantages of high pressure steam, when worked expansively; and for many years he had to contend with the fears and the prejudices of the manufacturers, before the present system of economical working was adopted.

The first attempt was by improvement in the construction of boilers and subsequently in the valves of the steam engine, adapted to either low or high pressure steam, when worked expansively; the latter of which it is the principal object of the present paper to develop.—*Practical Mechanic's Jour.*

To be continued.

The Pacific Railroad. ST. LOUIS CONVENTION.

We have now, through the St. Louis papers, received full reports of the proceedings of this convention; and for the purpose of preserving a record of a meeting of so much importance, as well as to give to our readers all its important results, we transfer the following condensed report to our columns. The convention was organized by the appointment of the Hon. Stephen A. Douglass, of Illinois, as President, and the following gentlemen as Vice-Presidents and Secretaries:—

For Vice Presidents—Wm. L. Totten, of Pennsylvania; Samuel Forrer, of Ohio; Samuel Emison, of Indiana; Henry J. Eastin, of Kentucky; Hon. Joseph Williams, of Iowa; Charles Bracken, of Wisconsin; Henry S. Geyer, of Missouri; John Biddle, of Michigan; Amherst K. Williams, of New York; Hon. W. B. Scates, of Illinois.

For Secretaries—A. B. Chambers, of Missouri; W. H. Wallace, of Iowa; A. S. Mitchell, of Kentucky; W. G. Minor, of Missouri; T. A. Stewart, of Illinois.

Judge Douglass, on taking his seat as President, made some remarks on the great importance to the whole country of the proposed work, and said that

* See paper read before the Geological Society of Manchester, in the year 1840, on the Economy of Fuel.

† See Report on the Prevention of Smoke and Economy of Fuel.—Transactions of the British Association, 1844.

the only obstacle to its success would be found in the conflicts of local interests, which would embarrass the discussion of the question in Congress and elsewhere. He was greatly encouraged, however, by the aspect of the convention, and trusted that all sectional feelings would be laid aside and an earnest and united effort made for the accomplishment of the work.

The convention adjourned at half past one o'clock in the afternoon, to meet again at nine o'clock the next morning.

SECOND MORNING.

After the passage of a resolution authorizing the President of the convention to appoint three from each State a committee on resolutions, the following resolution, offered by the delegation from St. Charles county, Missouri, was then up for discussion:

Resolved, That this convention does consider the prime object of its appointment and meeting to be, to elicit an expression of the public opinion, and the public will, as far as it can be done on this occasion, in reference to the establishment of a railroad and telegraph to connect the Atlantic and Pacific Oceans, for the benefit of our Union. That we deem the establishment of such road and telegraph to be an enterprise entirely worthy of the prompt, decisive and liberal action of the National Legislature. That it is emphatically called for by the national interests. That it belongs to, and is obligatory on Congress to take such immediate order on the measure as is consistent with the energy and power of this great nation.

Col. Benton, being then loudly called for, took the stand. He said he should occupy no time in dwelling upon the desirableness of such a road, for that he supposed to be universally conceded. He would simply read a few extracts from letters he had received on the subject from Col. Fremont, which contained information of some importance. He then read the following:

MONTEREY, (Cal.) June 27, 1849.

"I shall be anxious to receive the best information relative to your plan for a railroad—what the prospects are for its adoption, and towards what point of this country it will probably be directed.

"In conversing with Mr. Butler King and Gen. Persifer Smith a few days since, this road was a subject of general interest. I mentioned that the line explored in my last journey was admirably calculated for the road, passing the mountains between Arkansas and the Del Norte, with scarcely an inequality of profile, and with knowledge obtained since our disaster showed what would have been the character of its extension further west, to the Great Basin. A reference to the map will show you that this line crosses the valley of the Del Norte at the southern edge of the New Mexican settlements, a handsome and fertile country, whence a branch road might be thrown down the valley of the river and through the settlements of Santa Fe. The road would enter the basin at the southern end of the Mormon settlements, and cross by way of Humboldt river. About midway of that river's course, a large valley opens into it, and up this lies an excellent way to a low pass near the head of the lower Sacramento valley. Before reaching this pass, a way diverging to the north affords a very practicable valley road into Oregon, and, in my opinion, far the best by which you can reach that country.

"Immediately after this conversation, Gen. Smith determined upon a party to explore that part of the route which I have last described, with a view to report upon it at the ensuing session of congress.—He afterwards called upon me to request that I would send him a written communication, to the same effect, in order that hereafter the credit of the suggestion might remain with me. It is not pleasant to see the work pass into other hands, but private means are inadequate to such undertakings here."

This is the account which Col. Fremont gave of the line of his last exploration. In letters which were previously written from the base of the Rocky

Mountain, from Bent's Fort, giving an account of his explorations that far, he says:

"We have met with very reasonable success, and some good results, in this first long step in our expedition. To avoid the danger of snow storms upon the more exposed Arkansas route, I followed the line of the southern Kansas, (the true Kansas river)—and so far added something to geography. For a distance of four hundred miles, our route led thro' a country affording abundant wood, game and grass. We find that the valley of the Kansas affords by far the most eligible approach to the mountains. The whole valley soil is of very superior quality, and the route very direct, (between 38 and 39 deg.) This line would afford continuous and good settlements, certainly for four hundred miles, and is, therefore, worthy of consideration in any plan of approach to the mountains."

Col. BENTON proceeded to say that it was no part of the duty of that convention to settle or discuss the question of location. To induce Congress to make the road was the great object; practicability would be the first inquiry of Congress; and upon that point the labors of this convention should bear. Practicability could not be shown unless by showing a line: and this led to the necessity of considering localities, and finding a line on which a road could be built. In this point of view the extracts just read from Mr. Fremont's letters became vitally important. That young man had examined and fixed the locality and character of the South Pass—a name proper when given, but now become a misnomer.—In the year 1842, Oregon was our only possession on the Pacific coast at that time; and the objects of explorations then was a communication with the Columbia. The next year Mr. Fremont, in searching a new route west of the Rocky Mountains, fell upon the Great Basin, the Sierra Nevada, and California; and since that time his explorations in the Rocky Mountains have been south of the South Pass, and with the view to find practical communications further south. He had found, or rather he had examined and described many; for, like the S. Pass, they had all been discovered before; and in each of the three Parks, and at the head of the Arkansas, he found practicable passes. They were nearer the true line than the South Pass, and therefore preferable in point of locality to that pass; but he decided in favor of no one of them. There was a line further south still, which, from the beginning, occupied his thoughts, and that was at or about the head of the Rio Grande del Norte. He had no preference until he could explore that route, and that was the object of his last expedition—so disastrous to himself and his devoted comrades, but so rich in precious results to the country. The brief report of these great results was contained in the extracts of the letters which he had read; and they showed everything that the friends of this great highway of nations were in search of all the requisites for the great road which was required in our North America, from ocean to ocean. First, directness of course; for the line was between 38 and 39 degrees till it crossed the Rocky Mountains, then deflecting a little to the north, it entered the Great Basin, and touched the Mormon settlements, between 39 and 40—which, in that part, was about the straight line from St. Louis to the Bay of San Francisco. He said the straight line, in contradiction to the latitudinal line; and the difference between them from St. Louis to San Francisco would be about one degree in the middle—of course nothing at the ends. One great requisite of the road then was here found in the great point of directness of course; for, keeping between the same degrees of latitude, you follow the Kansas four hundred miles; you go on into the valley of the Upper Arkansas; and, still holding on your course, you enter the valley of the del Norte near the head of that river, where there is an easy pass; and after that by only a slight deflection to the north you get into the straight line. Mr. Fremont did not see this pass; the mistake of his guide, in the deep snows led him upon one of the most inaccessible heights of the Rocky Mountains; but that did not alter the fact. The pass was there—the same through which Roubidoux had taken loaded wagons—and which, information received after his disaster, proved to be a good one, with a good practicable line beyond it to the Great Basin.

Practicability, the indispensable requisite of the

road, was established on this line. The emphatic language of Mr. Fremont, his remark applying to the mountainous region which requires to be traversed, is that it presented scarcely an inequality of profile.

Another great requisite was adaptation of the country, which this line travels, to inhabitation and cultivation, and the means it presented for the construction and maintenance of the road. This requisite was fulfilled—wood, water, good soil were found along it—no less than 400 miles of such country along the Kansas—the valley of the upper Arkansas, as far used, the same—the valley of the Del Norte still the same; being, in Mr. Fremont's own language, "a handsome and fertile country."

Then the three great requisites for the road, practicability, directness of course, and adaptation to settlement are found upon this line.

Two other requisites were presented. California, though the jewel of our western possessions, was not the only possession which we held towards the setting sun. Oregon and N. Mexico were there, and must not be forgotten or neglected. We must have a road to them, if we mean to treat them as children of our family, and a branch road to each Mr. Fremont shows to be easy and natural, the way provided by the hand of nature, that for New Mexico leading down the valley of Del Norte from near the northern settlements to Santa Fe and El Paso—that for Oregon branching from the further side of the Great Basin, and on this side of the pass in the Sierra Nevada, through a valley leading to Oregon, and presenting in his opinion far the best way by which that territory (meaning the lower part of it of course) can be reached. Thus, all the requisites, natural and political, desirable for the great road to the Pacific ocean, are fulfilled upon this line.

Col. Benton then proceeded to examine and refute a statement made in a document published by a Committee appointed at the St. Louis Mass Meeting, to the effect that there was no practicable pass for such a road south of the South Pass, and that Mr. Fremont had so stated. This, Col. B. declared was an error. There were and are passes—Mr. Fremont had described them—at various places further south. Pulliam's fork of the north fork of the Platte—the three Parks—and the head of the Arkansas—all presented them; and Mr. Fremont had crossed them all and described them all. There was and is a pass from the head of the valley of the Del Norte leading to the Rio Compadre, a branch of the upper Colorado, and upon which, (the Rio Compadre) Mr. Joseph Roubidoux, well known in this city, had a trading post; and to which post loaded wagons have gone from Bent's Fort on the Arkansas through that pass. Mr. Fremont knew this.—All the men of the mountains knew it. It was a part of his plan from the beginning to examine that pass, and that was the object of his expedition last winter, and the sole object which could have induced him to explore a new route to California at such a season. He never told any body that there was no pass south of the South Pass, for he knew better—he had spent years in exploring several, had fixed their localities and published their descriptions, and made his great expedition last winter for the express purpose of fixing the locality, and describing the character, of the only remaining one which claimed his attention—the one by the head of the Del Norte.—He never said that the South Pass was the only route. He never even said it was the preferable route. Mr. Fremont is not the man to express an opinion before he forms it, nor to form it before he understands it. He must know all before he speaks—and upon that principle it was that he took his new route last winter, to examine the last route which belonged to the line of central communications; and the results of which briefly, but comprehensively and lucidly told, are in the extracts which have been read to you from his letters.

The south pass, though good in itself, has never met the approbation of Mr. Fremont for the road to California. It is too far north. He wanted a route three or four degrees further south; and has found it! and gives the country the benefit of it. General Persifer F. Smith has now sent a topographical officer to examine the only link in the chain which Mr. Fremont himself has not examined. That officer is to make his report in time to be laid before Congress at its ensuing session. All the remainder of the route, and all the country through which it passes,

has been examined by Fremont himself; so that all the information, and in authentic and official form, which is necessary to the action of Congress, will be ready for it at the approaching session; and the law may then be passed for the location of the road.

We do not diverge into discussions upon details: we do not pretend to locate a road. But a knowledge of details is necessary in order to be able to judge of the great points which must govern the question, practicability first, as an indispensable requisite—and all the other desirable requisites. Details embarrass all questions—impede wise discussion—and balk legislation. Congress should not undertake to locate the road—should only fix the governing points—and leave the rest to the engineers and the mathematics, under the obligation to connect the points by the nearest and best routes. This is what Congress should do, and for this everything will be ready at the ensuing session.

We have seen the new route under all its aspects of practicability, adaptation to settlement, directness of course, and facilities of construction and preservation. Another high requisite of a national road, is nationality; and that presents itself on this route. That is national which suits the greatest number of the nation; and such is the case here. It is central and national. It is between thirty eight and thirty nine degrees; these two parallels include the whole route from St. Louis to the Pass at the head of the Del Norte; include the Bay of San Francisco and Washington City; they cover the centre of the U. States; and from St. Louis, east, lines of roads built by the States—a line direct to the Atlantic—diverging lines to every commercial city on the Atlantic, the Lake and the Gulf frontiers—will reach and accommodate all the States east of the Mississippi river. The States will do this; Congress is only asked to bring this central trunk from the Bay of San Francisco to the west bank of the Mississippi at St. Louis. Water and iron—the steamboat and the steam car—will do the remainder; and from this great point, fleets of steamboats swimming every stream, and long lines of cars running every road, will carry the commerce of Asia through all the interior and to all the corners, and to the whole circumference of our wide confederacy. Nor is it to stop there. Europe will receive its supply of Asiatic goods through our America: and ocean steamers departing from our Atlantic coast, may reach not only the western cities of Europe, but run down the Mediterranean, up the Archipelego, and astonish Constantinople with Asiatic products coming west instead of east.

The San Francisco and St. Louis route, as shown to be practicable and preferable by the last exploration of Mr. Fremont, was the national route, demanded by every national consideration. It was territorially central; and that was a great recommendation. It was commercially central; and that was another. It was central to population; and that was still another recommendation. It would accommodate the greatest number of states and persons; and that was a crowning consideration in favor of its nationality. It could not pass through every state: then let it take the middle of the whole, and accommodate the greatest number.

Mr. Benton said he had some experience in road making in the vast region which lies to the West. Twenty-five years ago, "solitary and alone," he had moved a bill for a road from the frontier of Missouri to S. Fe. It was then considered one of the wildest of his "humbugs;" but the bill was passed—the road laid out—and a rich commerce been going on upon it ever since. It was objected to as being an external road; but as that objection came from those who were against internal roads, was pleasantly received; and the bill passed by nearly three to one in the Senate, and without a division in the House of Representatives.

That road was the humble commencement of the great system which is to put us into communication with the Pacific Ocean. One of the arguments for it was the same—the interest of commerce, and the duty of the General Government to give interior, and overland commerce, the favor and protection which induces it to send fleets into every sea to foster and protect the commerce of the ocean. Great merchants and statesmen supported that bill upon that ground—among them Mr. Van Buren of New York, and Mr. Lloyd of Massachusetts—the latter being a merchant in that large sense which includes

the statesman—which has enabled some merchants of Great Britain, of Holland, of Italy, to revive the recollection of the "merchant princes" of Tyre and Sidon, and to become by their enlightened patriotism the political benefactors of the country and their commercial enterprize enriched. The little bill for the Santa Fe road found such in the Congress of the United States in the year 1825. The great bill for the American road to India, through the centre of our Union, will expect to find such in the Congress of 1850.

Discarding all sectional and all local considerations, Mr. B. was for a national road in character, as well as in name—national in its location, by being central—national in its construction, being made by the nation—national in its title, by belonging to the nation—national in its use, by being used by the people free of tax. A slight transit duty in the nature of a drawback, common to all countries and to be regulated by treaty, would bring from foreign commerce enough to put great revenue in the treasury after keeping the road in repair. The track of European commerce will quit the ocean route, on the establishment of the American road, just as suddenly as the commerce of the desert and the camel quit the land routes upon the discovery of the Cape of Good Hope. All the commerce of Europe with Asia will go through our country; the carriage of it enriching our citizens, while a transit duty will put money in the treasury, and the necessity for its use will put Europe under bonds to our America for its peaceful behaviour.

Nationality, he repeated, and with great emphasis, was his polar star in his labors upon that road; and if all national considerations brought it by the city of St. Louis, and through the heart of Missouri, it did not belong to any part of the Union to repine at the result or to oppose the road on that account.

Mr. B. spoke of the ardor of the American Character, its love of enterprize; its intelligence; and its irrepressible activity. He said it must have employment; and if it could not find a war, or some great object, worthy to engross its energies, it must fall upon a small one—even a *morus multicaulis* speculation; and the whole country go planting bushes, and counting fortunes at the rate of thousands of dollars for each opening bud. That activity—that restless spirit of enterprize—is now without occupation, and panting for employment. Give it the road! and a hundred thousand men will go upon it! and in seven years all will be finished!

Mr. Benton did not enter into considerations for constructing this great central road. It was foreign to his purpose to mention the great commercial political, military, and social reasons which recommended it. One only he was unable to repress. All felt that such a road would be a band of iron, hooping and binding the States together east and west, from the Atlantic to the Pacific: it would also be a cement of union north and south. The lateral and converging roads would bring together in the centre the inhabitants of the north and the south. They would meet in the great line which would go east from the Mississippi, and feel again, as their fathers did in the time of the revolution! feel that they were brothers, children of the same mother country, with a heart to love, and a hand to support each other.

Mr. Benton having concluded, Mr. Loughborough addressed the convention in reply to Mr. Benton, and stated that, as he had himself, at the desire of the committee of twenty-five, drawn up the article objected to by Col. Benton as contrary to the opinions of Mr. Fremont, he felt called upon to say a few words in its defence. Whatever facts relative to the Pacific railway had been subjected to the consideration of the convention, were facts so well authenticated as to be entirely beyond reasonable doubt. He mentioned his authorities, a number of persons who have had long experience in every portion of the route proposed by the committee of twenty five. If the speaker has made Mr. Fremont express other opinions than his own, he begged the convention to believe that it had been done inadvertently. He was not prepared at present to discuss the subject with Col. Benton, but he trusted at an early opportunity to be enabled to discuss it in all its bearings, to the satisfaction of the convention.

After the conclusion of Mr Loughborough's speech several resolutions were offered, but postponed.—

The following, however, passed unanimously:

Resolved, That this convention does consider the prime object of its appointment and meeting to be, to elicit an expression of the public opinion and the public will, as far as it can be done on this occasion, in reference to the establishment of a railroad and telegraph to connect the commerce of the Atlantic and Pacific oceans for the benefit of our Union.— That we deem the establishment of such a road and telegraph to be an enterprize entirely worthy of the prompt, decisive and liberal action of the National Legislature. That it is emphatically called for by the national interests. That it belongs to, and is obligatory on Congress, to take such immediate order on this measure as is consistent with the energy and power of this great nation.

On motion, the convention adjourned (half past twelve o'clock) to meet again at the east front of the Court House, half past three o'clock P. M.

AFTERNOON SESSION.

After some unimportant matters were disposed of, it was moved and seconded, that a member of the convention be appointed from each State represented, to draft a memorial to Congress explaining the objects and views of this convention.

A resolution was then offered by Judge Birch, of Missouri, and read by the secretary, as follows:

Resolved, That the present state of geographical and topographical information concurs with the statistics of population and wealth in donating the best of public territory along on near the 40th parallel of north latitude as the starting point; and the general course of emigrant route to the southern pass in the Rocky mountains, as the line of the projected national railways to the Pacific ocean.

Mr. Lathrop, of Louisiana, moved that the resolution be laid on the table. Judge Birch explained that he did not ask the convention to pass this resolution, but to refer it to the committee on resolutions and spoke at considerable length, and begged the gentleman of Louisiana to withdraw his motion—which was done.

Gov. King then arose to address the convention, when he was called to order amid much confusion, upon the ground that he was a Missouri delegate, but not in the gallery; but the governor being an invited guest, it was declared that he had a right to be heard from any part of the house. The governor then spoke at some length in opposition to Judge Birch's resolution, and was followed by Judge Williams of Iowa, in an excellent speech, which was delivered in a very happy, off-hand manner, amid thunders of applause.

Mr. Lathrop renewed his motion to lay the resolution on the table.

The chair announced that he had selected the committee on resolutions, to consist of three delegates from each State represented.

THIRD DAY—MONDAY.

The morning session was occupied in the discussion of various matters, principally resolutions which were referred by the convention to the committee on resolutions. A resolution was offered that Congress should immediately commence this work beyond the limits of any state, which called forth a speech from Hon. O. H. Smith, of Indiana, in opposition to the "clause which fixed the commencement of the work at a point outside the limits of the State. None of us want a road that shall terminate in the wilderness. The work about to be undertaken will prove an Herculean task. No single State, no company of speculators would broach it with any rational hope of success. It must, then be a national work; and, in order to make it national, the interest of every State must be enlisted in its favor.— And further, how can we collect toll, and how can

we properly assume control of any kind whatever over a road terminating out of our States? The doctrine that the general government has no right to make a road through a State, is incorrect, and should not be allowed to interfere between us and our interests. The speaker proposed to explain his views on other branches of the subject. In relation to the establishment of a line, he begged to say emphatically that it ought to be established immediately. "Do not," said he, "leave the selection of the route to the wisdom of Congress." After all, our Congress is composed of Congressmen; and these Congressmen, alas! had been mere ordinary men before they were elected. That office did not always foster wisdom, was a fact established beyond doubt. In relation to the Railway route, the speaker said that our government would of course establish only a single line. Whether that would be the Whitney line, the Central line, or the Memphis line, he did not pretend to determine, but, to his mind, the central route certainly appeared the most feasible and the best suited. He begged to add that this was not his opinion only, but the opinion of the citizens of Ohio, Indiana and Illinois. The impression that either of the States was in any degree opposed to the termination of the route at St. Louis, was a most erroneous one. They looked upon it as the proper the natural, the only practicable terminus."

After the conclusion of this speech Mr. Douglass resigned the chair for the purpose of participating in the debates of the Convention.

AFTERNOON SESSION.

The convention met at three o'clock. After some unimportant preliminary proceedings, the secretary, at the instruction of the president, read the following report of the committee on resolutions:

Resolved, That this convention is in its spirit and objects strictly national, having no party, no section, no local interests to serve or promote, but having at heart the interests of the whole country.

Resolved, That it is the duty of the Congress of the United States to make immediate provision for the construction of a great trunk railroad to the Pacific ocean in California, with a branch road to Oregon, from such point in the Mississippi valley, or on the frontier of the states, as may be found, from examination and surveys, to be most eligible and convenient with reference to the existing and prospective state of the country, and the population and commerce of the whole Union; and that it should be diligently prosecuted by the federal government.

Resolved, That the various lines of railway, now either complete or under process of construction, from Savannah, Richmond, Charleston, Baltimore, Philadelphia, New York and Boston, tending to and connecting with the Mississippi valley, are only parts of the great whole, which the general government is asked to consummate by the Mississippi and Pacific railway; and that these eastern connections now being prepared for it, by uniting all interests, guarantee the perfect nationality of this work.

Resolved, That, as an important means, a necessary preliminary to the construction of such railroad, it is the first duty of the American Congress, immediately upon its assembling together, to make provision for the establishment of military posts from the western confines of our western states to the Pacific ocean; that these posts should be established numerously, in all proper places, not far distant from each other; and that civilized productive settlements should be encouraged around them, by liberal sales or grants of the public lands; by extending ample protection to the settlers, and to the transport of their stores, merchandise, etc, so that, by these means, full opportunities may be afforded to our topographical engineers for the immediate reconnaissance and survey of our vast possessions, reaching to the Pacific, and one or more safe practicable roads, with facilities of travel, immediately formed for our citizens, across our own territories, from the Atlantic to the Pacific shores.

Resolved, That the Congress of the United States be memorialised to construct, or authorise the con-

struction of a national line of telegraph along the route which may be determined upon by national authority, for the great railway to the Pacific.

Resolved, That a committee of five be appointed by the president of this convention, to report and publish an address to the people of the United States, urging their co-operation in procuring such action on the part of Congress as may be necessary to carry out the views of this convention.

Hon. R. W. Thompson, of Indiana, then addressed the Convention, examining at some length the routes upon which it was proposed the road should be located. He contended that it was the duty of the General Government—and he strongly emphasized the word *duty*—to build a Railroad which should connect the waters of the Pacific Ocean with the waters of the Valley of the Mississippi. He contended that such Railroad should be a central and a national one; that in order to make it central, three lateral branches should be constructed from its eastern terminus—one reach Memphis, another to reach Chicago, and another reach St. Louis. He contended that the Convention should, by their action, express their preference for such a central road, and then leave to Congress the performance of their duty; and if they did not make such a road, to hold them strictly responsible at the bar of public opinion. If the Convention resolved upon this great project, and presented some definite action, there was no danger to be apprehended from Congress; public men always loved the people too well not to reflect their will, and conciliate all sections of the Union. After dilating, in an eloquent manner, upon the practicability of the measure, and its vast importance to the world, he concluded by submitting the following resolutions, in lieu of those reported by the Committee.

1. Resolved, That, in the opinion of this convention, it is the duty of the general government to provide, at an early period, for the construction of a central and national railroad from the valley of the Mississippi river to the Pacific ocean.

2. Resolved, That, in the opinion of this convention, a grand trunk railroad, with branches to Memphis, St. Louis and Chicago, would be such a central and national one.

3. Resolved, That a committee of fifty, (Mr. Thompson, of Indiana, acting as chairman,) be appointed to communicate to the convention to be held at Memphis, the foregoing resolutions, and to request the concurrence of said convention therein.

The secretary then read an invitation extended by the delegates from Tennessee, in the name of their fellow citizens, to the members of the St. Louis convention to attend the convention shortly to be held at Memphis. It was moved that the chairman appoint fifty delegates from Missouri to attend the Memphis convention. After several eloquent speeches, expressive of approval of the resolutions last passed on the subject of the railway, the convention adjourned till to-morrow at 9 o'clock A. M.

LAST SESSION.

Memphis Delegates, Philadelphia Convention, etc., etc.

At 9 o'clock in the morning, the convention met pursuant to adjournment. Judge Samuel Treat, of Missouri, then arose, and having read the following resolutions, offered by the committee on resolutions and afterwards excluded by the amendments which passed, trusted that they would be adopted:

Resolved, That as an important means, as necessary and preliminary to the construction of such railroads, it is the first duty of the American Congress, immediately on its assembling together, to make provisions for the establishment of military posts from the western confines of the western states to the Pacific ocean; that these posts should be established numerously in all proper places, not far distant from each other, and that civilized and productive settlements should be encouraged around them, by liberal sales and grants of public lands, and by ample protection to the settlers.

Resolved, That the Congress of the United States be memorialised to construct, or authorise the construction of a national line of telegraph along the

line which may be determined upon by national authority for the great railway to the Pacific. Said line of telegraph to be constructed in connection with the military posts named in the preceding resolution, and to be pushed to completion as early as practicable.

After the transaction of some other unimportant business, the convention adjourned to meet in Philadelphia in April next.

Pennsylvania.

Central Railroad.—The following bird's eye view of the present condition and prospects of this work is presented in a letter from the Associate Engineer, under date of 20th ult., addressed to the President of the Pennsylvania and Ohio Railroad Co.

"You are aware that the Pennsylvania railroad has been opened to the public between Harrisburg and Lewistown, a distance of sixty miles, which is not sufficient to command a large share of the western travel. On this section is the great bridge over the Susquehanna river, which alone cost \$200,000, but notwithstanding these drawbacks, the road now earns equal to five per cent. per annum on its cost.

Above Lewistown the road has been delayed by the sickness which has prevailed to an unusual extent this year among the laborers on the Juniata.—The heaviest sections, however, are done, including the deep rock cut at Newton Hamilton, and the tunnel on the Little Juniata, and it is confidently anticipated that a further section will be opened to Waynesburg early in the winter; to Huntingdon in time for next spring's business; and to Holidaysburg by next summer. This will bring us, by a connection with the Portage, within seventy miles of Pittsburg by turnpike, and 103 miles by canal.

The part of the western division just put under contract, will extend the road twenty six miles further westward, and beyond all the mountain ranges of western Pennsylvania. Of this distance, fourteen miles of the heaviest work has been assigned to able and respectable contractors, to be commenced immediately, and completed April 1st, 1851.—The remainder is light work, and will be commenced in the spring, together with an additional section of similar character in connection with it, which will bring us to the Southern Turnpike, at a point about forty miles from Pittsburg, all of which will be pushed so as to be completed simultaneously by the time above named.

I have just organized a corps to make the final revisions and improvements of the location between the Loyalhanna and Pittsburg, with a view to putting the heaviest sections of that portion of our line under contract, as the Board hope to have the means at their command for this purpose next spring.—The lighter sections will be delayed until the heavy work has advanced so far as to permit the whole to be simultaneously completed, which I think may be done by the spring of 1852. In the course of that year, I fully expect that our board will have the pleasure of inviting the directors of the Ohio and Pennsylvania railroad company to ride in our cars from Pittsburg to Philadelphia, and I hope that the great work so happily commenced under your auspices, will be in such a state of forwardness that you will be able to reciprocate the invitation, and carry them on your iron river far into the fertile regions of central and western Ohio."

In connection with the foregoing subject, we find the following article in the Pittsburg Gazette of the 24th ult.

"We have been favored with the perusal of a correspondence of the President of the Pennsylvania railroad company with Messrs. McCandless and

McClure, the legal advisers and agents of the company in this city, from which we learn that Allegheny county bonds, to the amount of \$200,000, have been forwarded to the directors, and \$100,000 more will soon follow. The proceeds of these bonds will be spent in the purchase of railroad iron, 4,000 tons of which have been already negotiated for the western division.

We learn, also, from the letters of the President, that the board is anxious to put the whole western division under contract at as early a day as possible, and are only waiting now for the means. The remainder of the Allegheny county bonds will be devoted to this purpose, and the directors confidently hope to receive some additional aid from the capitalists of Pittsburg, to assist in the early completion of this great work.

AMERICAN RAILROAD JOURNAL.

Saturday, November 3, 1849.

Hudson River Railroad.

Certain parts of the permanent way of the Hudson River Railroad strike us as being of a very faulty construction. The cross-sleepers are adzed down from the ends towards the middle, the middle being the *weakest point*, although the load acting from the ends with the energy of a lever, requires that the middle shall be the *strongest point*. The object of hollowing out the cross-sleepers is, we presume, to obtain sufficient depth for the pavement of the streets through which these portions of the line pass; but surely, an educated invention can meet this condition by a less objectionable system of permanent way. The system adopted involves not only a great waste of labor and material, but actually runs counter to a principle of construction so plain as to be amongst even the *instincts* of every practical man.

The rails, too, rest on cast iron *seats*—we cannot call them *chairs*—of very questionable utility; and are bolted through the seats to the knob ends of the hollowed sleepers, the object of the knobs on the ends of the sleepers being, it is supposed, to raise the rail to the proper level. The joints of the rails are treated in precisely the same way as the intermediate parts—except, indeed, that a strip of sheet iron of the scantling of ordinary iron hoop is made to overlap a little of the lower web of the rail. This part of the line is probably not intended for locomotives; but the construction used is quite objectionable in any case.

A better system of permanent way, and one equally suited to the circumstances of the case, might be easily substituted for the existing one. For instance, may not the sleeper be laid down *whole* to a depth sufficient for the purposes of paving; and if longitudinal bearers be considered objectionable, the level of the rail be attained by inserting cleats of hard wood between the rail and the sleeper? We would, however, recommend that the sleepers be laid down *whole* to the necessary depth; and that the rail be bolted to a longitudinal bearer of timber crossing the ends of the cross-sleepers. This simple arrangement will not only make the rail much stronger, but also save the material and the labor lost in adzing down the sleeper, and also the cost of the useless castings with which the rail is bolstered up; and by giving the rail a continuous support, making it much stiffer, and by placing it on a slightly elastic material, making the motion much smoother, diminish the draught and increase the duration.

While on the subject of this railroad, we would suggest the further necessity of an examination in-

to the fitness of certain curves on the road for the high velocities with which it is intended to be worked; and to hint at a particular case suggest the positive necessity of altering an S curve some ten miles from the terminus.

We throw out these hints under a sense of duty to the public; and as they refer to particulars that, in the mass of details occupying the attention of the gentlemen conducting the work, may have escaped their notice, we trust they will be accepted in the candid spirit which suggests them.

Pacific Railroad—Exploration of the Route.

In a recent number of the Journal I showed cause why the South Pass and St. Louis should be considered as fixed points on a *national* railroad from the Mississippi to the Pacific. These points I attempted to establish satisfactorily from premises strictly abstract; and assumed no other fact in connection with the route than the simple one of the practicability of the South Pass for railroad purposes. The absence of any *precise* information as to the country lying between these two points led me to conclude that all the established facts of the case go simply to fix these two points as the basis of an engineering exploration; and now that men are beginning to fall into the views put forward in this particular by the Journal, I beg leave to go further in suggesting a system for this exploration.

Barometric sections are at best but rough approximations and the ordinary exploration plans are even still more loose, and both are besides so much labor lost, being quite useless for the purposes of the more precise survey, that in the case in hand must be undertaken subsequently. These explorations furnish *no evidence for any engineering purpose*. I therefore take leave to recommend that a trigonometrical survey be substituted for the ordinary system employed in exploring the country between the Mississippi and the Pacific. Adopting the arc of a great circle—the air line—from St. Louis to the South Pass as the basis of operations, and fixing the average maximum limit of deviation on either side at fifty miles, the whole belt of country should be *poled* out into a regular system of triangulation. The best method of arranging the triangles would appear to be this: having from a rough chaining staked out the centre line into five mile lengths, two transverse lines intersecting this at each of these mile intervals should be laid off on both sides at angles of about 60 degrees. These transverse lines followed out to the limit of the survey will break the whole belt into a series of triangles very nearly equilateral—the equilateral being the best shape for carrying out an extensive system of trigonometrical survey. When all the points of intersection have been established by signal poles in the usual way, the whole should be broken into sections of say 100 miles square, and a party of surveyors placed upon each under the superintendance of an engineer, who, stationed at the centre of his district, should check the observations of his assistants by working up the triangles on the ground. A base line may be measured at almost any point along the survey; but if the country should be very irregular, or if it be thought desirable to carry one bare line through the whole survey, a 24-inch theodolite must be employed to work out a system of primary triangulation; but the unbroken character of the country for a great part of the line of survey while lessening the efficiency of a 24-inch theodolite, will also prevent the necessity of using it by furnishing facilities at several points for the establishment of base lines.

Ten-inch theodolites should be employed for the

observations; and the centres of each station being well defined, should be made permanent points for future reference. The altitude of each point should be established in the usual way by means of vertical angles; and these being taken from each station would give several results, the mean of which would be a most reliable level. So too with each point on the plan: it would be fixed from at least four other points; and therefore be almost mathematically correct. There would be no confusion in determining each point coming within the field of the theodolite, seeing that the whole may be distinguished by reference to a diagram showing approximately the several stations of the district.

A map compiled from the results of these observations will be a highly useful plan for even nice purposes; and the points of observation being available for subsequent reference, the details of any part may be filled in with equal accuracy wherever such may become necessary. The advantage to science of connecting two points on the earth's surface so distant as under as the limits of this survey, and by such accurate calculation, are too obvious to require any remark. Besides this, such a map as I speak of will furnish a good profile of the whole belt of country showing some eight thousand altitudes even within the limits assumed; though as the peculiarity of certain parts may require a wider range and more detailed survey the points of altitude on the plan will very likely amount to even ten thousand. The force of this suggestion will be appreciated most fully by practical engineer, and will be felt—if not by every one—by all events, all the scientific men in the country. M. B. H.

Alabama.

Selma and Tennessee Railroad.—In our paper of the 20th ult. we gave a brief account of the meeting recently held at Selma for the purpose of promoting the above work, and enumerated some of the advantages to be gained to this State by its construction, not only as opening new facilities for the transportation of such agricultural articles as now constitute her chief products, but as making available her great mineral wealth, which, for the want of suitable means by which to reach a market, remains comparatively untouched. Since then, we have read with great satisfaction the speech of P. Phillips, Esq., of Mobile, President of the Selma Convention, in which the importance of this road, as a means of developing the resources of the State, by promoting a greater variety of industrial pursuits, is discussed with a freedom and ability which would be creditable to any man in the country. What pleased us particularly, was the fact that the speaker did not look at this subject through the medium of the ideas of a particular school of politics, but through the better one of common sense, which, independent of theory or tradition, adopts those means and that policy, best adapted to secure the end in view.

The economical ideas of every people will in the end, receive their character from the policy that constitutes their true interests. So long as cotton planting was the most profitable pursuit at the south, nearly every other branch of industry was neglected, and their encouragement was looked upon with distrust, from a fear that they would conflict with the profits of cotton growing. The south then believed that her best interests lay in the encouragement of this branch of industry. She now finds that she can produce more cotton than sell to profit—that capital in its production is hardly remunerative, and that the growth of this plant is fast impoverishing her soil, so that this State

can no longer compete with the virgin lands of our newly acquired territories. This change in her condition is rapidly changing her former views.—She now sees that cotton planting is not so profitable as commercial or manufacturing pursuits, and finding within herself all the elements of success in both of these, she is fast turning her attention to the development of these comparatively untouched sources of wealth; and those men who, as pioneers in this movement, are putting into operation cotton mills, furnaces, or similar establishments, or who are improving their rivers and constructing railroads for the purpose of opening cheap access to a market, and illustrating by their success, the capacity of this section of the country for these pursuits, are teaching a more valuable lesson than can be found in all the schools of politics, since the organization of society. The richest country in the world owes its wealth to the abundance of its iron and coal, and the people of Alabama are beginning to ask themselves why, by the working of the iron of that State, they cannot produce similar results.

In connection with what we have said, we give the following extracts from the speech alluded to:—

"The immediate effect of this great work will be to open up new sources of industry. No one who has been attentive to the cotton culture as pursued in the southwestern states but recognizes its exhausting character. The opinion is generally prevalent among our cotton planters that it is cheaper to purchase new lands than to manure old ones—and hence like the locust, they settle only to destroy. It then becomes necessary to fix this population, and to do this we must create facilities for transportation, and by the introduction of the comforts and conveniences of life convert the temporary settlements of Alabama into homesteads, whose permanency will draw around them increased improvement with increased affection.

The diversion of a portion of labor now employed in the culture of cotton will not only influence favorably its value, but by introducing new staples the state would be in a great degree relieved from the disastrous consequences which now result from the frequent fluctuations in its price. Depending upon this single staple, it becomes the great regulator of values, and the whole business of the country and all its contracts are subjected to change and uncertainty produced by causes beyond control, and which no foresight can anticipate.

I confess then, that much of my preferences for the Selma route arises from its embracing so large a section of the state, rich in inexhaustible beds of iron, coal, limestone and marble, and though cotton plays as conspicuous a part in the commerce of the world, in point of mere money value it is inferior to many of the subordinate productions of our country; and I feel confidence in declaring that the day is coming, and not very distant, when even in Alabama, more wealth will be dug out of her bowels than are now gathered from her bosom.

Not only does she possess this vast wealth, but what is of still more importance, she has superior advantages of location. The distinguished Lyell, who lately visited this country principally to acquire geological information, and whose scientific attainments have recently won for him a knighthood, describing this region says:—"It forms a southern prolongation of the great Appalachian coal field with which I was acquainted when I completed my map published in 1845, of the geology of North America. Its geographical situation is peculiarly interesting, for being situated in latitude 33 d. 10m. north, it constitutes at present the EXTREME SOUTHERN LIMIT to which the ancient carboniferous vegetation has been traced in the northern hemisphere whether on the east or west side of the Atlantic."

The extent of these coal fields is described by Professor Brumby as being 80 miles long from north to south, and ten to thirty wide. They not only constitute the extreme southern deposit, but construct this road, and you bring at once large portions of it within 40 hours of the Gulf of Mexico!

Those who know the value of this article and remember that it is the foundation of manufacturing

prosperity, and that it is rapidly occupying the same locality to commerce—will at once appreciate the magnitude of the interests here involved.

Speaking of the effects of the coal production upon the general prosperity of a country, McCullough says: "Our coal mines are the principal source and foundation of our manufacturing and commercial prosperity; and no nation, however favorably in other respects not plentifully supplied with this mineral need hope to rival those that are in most branches of manufacturing industry. To what is the astonishing increase of Glasgow, Manchester, Birmingham, Leeds, Sheffield, &c., and the comparatively stationary or declining state of Canterbury, Winchester, Salisbury and other towns in the south of England to be ascribed? The abundance of coal in the north, and its scarcity and consequent high price in the south, is the real cause of this striking discrepancy. Our coal mines have conferred a thousand times more real advantage on us than we have derived from the conquest of the Mogul Empire, or than we should have reaped from the dominions of Mexico and Peru."

It is evident then that our people with cheap transportation (already owning the cheapest labor in the world) may command the trade of the Gulf in coal, and enter into competition with other states under most favorable advantages for every thing their soil is capable of producing.

The coal fields are more accessible to the Gulf of Mexico than any other in the south or west, and their importance to the commerce of this great inland sea cannot be estimated. Every person who has paid any attention to the subject must feel convinced that steamships must soon supplant to a great extent the use of sailing vessels. These coal fields must therefore furnish the motive power to this immense commerce which will soon receive a vast accession from the channels of communication which will be opened across the Isthmus of Panama.—In relation to this Mr. Phillips speaks as follows:

Much has been said in this discussion of the newly developed wealth of California and the vast commerce of the Pacific in reference to the channels of trade. Gentlemen have risen above prose in their eloquent descriptions. But though they indulge in 'thoughts that breathe and words that burn,' they could not paint too strongly the gorgeous spectacle we are soon to behold. New Orleans and Mobile must soon become the great entrepôts for the commerce passing from the Pacific to the east.

Of all the practicable routes now proposed that by Tehuantepec is said to be the best, being nearer by 1400 miles than the Panama, and 1000 miles nearer than the Nicaragua routes, and possesses all the qualifications necessary for the construction of a road or canal, with good harbors at the termini. If this be adopted, New Orleans and Mobile will be by sailing distance only 950 miles to the eastern terminus, and more than 1000 miles nearer than most of the ports on the Atlantic.

The width of the Isthmus, as given by Moro, is 135 miles. Here the river Goatzaco alcos empties into the gulf, according to the account of Balbi, an experienced navigator, of more than 100 miles with an excellent harbor at its mouth. Descending the table land of Tarifa to the Pacific, although the conveniences of that point do not equal those in the gulf, we have a very general concurrence among scientific men that at a moderate cost all the difficulties may be obviated, and an harbor established equal to all commercial wants.

It is very evident that much the largest portion of this immense commerce will be carried on by means of steam vessels, and they must 'coal' at some point in the gulf; and what point so suitable as the harbor of Mobile?

He then gives some facts relative to the gradual increase of the depth of water in the harbor of Mobile, which we give as follows:

The coast survey conducted by the federal government, has recently given to the public in the most authentic form a knowledge of the true importance of Mobile harbor. In a communication from A. D. Bache, the distinguished superintendent of that work he states,

"That the depth of water which can be carried over the bar at the entrance of Mobile bay at mean low water is 20½ feet, mean rise and fall of tide one foot.

"The channel is perfectly easy, one course, N. 19° W. true going through with one or two casts on the ridge of shoalest water.

"The depth of water at the anchorage of the fleet of merchant vessels in the bay is 3½ fathoms. There is perfectly secure anchorage in any winds for large vessels off the west end of Mobile point in from 8 to 10 fathoms water, and distant from the shore from one to one tenth of a mile.

"In 1832 the greatest depth which could be taken over the bar was 17 feet. It 1841 it was 19 feet and in 1847 it was 20½ feet, each at mean low water."

He thus concludes: "From these facts it appears that the (neighboring) islands have been on the increase since 1832, while the bar itself connected with them has passed gradually seaward, deepening as it advanced."

In addition to the business furnished by the transportation of the agricultural productions of that portion of Alabama which now find their way to Mobile, the following statistics are from the business to be expected from those sections of the country which now seek other markets.

But the utility of the road does not stop here—crossing the Coosa in Talladega and meeting it again at Gadsden or Will's creek, it will afford a cheap and easy transportation for the produce which is now wagoned at a great expense from the counties of Talladega, Benton and Cherokee to Wetumpka, over rugged roads, the difficulties of which were graphically described by a delegate from the county first named, who said that the wrecks of their wagons and the bones of their horses strewed along the road, could furnish the fires and manure the fields of all Coosa.

It will bring down the Coosa, which is navigable from this point to Rome in Georgia, the trade which now goes up stream to seek a market on the Atlantic.

Reaching from hence to Gunter's Landing, the road will at once draw to it the trade of the counties lying north and south of the Tennessee river in this State, as also the southern and southeastern counties of the State of Tennessee.

From Decatur, which lies 50 miles to the west of Gunter's Landing, to Chattanooga 160 miles, the Tennessee river is navigable for a large portion of the year, and this section of country is said to produce 60,000 bales of cotton, to which add 20,000 made upon the Elk, which empties into the Tennessee near Decatur, at the point where the obstruction begins.

The counties which lie west and below the shoals would speedily complete their improvement to Gunter's, and would add 50,000 bales more. Thus we have 130,000 bales, nearly all of which now goes on a journey of over 1500 miles, to New Orleans.

To appreciate the value of the contemplated road to the country, its chances for profitable business, we should look to the charges of transportation by the various routes now used by the people of that section of the State.

The counties of Lauderdale, Limestone, Madison and Jackson, lying on the north of the Tennessee river, contain a population of 80,000, and Franklin, Morgan, Lawrence and Marshall, on the south side of it, about 50,000. Gunter's Landing, which is 55 miles from the northeast corner of the State, is a convenient and nearly a central point, whether you regard population or production.

Assuming then the amount of 100,000 bales of Alabama cottons, sent by Chandler's line from Decatur at \$1 10 per 100 lbs.—

\$5 50 per bale 500 lbs.....	\$550,000
Sent by the Tennessee to New Orleans at	
\$3 per bale.....	300,000
Sent by the railroad to Selma, and thence to	
Mobile at \$1 75 per bale.....	175,000

If we suppose that the counties of Cherokee, Benton, Talladega, etc, which would make Gadsden where the road crosses the Coosa their shipping port, would furnish for exportation 30,000 bales.

The cost by the Coosa company would be

\$4 12½ per bale.....	\$123,000
On the Selma road.....	52,000

The Selma route compared with Chandler's line, on 100,000 bales saves. 375,000
 Compared with the Tennessee route. 125,000
 And on 30,000 bales at Godsdon, as compared with the Coosa river company. 71,260

Rating the up freights at one-half of the amount of the down freight, and making a proportional scale of charges, and the amount of freight saved, constitutes alone sufficient inducements to undertake this work. Besides the difference in freight in regard to New Orleans, there is the heavy insurance and the long time occupied in reaching the market.

Take these calculations, which do not pretend to strict accuracy, and regard them only as approximations to the truth, and it will be found the people of North Alabama, by the construction of this road, would in a few years save in time, insurance and freight an amount equal to the whole cost of its construction.

But we go a step farther, and assert that, regarding the work as a mere investment for money, it would prove profitable to undertake it. In this view the interest of the road extends beyond our state boundary.

From Gunter's Landing to Chattanooga, a distance of 100 miles, the Tennessee is navigable for steamboats of heavy burthen 7 or 8 months and for boats of light draft all the year.

From Chattanooga to Knoxville on the Holsten, (an eastern branch of the Tennessee) there is a navigation of 200 miles more, six months in the year for large boats.

For 250 miles above Knoxville, the Holsten is still navigable for barges which descend the river carrying produce to that town.

From the point where the road will recross the Coosa, the river is navigable at all seasons to Rome, in Georgia, 150 miles.

These statements would fully justify the expectation that large freights would be received both from Tennessee and Georgia; and when we consider that the great Virginia and Maryland improvements all tend in this direction, it is only to anticipate the work of a few years to say that the link would soon be wrought which will connect them.—This will be the great overland route from southwest to northeast, the shortest which could be established between New Orleans and Boston, and the income from mail service and the great travel will swell the profits of the enterprise.

Our limits permit us to give only a portion of the speech of Mr. Phillips. Good sense characterises the whole of it, and it contains much valuable statistical information. If its spirit is not indicative of the feeling already prevalent in this State, it is so of what we may soon expect to see. Every road she builds, instead of exhausting her means, will furnish additional means to build the next, by making available her resources, which are now worthless. The people of this State seem fully to appreciate the importance of railways, which is the next step to prompt and vigorous action. If a person were to examine a map of the United States for the purpose of delineating a system of railways adapted to the wants of the whole country, he would feel that his system would not be perfect, unless it was connected by a great arm with the Gulf of Mexico, through which the tropical products of the Gulf could be distributed over other parts of this great country, and those of the north could be received in return. The two great lines diverging from Mobile in the northwest and northeast directions meet this want fully; and as they run in the direction of the trade of the country, in addition to all the advantages they could confer, this fact must secure to them a profitable business.

British Association.

On the Manufacture of the Finer Irons and Steels, as applied to Gun Barrels, Swords, and Railway Axles. By Mr. W. Greener, of Birmingham.

No manufacture has tended more to advance the improvement of the finer qualities of Irons than that of gun-barrels, which has proceeded from the old stub twist barrel of former days to the laminated steel of

the present time, and has been attended with the advantages of increased security and greater projectile power of the gun. It might be naturally inquired why the principle, if so advantageous, has not been applied to other manufactures where even greater security to life and limb is required than in a gun barrel. The first innovation on the old principle of manufacturing gun-barrels, or that of making them entirely from old horse-nail stubs, is due to the late Mr. Adams, of Wednesbury, who twenty years ago introduced what is yet termed Damascus iron, which is constructed of alternate layers of steel and iron, faggoted, draw down into rods, and twisted; and when welded into barrels, forms the beautiful Damascus barrel. The success of this experiment, not only in point of beauty but strength, was so great as to be under-estimated at an increase of 50 per cent. compared with the strength of stub-twist iron.

The next improvement was to blend more intimately steel with the horse-nail stubs, in the proportion of one to two of the latter. This was effected by cutting scrap-steel into pieces, assimilating with the stubs very carefully, cleaning them, and then welding into a bloom, and rolling. The fibrous system seemed in this case to be more perfect, for though possessing less steel in its composition, yet it was quite equal in tenacity. The difficulty in obtaining old stubs of quality sufficiently good, arising from deterioration in the original iron, has rendered the manufacture of this variety nearly obsolete, or, in cases where it is yet produced, the quality is so inferior as scarcely to rank third in quality.

The next and most important improvement in metals is the manufacture of the gun-barrels from scrap steel entirely, and for this purpose old coach springs are generally in request. By clipping these into pieces, perfectly cleansing them, and then welding in an air-furnace, a metal is produced which surpasses in tenacity, tenacity, and density, any fibrous metal before produced. The tenacity of it when subjected to tension in a chain testing machine is as 8 to 2½ over that of the old stub-twist mixture. The perfect safety of barrels produced from it is astonishing. No gunpowder yet tried has power to burst them when properly manufactured.

The progressive value attached to these various metals has induced Mr. Greener to try experiments on a more extended scale. To effect this he takes ingots of cast steel, from the mildest made to No. 3 in the scale of carbonization; these after being rolled into flat bars, are to be clipped into small pieces, intimately mixed, and welded, as before in the air furnace; drawn down in the rolls, refaggoted, again drawn down, and then converted into gun barrels, either with or without spirally twisting them to form the Damascus figure. Barrels made from this (which he terms laminated steel) are in reality safe. To ascertain this, breeches were screwed into both ends of a gun barrel more than ordinarily light; eight drachms of gunpowder (or three ordinary charges) were then introduced; the breech was screwed in again, and the powder fired through an orifice the size usually found in gun nipples. The density and tenacity of the metal are sufficiently great effectually to resist the enormous force of this great charge of powder, the exploding fluid passing through the nipple like steam from a safety valve. The principle here developed is the perfection of the fibrous system with increased density of metal. The dissimilar carbonization of the metals forms dissimilar fibers when thus enormously extended, with a complete absence of any crystalline structure in the metal,—the existence of which in any material, either gun barrel or any other manufacture which become subject to violent concussions, explosions, or blows, may safely be set down as of the negative kind.

To be Continued.

Illinois.

The Galena and Chicago Railroad is progressing steadily forward; and will be this fall completed to Fox River, over 40 miles from the lakes. When it is considered that, but ten or twelve years ago, there were no white inhabitants living west of Chicago, and this work has progressed by corporate enterprise, without one dollar of appropriation by either State or National Government, and is doing a good business, it speaks volumes in favor of the intelligence, science and judicious economy which exist in this infant settlement.—Chicago Com. Adv.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of
 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
 1 Brick, slate roof, engine and dry house, 30 by 40.
 1 Lumber house.
 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
 1 Barn, 18 by 28 feet.
 1 Wood dwelling house, 21 by 28 feet.
 1 Brick block, six tenements, two stories.
 A number of building lots.

Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
 WALTER LESTER. }

October 24, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Swiches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBRICH,
 46 South 8th St., Philadelphia.
 6m*

November 3, 1849.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
 54 Pine St., New York.
 3m

October 27, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
 No. 54 Pine St., New York.
 1m19

May 12, 1849.

Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,
 Sole Manufacturers,
 No. 85 Liberty St.
 New York.

And in the principal cities and towns in the U. States. The Premium of the AMERICAN INSTITUTE was awarded to the Etna Safety Fuse at the late Fair held in this city.

November 3, 1849.

ly

To Proprietors of IRON FOUNDRIES.

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust for facing very nice work, always on hand and for sale by

G. O. ROBERTSON,
 303 West 17th St., New York.

November 3, 1849.

lm

STATE OF NEW YORK.—SECRETARY'S OFFICE, Albany, July 14, 1849.—To the Sheriff of the city and county of New York.—Sir: Notice is hereby given, that at the General Election, to be held in this State on the Tuesday succeeding the first Monday of November next, the following officers are to be elected, to wit:—

A Judge of the Court of Appeals, in the place of Freeborn G. Jewett.

A Secretary of State, in the place of Christopher Morgan.

A Comptroller, in the place of Washington Hunt.

A State Treasurer, in the place of Alvah Hunt.

An Attorney General, in the place of Ambrose L. Jordan.

A State Engineer and Surveyor, in the place of Charles B. Stewart.

A Canal Commissioner, in the place of Nelson J. Beach; and

An Inspector of State prisons, in the place of Isaac N. Comstock;

All whose terms of service will expire on the 1st day of December next.

Also, a Justice of the Supreme Court, for the First Judicial District in the place of Samuel Jones, whose term of service will expire on the last day of December next.

Also, a Senator for the Third Senate District, in the place of William Hall.

Also, a Senator for the Fourth Senate District, in the place of John L. Lawrence.

Also, a Senator for the Fifth Senate District, in the place of Samuel Frost; and

Also, a Senator for the Sixth Senate District, in the place of Wm. Samuel Johnson;

All whose terms of service will expire on the last day of December next.

The following officers are also to be elected for the said city and county:—

A Judge of the Court of Common Pleas, in the place of Michael Ushoeffler.

A Judge of the Supreme Court, in the place of Aaron Vanderpoel.

Sixteen Members of Assembly.

A Sheriff, in the place of John J. V. Westervelt.

A City and County Clerk, in the place of James Conner; and

A Coroner, in the place of Wm. A. Walters;

All whose terms of service will expire on the last day of December next.

[The Electors throughout the State are also to vote for or against the adoption of the act entitled "An Act establishing Free Schools throughout the State." passed March 26 1849.]

CHRISTOPHER MORGAN,

Secretary of State.

SHERIFF'S OFFICE,

New York, July 21, 1849.

The above is published pursuant to the notice of the Secretary of State, and the requirements of the Statute in such case made and provided.

JOHN J. V. WESTERVELT, Sheriff.

All the newspapers in the county will publish the above once in each week, until the election, and then hand in their bills for advertising the same, so that they may be laid before the Board of Supervisors, and passed for payment. See Revised Statutes, Vol. 1, Chap. 6, Title 3, Article 3, Part 1, Page 140.

MANUFACTURE OF PATENT WIRE ROPE

and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tilters, etc., by

JOHN A. ROEBLING, Civil Engineer,

Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO.

PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.

CHARLES F. M. GARNETT,

Chief Engineer.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection on and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.—Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,

Chief Engineer J. R. & K Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. } Newark, Ohio, October 17, 1849. }

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,

Superintendent, etc,

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS

of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,

ELIJAH PACKARD,

ISAAC MILLS,

SPRINGFIELD, MASS.

1748

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, to work for himself, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL,

A General Newspaper and Weekly Review; To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence*; being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment*; combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors*; both at home and abroad, each one of whom will have a separate department under his charge.

IV. *Freedom from Deceit*; by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression*. While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. **BEN: PERLEY POORE.**

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.;

68 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. **D., B. & Co.**

Oct. 11, 1849.

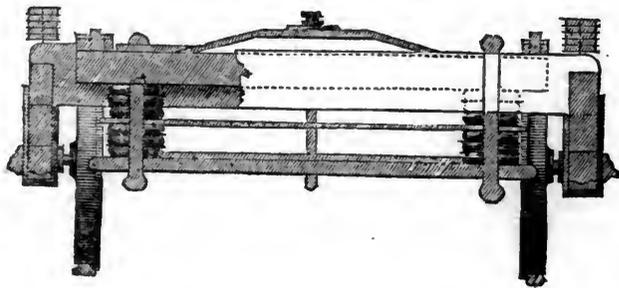
To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saitus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849,

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organized under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are
G. M. KNEVITT, 38 Broadway, N. York,
General Agent for the U. S.; and
JAS. LEE & Co., 13 India Wharf, Boston.
JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,
JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
590 " " 53 " "

of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD

India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " Baltimore to Richmond, 7 00
" " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore. STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.

April 11, 1849.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.
HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.
August 4th, 1849. M. M. White, Agent,
au7tf No. 74 Broadway, New York.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
A Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms. ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.
JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Meritt & Co., New
York; E. Pratt & Br. 1st, Es. Timez. Md

**LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.**
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron. THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Rail-
er rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
leghany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. J. F. WINSLOW, *President*
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

- 300 Tons A 1, Iron Dale Foundry Iron.
 - 100 " 1, " " " "
 - 100 " 2, " " " "
 - 100 " " Forge " "
 - 400 " Wilkesbarre " "
 - 100 " "Roaring Run" Foundry Iron.
 - 300 " Fort " " "
 - 50 " Catocin " " "
 - 250 " Chikiswalungo " " "
 - 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 - 75 " "Columbia" refined boiler blooms.
 - 30 " 1 x 1/2 Slit iron.
 - 50 " Best Penna. boiler iron.
 - 50 " "Puddled" " "
 - 50 " Bagnall & Sons refined bar iron.
 - 50 " Common bar iron.
- Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 New York. 64 South street

**American Pig, Bloom and
 Boiler Iron.**

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catocin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hill* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled and*
Hammered Bar Iron furnished at lowest prices. *Ag-*
ents for Watson's Perth Amboy Fire Bricks, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/2 to 15 inches diam-
 eter, and any length not exceeding 17 feet—manufac-
 tured by the Caledonian Tube Company, Glasgow, and
 for sale by
IRVING VAN WART,
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

Pig and Bloom Iron.

THE SUBSCRIBERS ARE AGENTS FOR THE SALE OF NUMER-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared
 to execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms,—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crane do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
 Do do Rounds and Squares, 1/2 to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
 Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
 Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

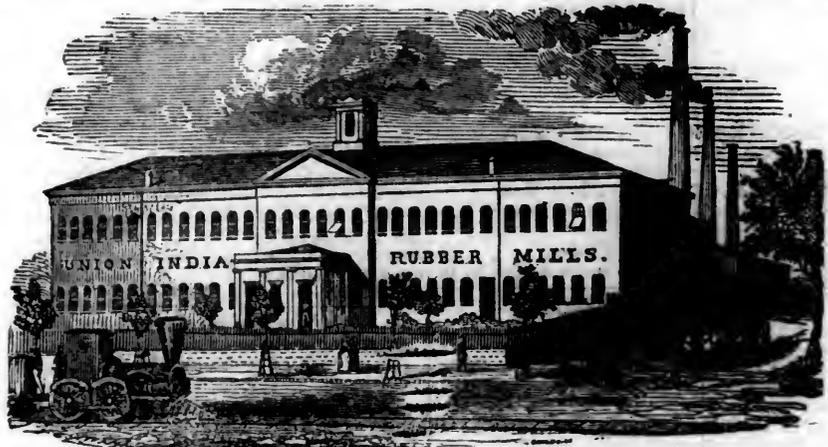
The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1 1/2 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from *Amer-*
ican iron, at their works at *Jersey City, N. J.*, Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,
 Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

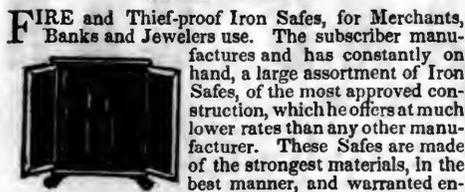
Articles which this Company has the exclusive right to make comprise in part

- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggins, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Horse Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Mattress Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Shower Baths, |
| Pants, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders. |

Together with all new applications of the *Patent Rubber*, which with Boots and Shoes, Packing, Machine
 Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
 will be sold to the Trade at Factory prices.

All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
 ings.
 October 20, 1849.

Iron Safes.



FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,** Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.
20tf

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—*Fulmer's Patent*—*Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,** Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10-foot stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,
Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.

This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationery Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 99 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupying but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,** 142 Front-street, New York. Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

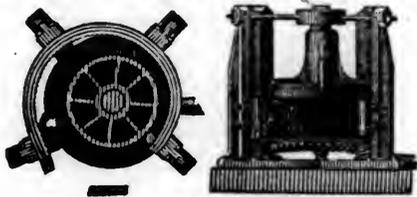
5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by **WM. MINIFIE & CO.,** 114 Baltimore St., Baltimore, Md. Price \$3. to be had of all the principal booksellers.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

F. S. & S. A. Martine,

IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc., 122 William Street, Ferdin'd S. Martine, N. York. Steph. A. Martine. 3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinetta, Cloths, Silk and Cotton Velvets, English Bunting, Plushes, etc.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR**WORKS.****DAVENPORT & BRIDGES,**

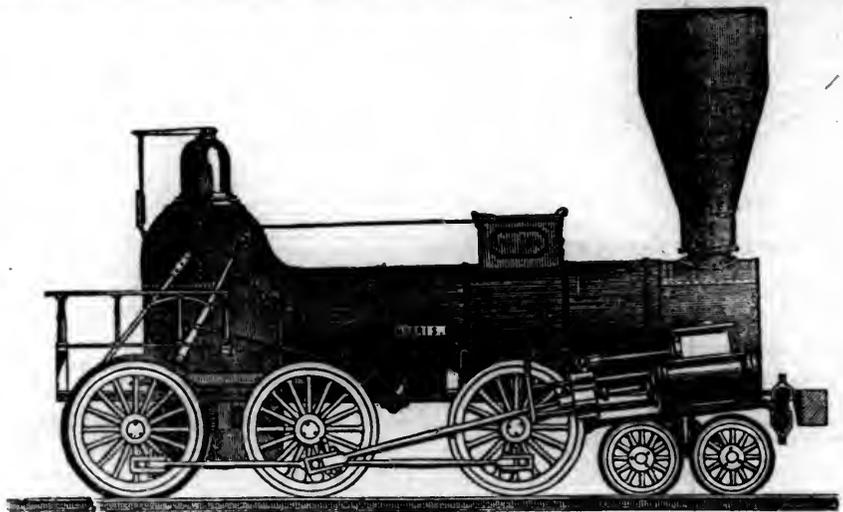
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 136 NASSAU ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
 SECOND QUARTO SERIES, VOL. V., No. 45] SATURDAY, NOVEMBER 10, 1849 [WHOLE No. 707, VOL. XXII.

ASSISTANT EDITORS,
 J. T. HODGE, *For Mining and Metallurgy.*
 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., 136 NASSAU ST.

Saturday, November 10, 1849.

Mackinaw, November 2, 1849.

The season for navigation on the lakes now drawing to a close, an opportunity is afforded of estimating the results of the working of the Lake Superior mines for the last twelve months.

These results, prepared by a consultation among the several directors and agents of the mines now detained at this place, waiting for a boat for Detroit, we present in the table below. In the percentage column a greater yield, it will be seen, is allowed to the products shipped from the Minesota, North West and Copper Falls, than from the Cliff mine and N. American. The explanation of this is, that those of the former consist only of masses of copper and lumps small enough to be packed in barrels, the poorer ore, (stamp work,) remaining on hand until stamps are put in operation to separate the greater portion of the stone from the fine copper. The products of the stamps bring down considerably the percentage of all the materials shipped. The masses, besides, from the Minesota were either obtained or made more free from adhering stone than those from the Cliff mine generally.

Statistics of Lake Superior Mines for the year 1849.

Name of Mine.	Copper shipped to Nov. 1. Tons.	Waiting shipment Tons.	Total tons.	Mass copper Tons.	Bbl. copper Tons.	Pro-duct of stamps Tons.	Probable average ore on hand per centage.	Stamp hand Tons.	Will probably produce for the yr. 1850 tons.
Cliff.....	940	60	1000	550	57	925	63	700	1000
Minesota.....	52	5	57	none.	none.	925	75	700	350
N. American.....	30	5	35	18	7	925	67	1000	350
N. West.....	20	5	25	18	7	925	67	300	250
Copper Falls.....	9	9	18	18	7	925	67	300	250
Lac la Belle.....	10	10	20	10	10	925	67	200	uncertain
Ohio and Isle Royale.....	6	6	12	6	6	925	100	120	120
Pitsburg and Isle Royale.....	6	6	12	6	6	925	100	120	120
Siskowit.....	6	6	12	6	6	925	100	120	120

In addition to the above a number of other mines are expected to add considerably to the production of the succeeding year. Several companies have been re-organised, and have this fall re-commenced operations, that had been interrupted during the past year or two; and a few additions it is expected will be made to the number of these the next spring. Some new companies also have been formed, and tracts secured, upon which parties will be employed another season.

The following table contains the names of these, some of which will certainly give employment to a large number of men another year; but though there is no doubt that among their number several will

eventually be found highly productive, the necessary surface work about mines new or comparatively so, will prevent their furnishing large returns the next season. Should they raise the amount of copper shipped up to the close of navigation next year to double the amount of this year, they will do better than can reasonably be expected of them.

- Ohio Trap Rock.
- Forest.
- Ontanagon of Detroit.
- Ridge.
- Adventure.
- Aztec.
- Indiana.
- Douglass Houghton.
- Algonquin.
- Quincy.
- Forsyth.
- Albion.
- Phoenix, (late Lake Superior.)
- Sec. 23, T. 58, R. 31.
- North Western.
- Sec. 14, T. 58, R. 29.
- Cape, (Sec. 7, T. 58, R. 28.)

The mines now in operation are left well provided with winter supplies, these having been sent up for the most part in good season, and with little loss. The experience of former years has taught companies the impolicy of deferring their shipment until the last boats, when in case of accident the supplies cannot be replaced, except with great hazard and expense. The improvement of the lands adjoining many of the mines has furnished these mines with hay, potatoes, turnips and some oats, all of which are produced with the greatest luxuriance on the excellent soil of this region. On the Ontanagon particularly, the crops have been remarkably fine, potatoes, turnips, cabbages, onions, and other garden vegetables, attaining a size and excellence rarely seen in the longer cultivated fields of better settled portions of the country. The amount of land to be put in cultivation in this district another year will probably render it altogether independent of other sources for supplies of these important articles. Many entries of land have been made within a few weeks, a large portion of which along the Ontanagon river can be only for agricultural purposes; though we cannot but fear, that as it is taken in a large body, it may longer be held unimproved, than if divided into smaller portions among actual settlers. Mining tracts entered also near the head

waters of the East branch of this river guaranty a ready and convenient market to the produce that may be raised on these lands. The townships south of the 5th correction line, not yet being in the market, are as yet neglected, except by those holding leases upon them: for the government do not recognise any pre-emption rights to the mineral tracts of these, and parties care not to make any developments upon them, when they have no mode of securing their discoveries. On Keewena Point three new mining tracts (a quarter section each) have been entered the present week at a cost of five dollars per acre. The opening and working of these mines will probably add considerably to the business of this portion of the country.

In the iron region also tracts of land of considerable extent have been secured, a portion for mining purposes, some for the supplies of fuel to the bloomeries, and some for cultivation. This district is the farthest east of the present three principal centres of operations, being only about a hundred and forty miles west of the Falls of the St. Mary, the outlet of the lake. The Keewena Point district is about two hundred and twenty-five miles from Sault Ste. Marie, and the Ontonagon district eighty miles farther. This iron region, of which we shall have more particular accounts to give hereafter, is about the head of Carp and Dead rivers. Its geological formations are different from those of the copper region, consisting of slates, talcose and micaceous, and quartz rock. In its vicinity limestone also is found, which hereafter will prove of great importance to the whole lake country, as this rock is not known about the copper mines, except a narrow strip of it too far in the interior to be of any present practical consequence. The small quantity of lime now used at the mines is brought from below the Sault, and sells for three dollars per barrel. Clay suitable for the manufacture of brick is also abundant here—a scarce article on Keewena Point, where it is sold for one dollar per barrel to the mining companies to be used for tamping in wet holes. There is no want of it on the Ontonagon.

The improved prospects of the mining business of the lake country have attracted the attention of those interested in the navigation of the lakes; and there is good reason to anticipate increased facilities the next year for the transportation of supplies.—On the upper lake there have been two excellent propellers, owned equally by Messrs. J. R. Livingston, Thomas Clark, & P. B. Barbeau, which run in connection with the steamboat Franklin and freight-vessels of S. McKnight, Esq., completing the route to Detroit. The propellers have successfully accomplished their part of the freighting business, but they need the regular support of the transportation of the mails, conferred by the post office department to ensure the regularity of their trips, and their stopping for passengers at the different ports on the lake. The steamboat Franklin lost no trip from the 1st May to the 1st October; on this trip she encountered a heavy storm on lake Huron, and was compelled to throw over a part of her cargo. She is still running and will probably make two more trips before the close of navigation. The freighting business between the Sault and Detroit has never been conducted better than it has been this season, under the energetic direction of Mr. McKnight; and we are gratified to learn that this gentleman is making arrangements for running next year a finer boat than the Franklin, and a large propeller on this route; may he have all the success his enterprise merits.

H.

TRANSLATION FROM *Traite de la Fabrication du Fer*, BY M. B. VALERIUS. Published at Brussels, 1843.* Section III.—OF THE FURNACES. Chapter I.—Reverberatory Furnaces. Article 3.—Gas Furnaces. Page 85.—Advantages of Gaseous Combustibles.

Historical Notice.—The question now attracting much attention among iron masters is the use of the waste gas of the blast furnace for heating reverberatory furnaces, and the substitution of gaseous for solid combustibles. The former have this advantage over the latter, that they develop instantaneously the temperature which corresponds to their calorific power, which admits of a greater heat being obtained, and one more easily controlled. With gaseous combustibles it is easy to produce either an oxidation, or a reduction, or a simple elevation of temperature without oxidation or reduction.

They are also more economical than solid combustibles, because there is less heat lost. In using them, the temperature of combustion can be easily controlled, it being necessary for this only to alter the temperature of the atmospheric air introduced by the tweres, and the depth at which the gas is taken from the blast furnace. In ordinary furnaces this cannot be accomplished so easily. But it is often important to develop the very highest possible temperature. For it is evident that the heating or melting of iron in a reverberatory furnace can be accomplished with a rapidity and economy greater in proportion as the temperature of the furnace exceeds the required temperature of the iron. The quantity of heat used, or rather that which is absorbed from the current of gas by the matter to be heated will be, *ceteris paribus*, greater in proportion as the difference between the two temperatures is greater.

The metallurgists, who have made the most progress toward the solution of the proposed question, are Messrs. Bunsen and Faber du Faur in Germany, and M. Ebelman in France. The latter, and M. Bunsen have studied it theoretically, the other has devoted himself to its application in practise.—Though the plans tried or proposed as yet are scarcely more than experiments, their bearing upon the future state of the art entitles them to description.

I will quote the calculations published by M Ebelman in the *Annales des Mines*, 3d series, vol. 20, p. 229; as well as the process of M. Faber du Faur from its description by M. A. Delesse in the *Annales des Mines*, 4th series, vol. 1, p. 433. I will also give the translation of a paper by M. F. du F., upon the construction of gas furnaces, and the method of working them.

86. *Gas from Blast Furnaces—Calculations of M. Ebelman.*—After having determined by numerous experiments the composition of the gas of the blast furnaces, taken at various heights, M. Ebelman calculates, 1st, The total quantity of heat which the combustion of the gas taken at different heights would afford. 2d, The volume of air necessary in each case for the combustion of the gas. 3d, The maximum temperature generated by such combustion. We give the calculations made from the blast furnace of Clerval (Doubs), supposing the gas taken from the level of the tunnel head.

This furnace is cold blast and uses charcoal.—The charge containing 253 61 lbs. of charcoal, passes on an average in 53 minutes, and produces 175 24 lbs. of pig iron, or 4496 96 lbs. per day.

The charcoal contains eight per cent. of moisture.

* The above translation was furnished me by the kindness of Charles E. Smith, Esq., late manager of the Troy Rolling Mill.

After this is driven off at a temperature of 284° Fahrenheit its composition is—

Carbon.....	68
Hydrogen.....	1
Oxygen.....	6
Ashes.....	3
Total.....	100

So that 253 61 lbs. of charcoal employed are equal to 234 77 lbs. of dry coal, and contain 205 54 lbs. of carbon. The carbon in the pig iron is equal to 7 4 per cent. of the whole carbon which enters in the charge.

The temperature of the air is 356° Fahrenheit. The diameter of the twere is 2 56 inches. The pressure gauge stands at 0 71 inches, and the barometer at 29 21 inches.

One hundred volumes of gas from the tunnel head, supposing it to be free from moisture, contains

Carbonic acid.....	12 88
Carbonic oxide.....	23 51
Hydrogen.....	5 82
Nitrogen.....	57 79
Total.....	100 00

The gas also contains 11 9 per cent. of the vapor of water.

With these data it is calculated that 100 volumes of nitrogen in the dry gas correspond to 31 5 volumes of the vapor of carbon, or—deducting the 7 4 volumes absorbed by the iron—to 29 2 of carbon of the coal introduced. Consequently 100 of nitrogen by weight correspond to 24 9 of carbon of the coal.

For 205 54 lbs. of carbon consumed per charge, there is introduced into the furnace 825 5 lbs. of nitrogen, or 1072 07 lbs. of atmospheric air. Of air 20 21 lbs. are introduced per minute—equal to 249 33 cubic feet (7 06 cubic metres). The volume of air really delivered in the same time by the twere is 8 76 cubic metres—equal to 309 37 cubic feet according to the following formula.

$$V^{0.76} = \frac{60 \cdot 289 \cdot d^2 \cdot \sqrt{h} (b+h)}{0.76 \cdot \sqrt{1+0.004 t}} = 2556 \sqrt{0.18(742+0.18)} V^{0.76} = 0.299052 \cdot 0.76 \sqrt{1+0.004 \times 180}$$

In which V 0 76 = the vol. of air at 0° Cente = 32° F. and at 76 metres Barom = 29 92 in.

d = diameter of the twere 0 65 m. = 2 56 in.

h = height of pressure gauge 0 18 m. = 0 71 in.

t = temperature of blast 180° Cente = 356 F.

b = pressure of the air at the moment of the experiment 7 42 m = 29 21 inches.

Hence the loss of air per minute is 1 7 cubic metre = 60 04 cubic feet. This might be saved by closing the space between the blow pipe nozzle and the water twere with clay—(“blowing with close tweres.”)

The volume of gas coming from the furnace per minute is found by the proportion—as 79 2, the vol. of nitrogen in 100 of atmospheric air, is to 57 79, the vol. of nitrogen in 100 of dry gas from the tunnel head, so is x, the quantity sought, to 7 06 cub. met., the vol. of air introduced into the furnace: whence x = 9 64 cub. met. = 340 45 cubic feet.

The total volume of gas, including the vapor of water is obtained by adding 11 90 per cent., which gives 10 796 cubic met. = 381 28 cub. feet.

A litre of gas containing 23 51 per cent. of carbonic oxide and 5 82 per cent. of hydrogen—in all 29 33 per cent. of inflammable gas, produces by combustion 918 calories,† and consumes 147 litres of

* Apparently an error in the calculation for 10 787. † A calorie is the amount of heat required to raise 1 kilogramme (2 205 lbs.) of water 1° Centigrade. C.E.S.

oxygen or .705 litres of atmospheric air. The quantity of heat developed by the combustion of 964 cub. metres of dry gas would be 8849.6 calories.

The heat developed by the charcoal employed in the blast furnace is 14216 calories per minute—consequently, the heat of the combustion of the gas is 62.2 per cent of that of the charcoal employed.

To obtain the temperature of combustion the following calculation is made.

For one litre of dry gas which consumes 7.05 of atmospheric air, we have—

Gas used,	Products.	Vol. litres	Weight grams.	Product of the weight and specific heat.
1 litre dry gas, 1.000	Carbonic acid contained in the gas, .1288	.364	.717	.000158
	Carbonic acid produced by combustion, .2351			
	Vapor of water in 1 litre of gas, .119			
Vapor of water .119	Vapor of water produced by combustion, .058	.177	.143	.000121
	Nitrogen in the gas, .578			
Air, .705	Nitrogen in the air introduced .558	1.136	1.485	.000396
		1.677		.000675

The temperature of combustion will be $\frac{918}{6.75} = 1360^\circ$

Centigrade = 2480° Fahrenheit. This number is a minimum, since it is obtained in supposing the initial temperature of the gas and that of the combining air equal to 0° Cent., 32° Fahr.

The melting point of cast iron, according to Pouillet, being 1200° Cente. (2192 Fahr.) it follows that this temperature can be produced by means of the gas from the tunnel head, especially if it be combined with hot air. Karsten regards the valuation of Pouillet as too low.

The puddling of 4496.96 lbs. of pig iron produced daily by the blast furnace of Clerval would require 4549.89 lbs. of coal, or 3.148 lbs. per minute, which corresponds to 8480 calories.

In the charcoal blast furnaces the oxygen of the air delivered by the twer is rapidly transformed into carbonic acid. By this means the high temperature is produced, which is required to melt the ore cemented in the upper part of the turnace. Carbonic acid in contact with charcoal at a high temperature passes into the state of carbonic oxide.—This causes a diminution of temperature, which limits the zone of maximum temperature or the zone of fusion to a distance not exceeding 8 to 12 inches above the twer. From this line to the top of the boshes the current of gas is principally composed of carbonic oxide and nitrogen. From the top of the boshes (or the widest part of the furnace) the proportion of carbonic acid gradually increases, until it rises to a point about half way from the boshes to the tunnel head, and from this it remains constant. At the same time the proportion of carbonic oxide diminishes, while that of hydrogen increases. It is in the upper part of the stack the vapor of water is disengaged. The quantity of this vapor in the gas taken from the furnace varies according to the time elapsed since the last charge. The specific heat of this vapor being considerable, its presence perceptibly diminishes the temperature produced by the combustion of the gas.

The complete transformation of the oxygen of the

atmosphere into carbonic oxide appears to take place at a greater height, or farther from the twer, in a coke furnace than in a charcoal furnace. This conjecture is based upon an analysis of gas taken from a cupola at a depth of four inches below the tunnel head. Ebelman found in 100 parts of this gas—

Carbonic acid.....	11.91
Carbonic oxide.....	11.91
Hydrogen.....	.99
Nitrogen.....	75.19
	100.00

To be Continued.

Institution of Mechanical Engineers.
ON THE EXPANSIVE ACTION OF STEAM, AND A NEW CONSTRUCTION OF EXPANSION VALVES FOR CONDENSING STEAM ENGINES.

By W. FAIRBAIRN, Esq.
Continued from page 690.

The expansive action of steam has been variously estimated by different writers, but all seem to agree in opinion that a considerable saving is effected by that process. It therefore becomes a question of importance in a community whose very existence almost depends upon the steam engine, how to work it advantageously, and at the least possible cost.—The great variety of schemes and forms which have been adopted for the attainment of these objects, have been exceedingly various, ingenious and interesting; and the investigation of the different theories and applications that have been submitted for public approval, would form an exceedingly attractive, if not useful, history of the various discoveries to which we are in a great measure indebted for the present improved construction of the steam engine.

The elastic force and expansive action of steam were well known to Watt, and some of his immediate contemporaries and successors, such as Smeaton, Cartwright, Wolf, Trevithick, and others; but the fears of explosion at that early period, and the difficulty of constructing vessels strong enough to contain high pressure steam, were probably the greatest drawbacks to its introduction. Wolf and Trevithick were probably among the first to grapple with the dangerous element; and the former, in order to economise fuel, introduced the double-cylinder engine, whereby a great saving was effected by increasing the pressure of steam in the boiler, and allowing it to pass from one cylinder to another of three or four times the capacity, by which its volume was expanded; and by these means a saving was effected, and an extra duty performed. If, for example, taking a double-cylinder engine, the high pressure cylinder being one fourth of the capacity of the cylinder from which the steam is condensed, there will be, for one cylinder full of steam, an expansion of four times its volume; this, of course, with a diminished pressure in the ratio of the capacities of the two cylinders. Comparing this with a similar process in a single cylinder equal in capacity to the two cylinders, and fitted with a well constructed apparatus, regulated so that only one-fifth of the contents of the cylinder (equal in capacity to the small cylinder on Wolf's plan) is filled with steam of equal density, and the remaining four-fifths (equal in capacity to the larger cylinder) is allowed for expansion, it is evident that the communication being thus suddenly cut off from the boiler after the piston has been urged through only one-fifth of the length of the stroke, the expansive force is then used in completing the remaining four-fifths of the stroke, and the result must be nearly the same as that obtained with the two cylinders on Wolf's plan. The advocates of Wolf's system, however, insist upon its superiority, not from the actual force given out (which is rather in favor of the single cylinder than the double, in consequence of increased condensation in the steam passage between the two cylinders), but from the superior action and greater regularity of motion which in the former case is produced. To some extent this is the case, but not to any appreciable amount, provided the fly-wheel is well proportioned to the pressure and power at which the engine is worked. In the double engines, which are now in common use, that is, when two single engines are coupled together with

the cranks at right angles to one another, there is less occasion for a heavy fly-wheel, as the effect of a large expansion is less felt, if not effectually neutralized. The results, therefore, of the double-cylinder engine and the single engine, working at equal rates of expansion, are virtually the same as regards power and economy of fuel, if the comparison be not in favor of the single engine.

Having come to the conclusion, that the same duty can be performed by the single as by the compound engine, and considering the important advantage of simplicity in mechanical construction, in opposition to complexity, however ingeniously made, it becomes a question how to obtain an effective, as well as a simple process, for the attainment of that object.

The first attempt was by revolving tappets, which had been long in use; these being formed and regulated in such a manner as to cut off the steam at such a point of the stroke, as to give the exact quantity of expansion required. These tappets, to say the least, were from various reasons objectionable, as the weight of the vertical rods and the slowness of their motion, prevented them from producing the desired effect. The steam valves could, however, be fixed so as to cut off the steam at the required point of the piston's passage in the cylinder, but the motion is not effected with the velocity essential to an efficient process of expansive action. Other processes have been tried for working steam engines expansively, besides those already noticed, amongst them may be noticed the equilibrium valve, worked by double cams from the crank-shaft. This method is generally used and adapted to the marine and old engines, but its application is seldom of much value, unless the engines and boilers are capable of bearing a pressure of 15 lbs. to 20 lbs. on the square inch.

Another fault to which this description of valves is subject, is their distance from the steam ports into the cylinder, and the large quantity of steam which occupies the space between the cut-off valve and the working cylinder of the engine. To remedy these defects, and to apply a better system of expansion to the common condensing engines, the following apparatus and mode of working the valves was introduced:—

In giving a description of this effective and simple apparatus, it is but fair to state that the first idea of this invention was suggested by Robert Brownhill, at first imperfectly constructed, but since greatly modified and perfected by the author of the present paper.

In the construction of a steam engine, two important considerations present themselves—the attainment of a maximum force, and the minimum in the consumption of fuel; to acquire the first, it is requisite to form such an arrangement of the working parts, as to obtain the closest approximation to a perfect vacuum under and above the piston; and the other is accomplished by having as small an expenditure of steam as possible. These desiderata are to a great degree attained by the principle upon which these valves are constructed, and the way in which they are worked. In the drawings exhibited, each of the steam chests contains two double beat valves, also a shut-off valve and throttle valve; these valves constitute the whole of the openings by which the steam is admitted and returned from the cylinder; the valves next to the steam pipe are those by which the steam is admitted into the cylinder, and the valves by which the steam escapes from the cylinder to the condenser. All the four valves are of the same area and dimensions; but the steam valves are not lifted up so high as the exhaust valves for the reasons which are afterwards given. The double-beat valves of this construction, have certain proportionate areas, the upper portion being larger than the bottom in the ratio of 1.158 to 1.000. The object of this enlargement of the upper part of the valve being to give a preponderance to the pressure of the steam on the top side, in order to overcome the pressure of the packing in the stuffing-box which embraces the spindle, and to assist the gravitating force of the valve in its descent when liberated from the actuating cams.

The mode of working the valves is by the shafts and wheels deriving their motion from the crank-shaft. A vertical spindle, upon which two circular discs are fixed, passes through the steam-chests; and by its rotary motion, the cams, which are fixed upon

the discs, raise the valves as they pass under rollers which are connected to the valve spindles by cross-heads, and by these means the valves are retained open or shut for any definite period. The rollers are steadied by cross heads sliding upon the vertical guide rods at their outer ends, and sliding at their inner ends in vertical grooves in a centre boss, which is supported by guide arms.

To work this engine economically, much depends upon the pressure of the steam and the amount of expansion given to the valves; the usual practice is to work with steam at 15 lbs. on the square inch, and cut off at one-half the stroke, and expand the other half; but in other cases, when the engines and boilers are calculated to bear a high pressure of steam, say from 30 to 40 lbs. on the inch, the cams are formed so as to cut off the steam at $\frac{1}{3}$ to $\frac{1}{4}$ of the stroke. There are generally three and sometimes four cams upon each of the discs, so as to cut off the steam at one-half, one-third or one-fourth, or any other point corresponding with the force of the steam and the load respectively.

To obtain this range of expansion, the rollers which work the steam valves are moveable, by brass strips which slide in the grooves in the cross heads, so as to bring the roller over any one of the cams that may be required; and fixed pointers show, by a graduated scale on each brass slide, the exact point of the cylinder at which the steam is cut off; and by these means the extent of expansion is regulated and brought under the eye of the engineer.

It has already been stated, that the steam valves are not lifted so high as the exhaust valves; and the reason of this is, that as the exhaust valves are not variable in their action, and always require full openings into the condenser, it is desirable to retain them open throughout the whole length of the stroke. This process is effected with a greater degree of certainty than by any other description of valve. The exhaust valves are raised suddenly by the short inclined planes of the cams; and having allowed time for the escape of the steam from the cylinder through a wide passage into the condenser, they suddenly fall by gravitation, and thus a more complete vacuum is formed under the piston than is probably attained by any other process.

The working of these valves is effected with a degree of certainty and simplicity which renders them very satisfactory, both as regards their efficiency in conducting to the economy of steam, and the perfect ease with which they are worked.—*Practical Mechanic's Jour.*

British Association.

On the Manufacture of the Finer Irons and Steels, as applied to Gun Barrels, Swords, and Railway Axles, By Mr. W. Greener, of Birmingham.

Continued from page 696.

Swords are another manufacture to which this improvement especially applies. Mr. Greener observed that all his investigations go to fully satisfy him that it is in a similar way the Arabs produce their finely tempered Damascus swords—namely using two steels of different carbonization, mixing them in the most intimate manner, and twisting them many fantastic ways, but observing method in that fancy. He is led to think that they do not temper by heating, and immersing the blades in a cooling liquid, as practised by us at the present day. If we subject a Damascus blade to the action of acid, the laminated structure is perfectly visible; if the blade be heated and immersed, crystallization takes place, and the limina disappears for ever. He was not then going to discuss the merits of our mode of tempering swords, but would merely allude to the fact that no European weapon had ever yet been produced equal in tenacity to those of Damascus.

The government inspector of small arms gave in evidence before a committee of the House of Commons in May last, "that the swords manufactured in Birmingham were not fit to be issued to the army." If so, this question becomes of vital importance not only to that district, but to the whole empire. Mr. Greener's investigations satisfied him that tempering by crystallising the steel (*ie.* tempering in the ordinary way) is far from the wisest course. He has found by experiment that the Damascus blade in its fibrous state, or hammer-hardened, is more difficult to break by a 100 per cent. than the best English-made blade. but temper it in the same way, and it shows no greater tenacity than

our own. The Damascus figure is destroyed by the carbon becoming equally diffuse; nor will acid develop it—it is entirely gone. But observe it with a glass attentively, and what is now a mere mass of crystal was previously a fibrous system of the most minute and beautiful arrangement. The tendency of all crystalline structures to lose tenacity, and separate by repeated actions of the waves of vibration, is evident to all scientific men. From these facts we may draw the conclusion, that swords constructed of dissimilar steels, tempered by condensation of its fibres, either by repeated rollings, hammering, or many other processes which our perfect machinery give us the opportunity of doing. Thus we may hope to see every soldier of the empire armed with a weapon as good, if not so costly, as the highly prized Damascus.

Lastly, though not of the least importance at the present day, is the construction of railway axles. If experience shows that the addition of one-third steel to two of iron doubles the strength of a mass so constructed, why not adopt this improvement in railway axles, and other parts of machinery on which the safety of hundreds sometimes depend? A few months previously to the death of the late George Stephenson, Mr. Greener consulted him on the possibility of improving this essential material, and at his instigation proceeded to make a considerable number of experiments. It appeared to him a settled fact, that from the affinity iron evinces for the various gradations of electricity, to galvanic electricity may be traced the rapid crystallization which takes place in railway axles, after having travelled over a given number of thousand miles. It is well known to all acquainted with engineering, that axles constructed of the most fibrous homogenous iron, are changed into a crystalline state of the most perfect kind, extending some inches from the journal. This, it may be assumed, is effected by the galvanic electricity generated by the bearings and the journal while in rapid motion. To this also, he apprehends, may be attributed the great tendency of axles to heat. To ascertain this fact, Mr. Greener subjected wire of various metals, from the ordinary iron wire to wire constructed of his laminated steel, to a strong and lengthened current of electricity, for a period of two hours, which effectually changed the fibre of the inferior irons to a crystalline state—their tenacity was entirely destroyed, and breaking with the brittleness of glass. The highly fibrous state of both the mixtures of steel and iron, and the fibrous steel, was not effected in the like ratio—not even after enduring the passage of the current for double the period. Hence he inferred that mixtures of iron and steel in axles would not only add to their durability and safety, but materially lessen the consumption of the lubricating material. This result will also be materially advanced by the adoption of a hollow axle—not hollow axles, which require increased diameter or surface, but an axle of precisely the present dimensions, with a perforation not exceeding $\frac{1}{4}$ inch in diameter; but this is a question of importance enough to demand a paper exclusively devoted to it.

To the adoption of mixed steel and iron is attributed the successful use of the gun-harpoon; for many years no iron could be found which would effectually resist the rapid motion given to it by gunpowder. It is a fact beyond dispute that all gun barrels will only stand a certain number of explosions, an ordinary iron barrel will seldom stand a repetition of four proofs,—and their quality even the best, a certain number of years' use changes their nature, and they become unsafe. So it is with railway axles, and, in short, all structures of this metal which, after a given time, part with every quality that renders it valuable. And thus arises a question whether the construction of horizontal bridges of iron is calculated to endure the many years their projectors hope. The waves of vibration, from the rapid passage of locomotive, partakes much of the nature of concussion, and as such, is peculiarly liable to be classed as one of those injured by excessive vibration.

Remarks.—The President (Mr. Stephenson) remarked on the danger of assuming facts and reasoning from that assumption. With respect to the influence of vibration on the structure of iron, he considered there was good room to doubt that the bearing force or pressure upon metals caused crystallization. It was by no means proved that railway axles were subject to the passage of currents of electricity, and therefore granting the assumption that

the passage of the electric current changed the character of the iron, there was a link wanting in the chain of reasoning, inasmuch as it was not proved that axles were subject to this electrical influence. Moreover he was inclined to doubt whether if a piece of iron was at first perfectly fibrous, vibration would ever change the structure of the metal. The beams of Cornish engines, for example, were subject to vast pressure; they never become crystallised; the connecting-rod of a locomotive was subject to great vibration, strain, and pressure, vibrating eight times a second when the velocity is 40 miles an hour: he had watched the wear of a rod for three years, and no change was perceptible in the structure of the iron. He doubted, therefore, the correctness of the assumption made by Mr. Greener.—After a few words from Mr. Roberts in support of this opinion, the discussion terminated.—*C. E. & A. Journal.*

Below we give the answers of Mr. Clay and Mr. Calhoun to the St. Louis Convention:

Letter from Mr. Calhoun.

Fort Hill, Sept. 16th, 1849.

GENTLEMEN: I regret that I cannot accept your invitation to attend the Convention to be held at St. Louis, on the 16th of the next month, to deliberate upon the expediency of connecting the Valley of the Mississippi with the Pacific. My engagements are of a nature that would not permit me to be present.

No one more highly appreciates the subject of your meeting than I do. I have made up no opinion as to its Eastern or Western terminus or the route that should be adopted; nor shall I, until I am better informed. My wish is, that the best route, all things considered, should be selected, including both termini. The work should look to the whole Union, and the general commerce of both the Atlantic and Pacific oceans. Such will be the views that will govern me, whenever I may be called on to act on the subject, I regard the work to be one of too great magnitude and importance to be influenced by local or private considerations.

With great respect, I am, &c.

J. C. CALHOUN.

A. B. CHAMBERS,

Letter from Mr. Clay.

ASHLAND, Sept. 19, 1849.

GENTLEMEN: I have received your official letter, in behalf of a Mass Meeting of the citizens of St. Louis, inviting me to attend a National Convention in that city on the 16th of next month, to deliberate on the expediency of connecting the Atlantic and Pacific Oceans in the Valley of the Mississippi, at an early day, by Railroad, &c. I am sorry that it is not in my power to attend the proposed Convention, other indispensable engagements interfering.

As to the project itself, the means of its execution, and the termini of the Road, I stand perfectly uncommitted, and feel no prejudices nor predictions which would sway my judgment. Before an enterprise of such vast importance is undertaken, all the light, of which the subject is susceptible, ought to be obtained. Among these is that to be derived from accurate surveys of contemplated routes, and their practicability, as well as estimates of the cost. I hope that the deliberations and proceedings of the Convention of St. Louis will afford useful aid in arriving at a proper conclusion.

I am, with great respect,

Your obedient servant, H. CLAY.
MESSRS. A. B. CHAMBERS,

New Hampshire.

Willon Railroad.—Directors for the ensuing year:—Daniel Abbott, Charles F. Gove, Abiel Lovejoy, William Ramsdell, Zebediah Shattuck, Joseph Greely, Clark C. Boutelle, Aaron P. Hughes, Clerk. Some gentlemen from Amherst tendered a subscription of \$40,000, to construct the road from Danforth, s Corner to Amherst Plain; but the whole matter was postponed.—[*Nashua Telegraph.*]

Georgia.

Western and Atlantic Railroad.—The Tunnel.

The Ringgold Republican of the 20th ult. says: "We are informed that 155 feet will complete this mammoth enterprise. The excavation has passed through the rock obstruction on both sides, and for several days past no impediment to the progress of the work has been presented. It is thought by those who have an opportunity to form a correct judg-

ment upon the subject, that the cars will run through this subterranean passage by the 1st of January next, and perhaps sooner."

We learn that the contractor, Mr. Gray, writes to a friend, that the cars will be running through the tunnel by the 1st of December.

New York.

Railroad from Ithaca to Owego.—We learn from the Ithaca Chronicle that the railroad between that place and Owego will be ready in about thirty days. It is now called the Cayuga and Susquehanna railroad, the terminus to be a mile from the landing, for the present, and will be completed next spring. Time of running one hour. The steamboats on the lake have been purchased by the company, and another will be added next season. It is intended to run these boats during the winter to Cayuga Bridge, and it is said that the difficulties heretofore in the way on account of the ice, will be fully removed. The rates of fare and freight are to be reduced.

Virginia.

Wm. Ward, Esq. President, and Capt. James Barnes, Engineer of the Seaboard and Roanoke Railroad Company, arrived day before yesterday from the North; and we are gratified to learn that they have made arrangements for commencing immediate operations on the line of road between Portsmouth and Weldon. The contracts for the whole of the iron have been closed on highly advantageous terms, and the iron will be shipped on as fast as vessels can be engaged for the purpose, and in two or three weeks "the clink of hammers closing rivets up" will be heard along the line of the road.—*Nor. Her.*

Tennessee.

Nashville and Chattanooga Railroad.—The Chattanooga Gazette of 26th ult. says: "The engineers this week completed the final location of the Nashville and Chattanooga railroad, from the Cumberland mountain to Chattanooga. We understand from them that it is not determined whether the road will cross the river in this state or Alabama. If the company succeed in getting a favorable location from the state of Alabama, for that portion of the road which would run through that state, they will cross the river below the island in Alabama—if not, it will cross above the island, and be located entirely in this state. The directors are called on to meet on the 7th proximo, to transact some important business. They will have another meeting in December, when it will probably be determined whether or no the road will be put under contract from the point where it crosses the river to Chattanooga forthwith."

We copy from the Boston Traveller the following interesting description of the Reading railroad. As this is one of the most important roads in the country, and as the description is taken from actual observation, and presents a popular view of the road, its resources and operations, we know of nothing more useful or interesting that we can give our readers:

READING RAILROAD.

No railroad in the Middle States, none perhaps out of Massachusetts, has claimed so large a share of the public attention as the Philadelphia, Reading and Pottsville railroad, or as it is generally called the Reading railroad; and yet there is no road, probably, the characteristics and capabilities of which are so imperfectly understood. Comparatively few among us have any personal knowledge of the road. It is known generally as a mere medium of speculation; and a great deal of undeserved odium has attached to it from causes which have no connection with the intrinsic value of the road. If the character of the road were better known, and its capacities and prospects for business better understood, its stock would soon cease to be a foot-ball among the street brokers, and assume a permanent form and value. Such at least is the impression which we derived from a recent visit to the road, and a cursory observation of its immediate resources and facilities for traffic. We do not propose to speak of the present pecuniary aspect of this truly great enterprise, but merely to give, in brief, such history and description as will convey an intelligible idea of what the road

now is, and what under good management it may become.

The road extends from Philadelphia to the coal mines of Pottsville, 93 miles, closely following the course of the Schuylkill river, even to its sources in the coal region of Schuylkill county. The river rises in and drains nearly the whole of Schuylkill county, bursting through the Kittatiny chain between the counties of Berks and Schuylkill, after a course of some 30 miles from the west. It then turns nearly to the south for a distance of 20 miles, passing the town of Reading, immediately below which it pierces the Blue Ridge and pursues a south-eastern course of 50 miles, till it reaches the environs of Philadelphia and is lost in the greater volume of the Delaware, five or six miles below that city.

The railroad is located, throughout the whole line, almost immediately upon the banks of the Schuylkill. With the river and the rich and beautiful scenery of the valley in constant view, the route of the Reading railroad is certainly pleasanter than that of any other railroad in the country.—Few fashionable routes of travel can furnish within the same distance, more attractions to the traveller for pleasure. The country, through which the road passes, is populous, highly cultivated, and productive; and the vast amount of coal business which is concentrated upon the railroad and the canal, excites the wonder and admiration of the traveller.

The railroad was projected in 1833, and a charter for it obtained in the year following. In 1835, about 40 miles of the road were put under contract. The original design was to carry the road only from Philadelphia to Reading, a distance of 58 miles, other corporations having contemplated the construction of railroads from Reading to the Schuylkill coal region. These roads, however, were finally constructed by the Reading Railroad Company; and the whole line of 93 miles was embraced in its charter, under the name of the Philadelphia, Reading and Pottsville railroad. The road was opened for public travel from Reading to Pottstown, 18 miles, in May 1848; from Reading to Norristown, 41 miles, in July of the same year; and to Philadelphia, 58 miles, in October, 1839; and the whole line, from Philadelphia to Pottsville, was completed in January, 1842.

A double track extends the whole distance from Pottsville, in the Schuylkill anthracite coal district, to Richmond, on the Delaware, 3 miles above the city of Philadelphia, and the grand shipping port for the coal. There is also a double track branch, 1½ miles long, which connects the road with the State or Columbia railroad, and thence with the principal business street of Philadelphia. This is for the accommodation of passengers and merchandise, and the city coal business.

The tracks are laid with a rail of the parallel H form, with both top edges alike. The rail weighs from 45 to 60 pounds to the yard—the greater portion being the heavy pattern, which is used exclusively in renewing the track. The rails are notched into white oak sleepers or cross ties, 7 feet long, and varying from 7 by 8 to 8 by 10 inches at the joints. They are laid upon broken stone, 14 inches deep, well rammed. After several trials of different methods of superstructure, this plan was found the best calculated for the business of the road. In all respects, the road is well built.

The grades of the road are admirably adapted to its heavy transportation of coal in one direction, being either level or descending—with no steeper inclination than 19 feet per mile towards tide water—from Schuylkill Haven, the most important point of supply of coal, to the Falls near Richmond, a distance of 84 miles. At the Falls, an assistant locomotive engine is supplied, which pushes the loaded train, immediately on its arrival, up a grade of 42½ feet per mile for a distance of a mile and a half leaving it on a descending grade and within four miles of Richmond, whither it is hauled by the same engine by which it is taken from the coal region.—The power of an engine on this road is therefore limited only by the resistance of the train on a level—a fact of great importance, as it secures for the road an economy of transportation, per ton, which is unparalleled.

There are no less than 120 bridges on the road.—Of these 83 are stone bridges, varying from 6 to 72 feet span; 9 iron "Howe" bridges, from 25 to 38 feet span; 14 lattice arched "Howe" and "Burr" wood-

en bridges, from 41 to 160 feet span; and 23 other bridges of short spans, from 14 to 39 feet each. One of the stone bridges crosses the Schuylkill at Phoenixville, 27 miles from Philadelphia, and is worthy of notice. It consists of 4 cut stone arches, of 72 ft. span and 16½ feet rise, and cost, with ice-breakers, &c., 47,000 dollars.

There are four tunnels on the road: one called the "Black Rock Tunnel," near Phoenixville, 1934 feet in length, 19 feet wide and 17 feet high, is thro' solid rock, and was worked from 15 shafts and 2 end breasts. The cost of this tunnel was 153,000 dollars. Another at Port Clinton, 75 miles from Philadelphia, called the Pulpit Rock Tunnel, is 1,600 feet long, worked from 2 shafts and 2 end breasts, through solid and loose rock mixed, and requiring 1,330 feet to be arched. This cost 133,000 dollars. Another, called the Flat Rock Tunnel, near the village of Manyunk, 7 miles from Philadelphia is 962 feet long, through very compact mica rock, worked from two ends only, and cost 91,000 dollars. The fourth is a tunnel under the Norristown railroad, 172 feet long, and arched throughout with brick.

The depots are laid out on a scale commensurate with the great business of the road. They are substantially built, but with a view to use and convenience rather than ornament.

Soaic account of the machine shops, the extensive arrangements of the company at Richmond for shipping coal, &c. will be given in another number.

The machine shops of the company are very extensive. They are located at Reading and Pottstown. Those at Reading are for the repair and renewal of the running machinery of the road; and those at Pottstown are for such repairs as are required by the road way department.

At Reading the company's property covers nearly 40 acres of ground. The workshops and other railroad buildings occupy but a small portion of the ground, and the remainder is unimproved and reserved for the demands of increasing business. The present improvements consist of large machine shops, with every variety of stationary machinery; black smith's shops; iron and brass foundries; copper and tin smith's shops; boiler shop; carpenter and pattern maker's shop; iron coal-car shop; steam tilt-hammers; tire making machinery; water works for supplying water stations and shops; engine house; wood and water stations; merchandise depot; coal shoots; offices, &c. At Pottstown, 18 miles from Philadelphia, are several shops for operations connected with the construction and repair of bridges, tracks, and whatever else is required for renewal and repairs of the roadway.

The repairing department, as will be seen by these statements, is of vast magnitude. At Reading alone some 600 hands are employed. The first impression upon almost every observer would be that less machinery and less force ought to suffice for repairs; and it is altogether probable that a reduction might be advantageously made. The arrangement of the shops is not the most perfect, nor best adapted to the necessary supervision of the workmen; and without the closest scrutiny and the most careful economy, it is obvious that there may be leakages which might materially affect the pecuniary condition of the company. It must be remembered, however, that the vast business of the road requires corresponding arrangements for renewal and repairs of road way and running machinery; and those who are conversant with the matter believe that the present business of the road fully justifies the extensive work shops which are now in operation, and that the company have already secured a great economy in the manufacture of their own tires, bar and cast iron, etc.

A statement of the present equipment of the road will convey some idea of the apparatus which must necessarily be required to keep the road in a suitable condition for business. The running machinery now comprises 83 locomotive engines and 5,117 cars for coal, merchandise and passenger business, and for supplying motive power on three branch railroads in the coal region. The whole force exclusively employed in the coal business, is 42 engines and 4606 coal cars. With this force, during four weeks, (24 working days) of the past season, the large amount of 169,334 tons of coal were transported on the road. Of the locomotives, 48 are of the first class, (27 to 17 tons), 26 of the second class (17 to 10 tons), 8 of the third class, (10 to 6 tons), 3

of the fourth class, (6 to 4 tons.) Of the coal cars, 3000 and over are iron, with four wheels, weighing something more than two tons, and carrying five tons of coal. The whole cost of the running machinery has been \$2,273,326.

The arrangements at Richmond, or Port Richmond as it is generally called, for receiving from the cars and shipping the coal brought over the Reading railroad are very extensive and complete. Richmond is the lower termination of the road on the Delaware, about three miles above the city of Philadelphia, and about 100 miles from the sea.—The railroad company own here about 60 acres of the most valuable property, including 3200 feet of river front. Two thirds of this front is now occupied by commodious wharves and piers, 17 of which varying from 342 to 1142 feet in length, extend into the Delaware, with sufficient water to allow vessels of 700 tons to lay along side.

These wharves and piers are most substantially built. They are elevated some 16 feet above the water, and are furnished with shoots at convenient points, through which the coal is passed into the holds of vessels, directly from the dropped bottom of the cars in which it is brought from the mines. The railroad tracks are raised a sufficient height above the solid surface of the piers and wharves to admit of the stacking of 200,000 tons of coal during the winter, or when it is not demanded for immediate shipment. Capacious docks extend in shore, between the wharves, so that the whole river front is made available for shipping purposes, and 97 vessels may be loaded at the same time. From these wharves 956,000 tons of coal have been shipped in one year; and it is estimated that more than two million tons might be shipped without any enlargement of the present arrangements.

A neat semi circular engine house, capable of holding 20 locomotives and tenders of the largest class, has lately been erected at Richmond. There are likewise spacious machine and workshops for lighter repairs of engines and cars. It is probable that the Richmond wharves are without a parallel in the world, in regard both to the magnitude of the shipping facilities which they afford and to the amt of coal which has been shipped from them. Every stranger in Philadelphia, who has the least curiosity or interest in such things, should visit this chief outlet of the coal trade of Pennsylvania.

There are several lateral or branch railroads connecting with the Reading road, which contribute largely to its business, and although under other charters and corporations, use its cars and return them loaded with coal or merchandise. The aggregate length of these roads is about 95 miles. Most of them are constructed with the best superstructure and in the most substantial manner. These branches extend from Port Clinton, Port Carbon, Pottsville, etc., and penetrate more or less deeply into the various coterie of the Schuylkill district, the Tamqua, Little Schuylkill, Pottsville, Mine Hill, etc.

The affairs of the Reading railroad corporation have recently been laid before the public, in a very lucid and satisfactory report by Mr. Neal, the president of the Eastern railroad, who undertook an investigation in behalf of the eastern stockholders.—Having given a full synopsis of Mr. Neal's report, it is unnecessary for us to recur to the subject here. His conclusion was, that the road is susceptible of being made a good property, and that under proper management it must inevitably increase in value. No one can take even a cursory view of the road, without being strongly impressed with the conviction that Mr. Neal's conclusion is well founded.—The road is admirably located and substantially built. The sources of business which it can command are almost inexhaustible. It is already a passenger road of no mean importance; and in this respect its business has not certainly reached its full capacity. As we have before remarked, the route of the road is one of the pleasantest in the country, and with suitable arrangements it might be made very attractive for pleasure travel merely. The Schuylkill coal region is full of interest, and to those whose taste or curiosity would be gratified by the sources of industry and wealth which are there exhibited, as well as to those who love beautiful natural scenery and the purest mountain air, a summer excursion over the Reading railroad cannot be otherwise than agreeable and healthful. The cost of the road may now be stated at \$16,500,000, propor-

tioned among the several departments nearly as follows: roadway, \$13,500,000; depots, \$200,000; running machinery, \$2,300,000; real estate, \$500,000.

In estimating the importance of this great work, it must be borne in mind that the anthracite coal trade of the United States, which in 1825 was only 34,893 tons, had in 1835 increased to 569,603 tons, and in 1848 to 3,089,238 tons. Of the latter amount there were brought to market by the various improvements, as follows:

By Reading railroad.....	1,216,233 tons.
By Schuylkill canal.....	436,602 "
By Reading railroad.....	1,652,835 "
By Lehigh canal.....	680,746 "
By Delaware and Hudson canal....	437,500 "
By Penn. canal from Wyoming val.	237,271 "
By railroad and canal from Shamokin, Pine Grove, etc.....	80,586 "

Total in 1848.....3,089,238 tons.

There is no room to doubt that the consumption of anthracite coal in the United States will regularly and greatly increase. The demand for it as fuel will be augmented with the rapid growth of our population, notwithstanding the improved economical arrangements which will undoubtedly be made for its ordinary consumption; and science is industriously at work to increase the facilities for employing it for manufacturing purposes. In regard to the avenues by which this increase is to be brought to market—we are not prepared to state to what extent the capacity of the canals can be increased; but the present capacity of the Reading railroad, without any additional outlay, may be stated as follows:

1,500,000 tons of coal, at \$1 45.....	\$2,175,000
115,000 passengers.....	190,000
65,000 tons merchandise.....	130,000
Mails, etc.....	15,000

Gross receipts.....2,510,000
Expenses, including transportation, repairs, etc.....1,100,000

Net profits.....\$1,410,000

We here speak of the present capacity of the road. Mr. Neal's estimate of annual net profits, for four years to come, is \$1,073,350, and upon the basis of that estimate he declares his willingness to take the road and operate it for ten years. We have no doubt the undertaking would give him a good bargain.

When the coal trade shall require it—and it is a probable supposition that it will, within a few years—the capacity of the railroad may be increased to an extent limited only by the ability of its double track to pass an almost endless train of coal cars; and this without any other additional expense than the running machinery, and a few sidings or turn-outs. The engines and cars for every additional half million tons, would cost about \$400,000—say 123,000 for 15 engines, and 280,000 for 1600 coal cars—and at the present average rate of toll would produce an additional gross income of \$725,000, or allowing for all expenses, a net income of \$470,000.

The Pacific Railroad MEMPHIS CONVENTION.

This Convention assembled, according to notice, at 4 o'clock P. M., on the evening of the 23d October, when Col. Nicholas Davis, chairman of the committee of organization (appointed at the meeting in the morning) nominated Lieut. M. F. Maury, U.S.N., president. He was unanimously elected. The following officers were nominated and elected:

Hon. C. C. Clay of Alabama, W. F. Mason of Mississippi, Col. Willoughby Williams of Tennessee, Col. R. F. W. Alston of South Carolina, Dr. D. Jamison of Georgia, Col. Maunsel White of Louisiana, Ex-Gov. T. S. Drew of Arkansas, Hon. Ashbel Smith of Texas, Ashton Johnson of Missouri, William M. Hall of Illinois, Col. B. E. Gray of Kentucky, Col. John T. Trezevant of Virginia, J. S. Thompson of Pennsylvania, and L. L. Robinson of New York were appointed vice-presidents; and A. H. Arthur of Mississippi, Richard Walker of Alabama, E. J. Carroll of Tennessee, C. A.

Price of South Carolina, Alex. Walker of Louisiana, L. J. Reardon of Arkansas, E. W. Upshaw of Texas, A. Finley of Missouri, and H. J. Eastin of Kentucky as secretaries.

After the report had been unanimously adopted, Hon. Nicholas Davis and Col. Maunsel White were appointed a committee to conduct the president to the chair, and on motion of Mr. Yates of Texas a committee of one from each delegation of the states present was appointed to draft rules for the government of the convention, and for the settlement of the mode of voting, etc. Lieut. Maury was conducted to the chair—a venerable relic, says the N. Orleans Picayune, being the same in which John Hancock set and presided at the first Continental Congress. How it got to Tennessee we are not informed. Lieut. Maury then addressed the convention in a speech which we are compelled to omit for another number of our paper. In consequence of the speech of Lieut. Maury little was done during the remainder of the evening. Mr. Forshay of Louisiana, moved that the members of the St. Louis convention be not admitted until the committee on rules had reported—was opposed by Mr. Bowlin of Missouri, and finally withdrew his motion. A committee on rules was appointed, and the thanks of the convention voted to the president, pro tem., when the convention adjourned to meet at 9 on the next day.

October 24.—The convention met at half past nine, an immense crowd, among whom were many ladies, being present. Two members from each delegation instead of one, were appointed for the purpose indicated above. The following gentlemen were elected to compose the railroad committee:

Alabama—J. A. Campbell, Dr. Fearn.
Arkansas—W. K. Sebastian, Dr. Kirkwood.
Georgia—Dr. D. Jamison.
Illinois—W. M. Hall, James Williams.
Kentucky—B. E. Gray, E. J. Bullock.
Louisiana—M. M. Cohen, J. C. Larue.
Missouri—J. Loughborough, T. F. Riser.
Mississippi—J. W. Chalmers, J. S. Yerger.
New York, L. L. Robinson.
Pennsylvania—George Darsie, Charles Naylor.
South Carolina—D. F. Jameson, J. F. G. Mittag.
Texas—C. C. Mills, A. J. Yates.
Virginia—J. E. Leigh, J. T. Tresevant.
Tennessee—J. C. Jones, H. G. Smith.

And the following to cast the vote of their respective states:

Alabama, N. Davis, S. Borland; Georgia, Dr. D. Jamison; Illinois, W. M. Hall; Kentucky, E. J. Bullock; Louisiana, Samuel C. Reid, Jr.; Missouri, J. B. Bowlin; Mississippi, J. D. Martin; N. York, L. L. Robinson; Pennsylvania, J. N. Smith; South Carolina, J. A. Woodward; Texas, R. L. Lindsay; Tennessee, John Pope; Virginia, J. E. Leigh.

Mr. Loughborough of Missouri, then read and submitted the report to the St. Louis convention, which was laid on the table, to await other plans of the same nature, in order that the convention might deal with them all at once.

On motion of Mr. Cohen of Louisiana, Mr. Whitney was admitted to a seat in the convention, and the ladies were invited to a seat on the floor. Mr. Anthony of Arkansas, offered a resolution that no question involving the construction of any highway beyond the limits of this republic, be entertained.—This brought Lieut. Maury to his feet, for the purpose of explaining his position. He succinctly stated his views. He was in favor of this railway, but he saw no reason why ships and property should be exposed to the perils of a voyage around Cape Horn. This canal would make railroads as the Erie canal had done. A ship canal across Tehuantepec would be worth a dozen railroads, and it

would create a dozen of them. He alluded to the anxiety of Great Britain on this subject, as proof of the immense importance of such a canal.

Mr. Larue, of Louisiana, concurred with Lieut. Maury. It would take 10 years to construct the railroad, and in the mean time it was of great importance to get the eastern and Pacific trade as soon as possible. He then offered three resolutions.

1st. Recommending the general government to make a topographical and geological survey of the country between the Mississippi and the Pacific.

2d. Recommending a military road to the Pacific as necessary to protect emigration and advance population.

3d. Recommending the government to convey military stores, troops, etc., to the Pacific settlements by the shortest route; to wit, Nicaragua Tehuantepec, etc.

Mr. Campbell, of Alabama, offered three resolutions:

1st. Relieving Congress of all constitutional embarrassment, by procuring an amendment specially authorising the construction of the improvement to the Pacific.

2d. Expressing the opinion that the public lands are a legitimate fund for this purpose.

3d. That a liberal appropriation of public lands lying within the several states should also be made.

Mr. Smith, of Texas, offered a resolution to appoint a committee of one from each state and territory represented in the convention, to present a memorial to Congress representing the importance of a military road, to commence on Red River between 32 and 33d ° North Latitude—thence to El Paso—thence along the frontier to some point on the Pacific—and establishing stations, erecting blockhouses, &c. &c.

On motion of Mr. De Bow, a committee of seven was appointed to draft a memorial to Congress and an address to the people, setting forth the importance of this great project.

Mr. Yates of Texas, moved that the committee appointed to report on the railroad to the Pacific, report also on the union of the waters of the two oceans.

Mr. Topp, of Tennessee, offered several resolutions, the substance of which was, that the government ought to construct this road, that it ought to employ able engineers to make a scientific survey, and that it was duty of the government also to aid by means of the national domain, in uniting the great lakes with the Mississippi.

Mr. Mills of Texas, offered a resolution in favor of the Gila route. Upon this "Captain Charles Naylor, of Pennsylvania, rose and addressed the convention on the subject of the Southern route: "The discussion on this subject," he said, "reminded him of a school boy bounding the United States, during the war with Mexico. He began by saying, on the north by the icy pole, on the east by the Atlantic, on the west by the Pacific, and on the south—and here the boy hung his head and considered, knowing that our troops were in Mexico, and replied, on the south—just as far as we d—n please.—(Roars of Laughter.) And so I found it when I was in Mexico—the boundary was just as far as we d—n please to make it. This is the boundry of our country on the south. Then who will say that we cannot make a railroad wherever we want? From the remarks of the President, and from the great aequeduct of public feeling in the bosom of the people, I feel that we are all in favor of the school-boy's boundary." Capt. N. then alluded to our conquests in Mexico and the part he bore in them, and he yet hoped to see our flag wave

on the school-boy's boundary. (Great applause.)

Mr. Loughborough, of Missouri, offered a resolution, that it was right in selecting the route to accommodate as many States as possible.

Mr. Watkins of Arkansas, then offered the following resolutions which were debated at length by himself, Col. Jefferson Davis and others, and produced violent excitement, in the midst of which the Convention adjourned.

1. Resolved, That the construction of a railroad from the valley of the Mississippi to the Pacific Ocean, for purposes of national defence and military communication, and transportation, and to increase the value of the public domain and bring it into market, are strictly within the constitutional powers of the General Government, and it can be no objection to the exercise of this power that it will facilitate emigration and commerce.

2. Resolved, That the South and her institutions have more to dread than to hope for in any future changes or amendments of the federal constitution, and we are opposed to any amendment conferring on Congress any further powers than it now possess over the subject of internal improvements.

In the evening, Mr. Davis having moved to lay the resolutions of Mr. Watkins on the table, the discussion was continued with much warmth. The motion finally prevailed. A number of letters from distinguished individuals was read. A mass meeting was to take place in the evening. The Convention adjourned until 9 on 25th.

THIRD DAY.

Hon. C. C. Clay took the chair, Lieut. Maury being indisposed. The meeting was opened with prayer by the Rev. Mr. Webber, formerly of Goochland county, Virginia.

Hon. Solon Borland having on the 24th offered a series of resolutions calling for a survey of the whole route, and the establishment of a line of posts to the Pacific, made a speech in support of his proposition. He gave way however, for Mr. Walker of Louisiana, to make an explanation. That gentleman opposed Mr. B's resolutions on the ground that they were too limited, and were moreover embraced in those of Mr. Larue, the substance of which we gave yesterday. The question was discussed between these two gentlemen, and the resolutions were finally referred.

Mr. Woodward of South Carolina, said that neither this convention nor that of St. Louis was a National Convention. They were both sectional and sought to bring to the notice of Congress a particular section of country for the purpose of making a railroad. He believed the Memphis route the proper one, and influenced by this belief, he begged leave to submit the following resolutions:

Resolved, That it is highly expedient, in a military and commercial point of view, that a communication by railroad should exist between the waters of the Mississippi river and the Pacific ocean, and that every means and facility that may lie within the constitutional powers of the Federal Government, if any do, should be applied to such object.

Resolved, That a route to terminate westwardly at San Diego, on the Pacific, and eastwardly at Memphis, on the Mississippi river, is strongly indicated by climate, temperature, geographical and commercial relations, directness of course, centrality and an equal regard to the interest of every part of the Union.

Mr. Walker of Louisiana, denied any sectional feelings for himself and his colleagues. They would support all routes, but they acted under instructions. They were instructed to bring forward the Tehuantepec route, in order that it should be brought to notice, and presented to Congress.

Mr. Bowlin of Missouri, did not deny that he had strong local prejudices. They had, however, been repudiated, in discussing the general question, at

St. Louis, and he hoped they would be here.

Mr. Woodward was for a national route, yet he spoke in favor of a local route. He hoped this convention would go before Congress with the same general, broad principles that the St. Louis Convention had acted on. It was proposed to array Memphis against St. Louis. It was a sort of triangular duel, each shooting at the other. The St. Louis Convention wanted the road, no matter where it ran, so it terminated on the Mississippi and Pacific. He would leave the route to engineers.

Mr. Upshaw, of Texas, offered the following resolution:

Resolved, That this convention extend the same courtesy to St. Louis that the gentleman from St. Louis says the St. Louis Convention extended to Memphis, by taking St. Louis under our wing, as St. Louis took us under hers.

Mr. Stanton denied that there was any rivalry between the two routes. Mr. Fray, of Kentucky, wished to amend the resolutions of Mr. Woodward by substituting the mouth of the Ohio for Memphis, saying Illinois would go for that terminus. This Mr. Hall, of Illinois, denied, saying that state was for Memphis.

Mr. De Bow made some remarks with regard to the delegation of Louisiana, who he said had no scheme, and were acting under instructions. These related principally to the Tehuantepec improvement, for which they were instructed to obtain the assistance of the convention, in inducing Congress to pass a law for the passage of military stores, &c. when completed. They were farther instructed to ratify any route selected by this convention, and to express a preference for that along the Gila river.

Col. Davis, of Mississippi, offered the following resolution as a substitute for that of Mr. Woodward:

Resolved, That the committee on resolutions already created, be instructed to do nothing more of a general character than to report a memorial to Congress, asking for a survey of the various routes proposed for the great railway from the Valley of the Mississippi to the Pacific Ocean.

Mr. Woodward defended his resolutions. He said they were national, merely expressing a preference, which, if ill founded, would have no force. He contended that all the routes should be surveyed, but that still, this would not prevent him from preferring Memphis.

The committee on resolutions reported that they would make a general report on the next day at 10 o'clock.

Mr. Hall of Illinois, having the floor, gave way to a motion to adjourn until the 26th, at 9 in the morning.

FOURTH DAY.

The convention met at 10 o'clock, A.M.

Mr. Hall, of Illinois, resumed the discussion of the resolutions which he had offered. He considered them of the greatest importance. He proposed as one from the great lakes, to put in claims for his route. Mr. Hall proceeded to make some very severe remarks upon the project of Mr. Whitney, its engrossing and monopolising character. In the same tone he commented upon the project of Dr. Carver. He was opposed to all monster speculations, monopolising humbugs.

Mr. Stanton, of Tennessee, moved that Mr. A. Whitney be invited to address the convention, who consented to do so in the afternoon.

Mr. Lea, of Tennessee, proposed to show the convention the practicability and the impracticability of the different routes proposed for a railroad to the Pacific.

Capt. Eastin, of Ky., remarked that Kentucky preferred Memphis as the eastern terminus of the Pacific railway.

Dr. Lea resumed his remarks. He believed a southern route alone to be practicable for a railroad. Dr. L. enforced this proposition very earnestly.

Prof. Forshey, of Louisiana, addressed the convention. He thought that Mr. Whitney was deserving of high eulogy—but did his route respond to the exigencies of the southern half of the confederacy? Prof. F. commented in a forcible manner upon the proposed northern routes—urging as objections the severe winters and difficult mountain passes. He urged a route from the Mississippi river, by the Rio Grande, through El Paso del Norte, down the Gila to San Diego.

The committee on resolutions appeared and reported through Lieut. Maury as follows:

1. Resolved, That it is the opinion of this convention that it is the duty of the general government to provide at an early period for the construction of a national railroad from the Mississippi river to the Pacific ocean.

2. Resolved, That to facilitate the accomplishment of this object, in the opinion of this convention, it is the duty of the general government to constitute an efficient and competent corps of Engineers to make complete explorations and surveys of all the routes that have been designated by public opinion as proper for the line of this road.

3. Resolved, That after the proper surveys shall have been completed, that in the opinion of the convention, it is the duty of the general government to locate the line of the road; and in making the location that route should be selected which is easiest of access, best calculated to subserve the purposes of national defence most convenient to the people of, and as far as practicable, central to, the United States, and upon which a railroad can be constructed on the cheapest and best terms.

4. Resolved, That to carry into effect the object of the first resolution, in the opinion of this convention the public lands of the United States constitute a legitimate and proper fund.

5. Resolved, That after the construction of the national railway trunk from the Mississippi river to the Pacific ocean, in the opinion of this convention it is the duty of Congress to aid by the appropriation of the national domain, in the construction of such branch railroads as will best connect it with the northern lakes and the great thoroughfares leading to the Atlantic ocean, and with such other points on the Mississippi river as will connect it with the lines of improvement completed or in the course of construction—and also to aid in the construction of branches from the main trunk to suitable points on the Gulf of Mexico either east or west of the Mississippi river.

6. Resolved, That in the opinion of convention it is the duty of the general government to provide, under liberal conditions, for a connection between the main trunk of the national railroad and all railroads now made or which may hereafter be constructed by the authority of the several States and territories of the Union.

Resolved, That as an important means, a necessary preliminary to the construction of a railroad, it is the first duty of Congress to take the necessary measures for the establishment of military posts from the western confines of our western states, along the southern boundaries of our republic and our Indian frontier to the Pacific ocean—that these posts should be established in all proper places, not far distant from each other, and that civilized and productive settlements should be encouraged around them by sales and the grant of pre-emption rights of the public lands to actual settlers, and by such other encouragement as may be deemed necessary, so, that by these means, ample opportunities may be afforded to our engineers for the immediate survey and reconnaissance of our possessions lying between our western and southern states and the Pacific ocean, and so, also, that by these means safe practical roads, one or more, with facilities of travel, may be immediately formed for our citizens and for the transportation of troops and munitions of

war, etc., across our own territories, from the Atlantic to the Pacific shores, and in order that our government may fulfil its recent treaty stipulations with Mexico.

Your committee would further report, that in the opinion it would be highly advantageous to the commerce of this country, and add greatly to its political power and influence, if an immediate connection by railroad or canal, could be obtained between the Gulf of Mexico and the Pacific ocean. Many projects of greater or less promise for the purpose of constructing the necessary works to complete such a communication have been of late agitated, and without, in the present state of our knowledge upon the subject, pretending to decide upon their relative merits, they beg leave to recommend the adoption of the following resolution:

Resolved, That while the contemplated railroad across the continent is being constructed, a present communication between the States of this Union, and the American and Asiatic coasts of the Pacific ocean is of vast importance to every portion of this country; that such communication can be obtained by ship canal or railroad across the Isthmus of Tehuantepec, Nicaragua or Panama, or across them all, which railroads or canals may be constructed by private enterprise, and this convention, in order to encourage the undertaking and completion of such works, recommend the passage of a law by the Congress of the United States, directing the postmaster general, secretary of war, and secretary of the navy, to make annual contracts for the transportation of the mails, troops, and military and naval stores of the government, from the Atlantic to the Pacific posts of the country, by the shortest, speediest and cheapest route.

The committee on resolutions to which was referred the resolution that declares "that in the event of the appropriation by Congress of a considerable portion of the proceeds of the public lands to the construction of a railroad from the Mississippi river to the Pacific ocean, that at the same time liberal appropriations of the public lands lying within the limits of the States should be made to aid them respectively in their works of internal improvement, have had the same under consideration, and have instructed me to report: that the claim of the States is equitable, because the lands of the United States within the State bear no charges for local improvements, nor for the expenditure of the State government, and receive benefit from both sources of expenditure." They therefore recommend the adoption of the resolution:

Resolved, That in the event of the appropriation by Congress of a considerable portion of the public lands, or of the proceeds of the sales thereof, to the construction of a railroad from the Mississippi river to the Pacific ocean, that liberal appropriations of the public lands lying within the limits of the respective states, to be made, to aid them in the construction of their works of internal improvement.

On motion the report on the Isthmus and other foreign routes over this continent was ordered to be taken up. Resolution unanimously adopted.

The reported resolution on protecting the frontier settlement and settlers upon the route, was taken up and unanimously carried.

Committee of Seven appointed by the President to Memorialize Congress.

J. B. D. DeBow of Louisiana.
Absalom Fowler of Arkansas.
James C. Jones of Tennessee.
J. R. Strother of Missouri.
J. F. G. Mittag of South Carolina.
C. C. Mills of Texas.
G. S. Yerger of Mississippi.

The reported resolution in favor of the equitable right of every state to a share in the public lands, and the propriety of using them to build the road.

The reported resolution indicating advantages of a superior character on the route from San Diego down the Gila, through the space between 35d and 33d degrees of latitude to some point on the Mississippi, between the mouths of Red river and Ohio, were taken up.

Mr. Kirkwood of Arkansas, withdrew his call for a vote by states, and offered an amendment adopting the second resolution offered by the gentleman from South Carolina at a preceding day.

A motion was made to lay both resolutions and amendment on the table.

Missouri called for a vote by states, which resulted as follows:

Ayes—Illinois, Missouri and Pennsylvania.
Nays—Alabama, Arkansas, Kentucky, Louisiana, Mississippi, New York, South Carolina, Texas, Tennessee and Virginia.

And so the amendment was not laid on the table.

A long discussion ensued as to the effect the vote had.

Dr. Lea of Tennessee moved to amend further, by resolving that the road should be made to terminate below the icy obstructions of the north, at some point below the mouth of the Ohio.

Mr. Campbell of Alabama, addressed the convention in favor of, and Mr. Naylor of Pennsylvania, in opposition to, the amendment.

Mr. N. thought the amendment too local, sectional; we were met in national, not local convention, and he appealed to the national heart against the resolution. We had labored together—why should we not reap the reward together? It might be a misfortune—was it a sin to be born north? He was a northern man by birth, but he had a southern, a warm heart. He had no personal interest in this matter—but he wanted us to achieve God's mission of progress for which our fathers had been planted in this country. We had our commercial appetite to gratify—barbarism to civilize, heathenism to christianize, ignorance to enlighten, brutality to enable, to lift up and place erect God's images, capable agents in the world's great labors. This was before us; and, after all we had come to disagreement in this convention, on a route outside of our country.

Capt. Naylor continued—making a fervent, earnest and most eloquent appeal in favor of harmony—he knew nothing of routes—we should wait for surveys—surveys of all routes, of every route. We should act now in a grander spirit than of old—we should be national, world-wide in our feelings and action—not whig or democrat, or federal or locofoco.

Mr. Kirkwood of Arkansas, addressed the convention in favor of his resolution.

Mr. Larue of Louisiana, addressed the convention. He was, in part the representative of Louisiana, and could only say that the second resolution reported from the committee went as far as this convention ought to go. We should unite our energies and have the road. That was what he wanted.—We could not have the road without the harmonious concert, the concordant energies of the people, and all the people, of the United States. We should wait for the surveys—for the topographical wagon to come up—not quarrel, like the two Platians, about property in the clouds.

Mr. Woodward of South Carolina rose. He did not expect to make, he did not feel called upon to make an elaborate argument. The gentleman from Louisiana had not met a single point in his argument; if he had, he (Mr. W.) would be glad to hear it indicated; he liked patriotism, but jockeying intrigue, were to guide congressional action in deciding upon a route. He disliked to say these things

—but they were so, and the member who talked to Congress of patriotism, etc., unless he "spoke for Buncomb," would be set down as a fool. Congress would decide upon a route in advance of a survey—a majority never gave up to engineers and mathematical instruments the decision of a question which they might decide in favor of a minority.—The majority would run the road upon its route, even if they ran it bluffly against the mountain barriers. Unless this route was sent up to Congress by this convention it would never even be heard of in a congressional committee. Our silence would be assumed to be an admission of great doubt in reference to the merits of our route. The St. Louis convention had endorsed the St. Louis project—why should we not do the same for the Memphis route? Other routes would come up with recommendations to Congress—and, even to the disregard of the extensive patriotism of the gentleman from Louisiana, we would have to look out for our own interests, because no body else would. He rather doubted the probability of the Memphis route having a fair hearing in Congress—the Memphis route would be ground to dust and nothingness between the upper and nether millstones. We would have to wait until the attempt to construct a railroad on another route had been made, and failed—that would be the demonstration in favor of the Memphis route. His resolutions were more national than the resolutions of the gentleman from Louisiana: his resolutions most singularly and unfortunately indicated a region of country just embracing the slave States. That was bad and might originate scandal and unjust imputations against the convention.

AFTERNOON SESSION.

The convention met at 4 p. m.
Mr. Campbell of Alabama, took the floor. We should not, said Mr. Campbell, hesitate to indicate a particular route—St. Louis ought to have done so—we ought to do so. St. Louis was a noble city, and she should have indicated her route to Congress for its favorable consideration. But she had covertly done so; and that was not right. And when she talked of bringing a trunk merely to the limits of the State, this started disturbing constitutional questions, which ought to be avoided or the constitution amended. We ought not to be discussing such matters, but organize public sentiment and act upon it, so as to secure the accomplishment of this great project.

Capt. Eastin, of Kentucky, thought that the largest number of railroad improvements were converging to the great table land of Ohio—he thought it unfortunate to designate or indicate a southern route—the votes were against us—and we should have done well merely to declare in favor of the best route—and to commit members of Congress to this position. A topographical survey could alone determine the proper route.

The amendment of Mr. Kirkwood, of Arkansas, substantially the same with the resolutions of Mr. Woodward, was called, and the vote by States demanded:

Aye—Arkansas, Mississippi, South Carolina, Alabama, Tennessee, Virginia.

No—Illinois, Kentucky, Louisiana, Missouri, New York, Pennsylvania, Georgia, Texas.
So the motion was lost.

Mr. Darsie, of Pennsylvania, called up his amendment, to strike out the words "is possessed of special advantages." Amendment carried by common consent. The vote was called by States on the original resolution as amended:

Ayes—Alabama, Georgia, Kentucky, Louisiana, Mississippi, New York, Texas, Tennessee, Virginia, and South Carolina.

Nays—Arkansas, Missouri, Pennsylvania, and Illinois.

And so, in the midst of tremendous applause, was declared to be carried. The following is the resolution:

Resolved, That in the present state of our knowledge, we feel warranted in recommending to the particular attention of the general government for examination as possessing special advantages, the route commencing at San Diego on the Pacific ocean, crossing the Colodaro of the west, running along the Gila River, or near it, in a direction to the Paso Del Norte, and thence across the State of Texas to its northeastern-boundary between 32 and 33 degrees of north latitude, terminating at some point on the Mississippi between the mouth of the Ohio river and the Red river.

Judge Walker, of Louisiana, handsomely spoke of the hospitality of Memphis, and offered a resolution of kind and courteous thanks. Passed unanimously.

Mr. Stanton, of Tennessee, moved the thanks of the convention to its President for the able and dignified and impartial manner in which he presided. Carried in the midst of great applause.

A motion was made to adjourn *sine die* after hearing Mr. Whitney.

AMERICAN RAILROAD JOURNAL.

Saturday, November 10, 1849.

Railroad to the Pacific.

The two great conventions of St. Louis and Memphis have been held, and their results are now before the public. We think that they have accomplished much in aid of this great work. The report of their proceedings show that great progress has been made in the public mind in relation to it; that the people are beginning to look at this question in a proper manner, and to subject their opinions upon the various questions arising in its progress, to the control of competent evidence. These conventions were called by the advocates of rival routes, and upon this subject we expected to see a diversity of opinion. This is of little importance compared with a proper appreciation of the nature of this great work, and the proper course to be pursued to secure its construction. There will be but little difficulty in deciding upon the route, as soon as the people are agreed upon the evidence by which this question shall be decided. Both conventions admitted that the question of route was one of engineering—a question which they did not profess themselves competent to decide. We are happy to bear testimony to the general correctness of the views expressed by the leading men of the convention. We here see the first development of order upon the chaotic state of opinion which up to a recent date has prevailed in reference to this great work. Thus far, those who have led public opinion, have drawn upon their imaginations for their facts, and the desirableness of the work being admitted, just these conditions were supposed to exist most favorable for its execution. Men are now endeavoring to ascertain what are the conditions which actually exist, that they may make use of the proper means to meet them. Opinion follows, instead of anticipating evidence, our progress can now be measured, because the different views which prevail upon this subject are subjected to and decided by the same tests. We are now going the right way to work.

As we before remarked, the conventions did not profess themselves competent to decide upon the question of route; and their proceedings throw but very little additional light upon this point. We cannot regard the letter of Mr. Fremont, read by Mr. Benton, as entitled to much weight. He never explored the routes stated by him to exist, neither does he say how he obtained his information. The letter upon its very face is not evidence—it is mere conjecture. Now these conjectures may be correct; but certainly the existence of the route he speaks of is against all analogy. This new route traverses

the base of the loftiest peaks of the Rocky Mountains, and crosses the most elevated plateau of this region, from which the heads of the rivers watering this country run in different directions. Now general experience always teaches us that the higher we ascend a river, the less likely are we to find a good route for a railroad. In this letter we find no evidence to rebut this presumption. The letter is entirely unprofessional, and in our minds weakens the confidence which we have felt in this gentleman. An engineer has no right to substitute conjecture for evidence, and one who does this is a very unsafe guide, whether he does this from an ignorance of what belongs to his profession, or from a desire to aid the cause of a partizan. We sincerely hope that Mr. Fremont is correct in his conjectures. If such should be the fact, the greatest obstacle to the success of this road is disposed of.

In reading Mr. Benton's speech, we must take into consideration his peculiar position. What he says has more reference to this, than to an abstract question of a railway. A most embittered political feud exists in the democratic party of this State headed by Mr. Benton on the one hand, and numerous lesser politicians on the other, and both are using all means within their reach to destroy each other. As the subject of a railroad is very popular in the state of Missouri, it was looked upon as very important to get the lead in relation to it in the convention. The statements of these partisans, therefore, must be taken as that of interested parties.—With all due deference to Mr. Benton, we must believe that the Pacific railway, which would realize his highest conceptions of usefulness or greatness, would, after running directly through the State of Missouri, make a sudden *detour*, and find its western terminus at the Senate Chamber at Washington.

So bitter is this quarrel in Missouri that we understand, but from the interposition of members from adjoining States, it would have broken up the convention. At Memphis no such disturbing influence existed. Its proceedings were therefore conducted with greater harmony and dignity.

The most important feature about these conventions is in the answers of the invited guests. They are from the first men in the country, of old political parties, and the tone of the whole is in favor of the work, however much they may differ upon the questions of means, routes, etc. They show that the country is ripe for action, and that nothing remains but to unite upon the best plan to commence the work. We give in another column the answers of Mr. Clay and Mr. Calhoun, which are models of good taste and good sense. If the two men in the country, probably the best qualified to speak correctly upon this subject, feel called upon to give their opinions with so much caution, it certainly becomes those who can lay no claim to such authority to give their opinions with diffidence if nothing more.

Railroad to Memphis.

The extension of the Georgia railroad to the Tennessee river has already secured the construction of a road from this point to Nashville, from whence it will soon be extended to the Ohio. Another road of nearly equal importance, from the Tennessee river to Memphis, is occupying the attention of the country along the line of the proposed road, and we soon expect to see an organized effort made to secure its construction. It will run through a wealthy section of the south, capable of contributing largely to such a work, which may be expected to receive additional means from the States of Georgia and South Ca-

rolina, who are much interested in securing a connection with the lower Mississippi. The proper termini of the roads of these States are the Mississippi and the Ohio, and they will not realize the full extent of their usefulness, till these points are reached:

In connection with the above, we copy the following letter from the Huntsville Democrat in relation to a route for this road:

The Democrat says "Mr. Jones is a practical man, add well acquainted with the route which he represents as most suitable for the location of that portion of the road referred to:"

BOLIVAR, Ala., Oct., 16, 1849.

Mr. P. Woodson—Dear Sir: I was some time ago appointed by his Excellency, Gov. R. Chapman, a delegate to attend the Railroad Convention at Memphis, Tenn., on the 23d inst., but as sickness in my family prevents my attending the convention, permit me to point out, as I believe, the proper route of a road from Memphis to connect with the east. It is to commence at Memphis and run nearly east by Florence, Athens, Huntsville, Larkinsville, and Bellefonte, up to the Tennessee river, where the Nashville and Chattanooga railroad crosses it. For these reasons, 1st. It is in a line with the Lynchburg and Tennessee railroad, as well as the best point to connect with the Nashville and Chattanooga railroad which connects with the Georgia railroads. 2d. The ground is well adapted for constructing a railroad, there being no serious hill or ridge to cross in the whole distance, so far as my information or knowledge extends. From Athens to the Tennessee river I know the topography well, and much of the balance of the route I have been over. 3d. The road will pass through one of the richest valleys in the United States a distance of a hundred miles, say from Athens to the Tennessee river, thereby insuring a vast amount of freight and a great number of passengers. 4th. It will be a more direct route than any other line which can connect Memphis with the Atlantic cities. 5th. The whole country is anxious for such a road, and with very few exceptions, would give the company that might be formed, the right of way through their lands, as well as take liberally of their stock. 6th. There has never been a case of cholera on the route which has proved so disastrous in the northern and middle parts of Tennessee, thereby insuring, in some degree, the health of passengers. My objections to its connecting with the Nashville and Chattanooga railroad at Nashville is, that it makes the distance to the Atlantic cities too far, thereby increasing both time and expense; and for the same reason, near Winchester. In both cases the snow and frost would be worse than along the southern side of the Cumberland Mountains; along the route first proposed. And again, because the route up the Tennessee valley would avoid the tunnel and inclined plains, where the giving away of a break would be attended with so much danger of life. Again, by connecting at the Tennessee river, no unfair exactions would be made by the Nashville and Chattanooga railroad, because the river is now navigable at all times from there to Chattanooga, except at the very lowest water, and with but little work, the obstructions at the Tumbling Shoals, could be removed, thereby making the navigation good at all times.

Very respectfully, your obt. servant

CHARLES J. JONES.

The New Route from New York to Buffalo.

The New York and Erie railroad is now beginning to realize some of the results claimed for it by its friends, when it should reach the fertile sections of Western New York, and connect itself with the lines of communication in that quarter, so as to open between them and New York the shortest and quickest route. The following, taken from an Ithaca paper, shows the state of the road which is to connect the Erie road with Cayuga Lake. The completion of the Cayuga road will, in connection with the lake, be a virtual extension of the Erie road to Cayuga Bridge. A road is in an almost equal state of forwardness to connect Seneca Lake with

the Erie road at Elmira. This lake too is unobstructed by ice during the winter. This last named road will form an additional connection between the Erie road, and the roads running from Albany to Buffalo. As soon, therefore, as the Hudson shall be closed by ice, a greater part of the travel from the west, which now reaches New York by way of Albany, will be brought over the Erie road.

Cayuga and Susquehanna and Liggel's Gap Railroad.—For the gratification of our readers, we have taken the liberty several times during the last two months to refer to the operations of the enterprising company now owning and rebuilding Cayuga and Susquehanna railroad, and have attempted, from what information we could gain, to give the public some idea as to the progress of the work, and the prospects before us.

We are now happy to be able to say, advisedly, that the old Ithaca and Owego—now the Cayuga and Susquehanna railroad—will be open for travel within thirty days. About four miles of New road are now being made. To avoid the inclined plane, and will be opened at the same time with the other line.

The terminus for the present will be about half a mile from the village, and about one mile from the steamboat landing. A plank road is now being made, on which the passengers will be transported from the boat to the railroad depot, in omnibusses, until spring, when the railroad will be extended to the landing.

It is well known that the line of this road is very fine, perhaps the best in the state, with no grades over 21 feet to the mile, and practically straight. The track will be six feet—same gauge as the New York and Erie railroad.

This will be one of the most elegantly equipped roads in the United States; and the 28 miles will be run in 45 minutes.

The passengers will be taken from the steamboat and set down at the New York and Erie railroad depot, at Owego, in one hour.

The steamboats on Cayuga lake have been purchased by Col. Scranton, President, and William I. Humphrey, Esq., Secretary of the railroad company, and will hereafter be controlled by the railroad company.

These boats are to be immediately improved and fitted up in the best possible manner for the fall and winter travel, and everything done to render them comfortable and pleasant. It is believed they will be made to run from Cayuga Bridge to Ithaca in two hours and 45 minutes.

It has become a common opinion abroad, that owing to the freezing of the lower end of Cayuga Lake, steamboats could not run to the bridge during the severe winter months. The public may rest assured that arrangements are now being made to overcome any difficulties of this kind that may occur, and that boats will run daily to the bridge the coming winter.

A beautiful boat is to be built and put on the lake early next season that is expected to make her trip through the lake in two hours and fifteen minutes; this will enable passengers leaving Cayuga bridge to reach Owego (69 miles) in three hours and fifteen minutes. The intention now is to run this line to and from the express trains of the Auburn and Rochester and New York and Erie railroads.

No pains will be spared by the company to render this route attractive and popular, as well as pleasant and comfortable. They intend to merit at least a fair share of patronage.

The rates of fare and freight are to be reduced, and arrangements made to receive and discharge freight going to and from the New York and Erie railroad, and Auburn and Rochester railroad at different points on the line between these two roads.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849.

3145

NOTICE TO CONTRACTORS.—Office of the Cincinnati, Hamilton and Dayton Railroad Company, Nov. 3d. 1849.

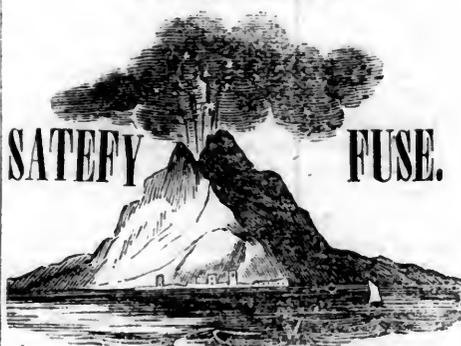
Sealed Proposals will be received at this office until THURSDAY, the 13th day of December next, for the Grading, Masonry and Bridging of the Southern Division of the Cincinnati, Hamilton and Dayton Railroad, extending from the city of Cincinnati to the town of Hamilton, Butler county, a distance of about 25 miles.

The work will be ready for inspection in ten days previous to the letting, and all the necessary information will be given by the undersigned and the assistant Engineers.

Proposals to be addressed to S. S. L'Hommedieu, Esq., President of said Company, or to the undersigned. Bidders not known to the President and Directors, or to the undersigned, will be required to give satisfactory testimonials as to character and qualifications.

R. M. SHOEMAKER, Engineer.

ETNA



THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers,

No. 85 Liberty St.

NEW YORK.

And in the principal cities and towns in the U. States.

The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849.

ly

C. W. Bentley & Co,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williams's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,
CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849.

ly25

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 28 feet.
- 1 Wood dwelling house, 21 by 28 feet.
- 1 Brick block, six tenements, two stories.

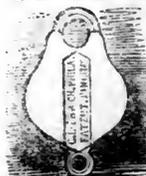
A number of building lots. Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, mortising, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBRICH,
46 South 8th St., Philadelphia.

November 3, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

To Proprietors of IRON FOUNDRIES.

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust for facing very nice work, always on hand and for sale by

G. O. ROBERTSON,
303 West 17th St., New York.

November 3, 1849.

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO. PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.
CHARLES F. M. GARNETT,
Chief Engineer.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection or, and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.—Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,
Chief Engineer J. R. & K Co.
Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. }
Newark, Ohio, October 17, 1849. }

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (53 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,
Superintendent, etc,

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF RAILROAD CARS,

SUCH AS PASSENGER, FREIGHT AND CRANK CARS,

— ALSO — SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN, }
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1748

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, to work for himself, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL.

A General Newspaper and Weekly Review; To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence*; being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment*; combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors*; both at home and abroad, each one of whom will have a separate department under his charge.

IV. *Freedom from Deceit*; by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression*. While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. BEN: PERLEY POORE.

LAWRENCE'S ROSENDALE HYDRAULIC Cement.

This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—*Fulmer's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1843.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address

JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, I. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD**India-rubber Springs.**

If any Railroad Company or other party desires it, the **NEW ENGLAND CAR COMPANY** will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.
F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office*, adjoining the *Washington Railroad Ticket Office*, Pratt Street, Baltimore.
STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.
April 11, 1849.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.
JAMES C. CHURCHILL,
General Agent and Clerk.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York.
October 27, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by
H. B. TEBBETTS,
No. 40 Wall St., New York.
May 12, 1849.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Pittsburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac H.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St. opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

J. A. Burdett,
BLACKSMITH,
No. 176 Chambers street,
(Between Greenwich and Washington),
NEW YORK.

Quarry Sledges and Hammers, constantly on hand
and made to order, & warranted. Forger of all kinds
of Ship, Steamboat and Bridge Work. Also, Forging
to Draft or Pattern.
Screw Bolts, Dock Bolts and Spikes. 1m45

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. makers
No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

F. S. & S. A. Martine,
IMPORTERS and Jobbers of Railroad Car and Car-
riage Linings, Curtain materials, Plushes, etc.,
122 William Street,
Ferdin'd S. Martine. N. York. Steph. A. Martine.
3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union
Damasks, Moreens, Rattinets, Cloths, Silk and Cot-
ton Velvets, English Buntings, Plushes, etc.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
A Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849. 6m*

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.
Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, Civil Engineer, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED
—'Potomac' and other good brands of Pig Iron.

IRON.
Railroad Iron.
1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
580 " " 53 " "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.
They offer also to import and contract to deliver
ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc. by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.
These Ropes are now in successful operation on the
planes of the Portage railroad in Pennsylvania, on the
Public Slips, on Ferries, and in Mines. The first rope
put upon Plane No. 3, Portage railroad, has now run
four seasons, and is still in good condition.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the deli-
very of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.
ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.
JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Meritt & Co., New
York; E. Pratt & Br 1st, Es. Street, Md

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Locomo-
tive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Bol-
ter rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " "
 100 " 2, " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " " Roaring Run" Foundry Iron.
 300 " Fort " "
 50 " Catoctin " "
 250 " Chikiswalungo " "
 50 " " Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " " Columbia" refined boiler blooms.
 30 " 1 x 1/2 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order,
GOODHUE & CO.,
 New York. 64 South street

**American Pig, Bloom and
 Boiler Iron.**

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catauba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hilles* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *A-*
gents for Watson's Perth Amboy Fire Bricks, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/2 to 15 inches diame-
 ter, and any length not exceeding 17 feet—manufac-
 tured by the Caledonian Tube Company, Glasgow, and
 for sale by **IRVING VAN WART,**
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 17 Burling Slip, New York.
 October 30, 1848.

Pig and Bloom Iron.

THE SUBSCRIBERS are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared
 to execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crane do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, 3/4 to 4 inch by 1/2 to 1 inch thick.
 Do do Rounds and Squares, 3/4 to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
 Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
 Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

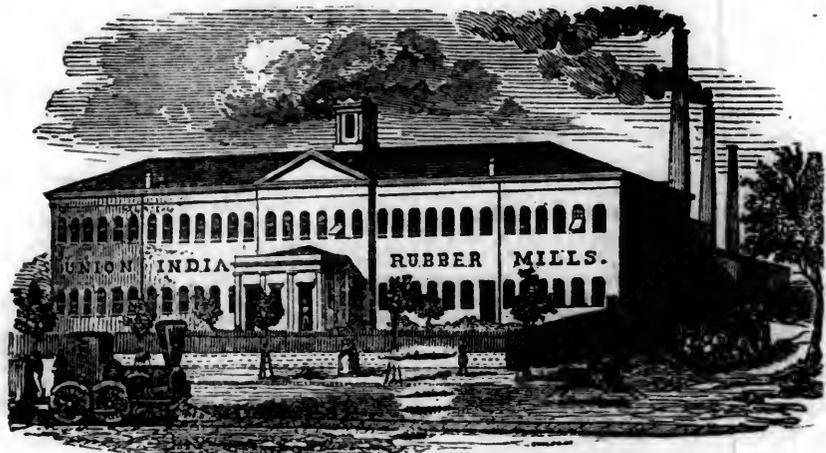
The subscribers have on hand, and are constantly re-
 ceiving from their manufactory.
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by **WM. JESSOP & SONS,**
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1 1/2 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from *Amer-*
ican iron, at their works at *Jersey City, N. J.*, Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 23, 1849.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggins, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Horse Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Mattress Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Shower Baths, |
| Panta, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders. |

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine
 Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
 will be sold to the Trade at Factory prices.

* * * All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
 ings.
 October 20, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

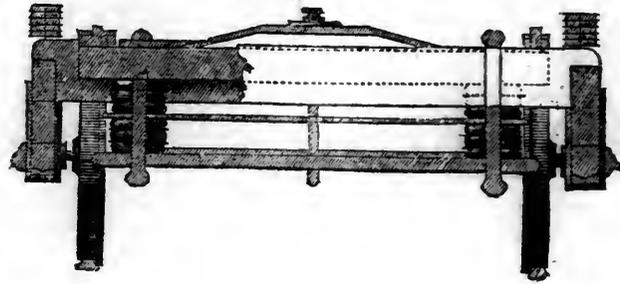
HART & MUNSON,

Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.
This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationary Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organized under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue further to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are
G. M. KNEVITT, 33 Broadway, N. York,
General Agent for the U. S.; and
JAS. LEE & Co., 18 India Wharf, Boston.
JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Salsus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

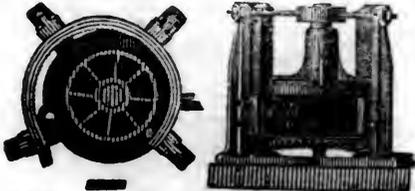
MORRIS, TASKER & MORRIS,
Philadelphia.
Warehouse S. E. corner 3d and Walnut streets,

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, autf No. 74 Broadway, New York.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

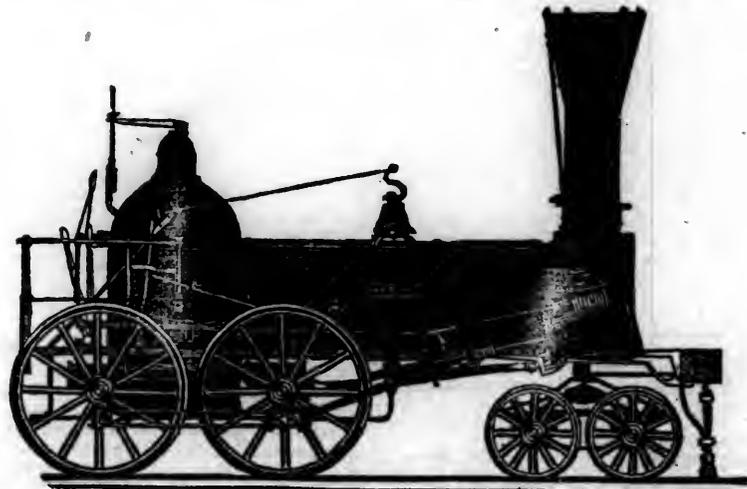
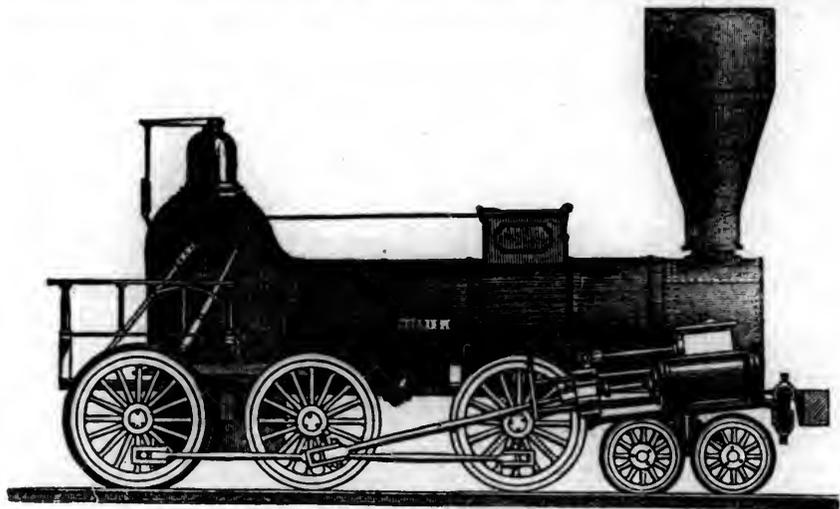
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, November 17, 1849.

Winter Route to Lake Superior.

No portion of the United States is so inaccessible during the winter season as the Lake Superior copper region. In the summer it is easily approached by water communication; but when this is closed by the rigors of its high northern latitude, its population remains shut up without other intercourse with the world beyond, than that afforded by the monthly arrival of the hardy mail carriers, who travel on snow shoes over the broad peninsula lying between Green Bay and Lake Superior. No road crosses his wild territory, and no friendly cabin welcomes the weary traveller at night. His way is by blind trails long since made by hunters and trappers thro' the swamps and among the little lakes, where furs were most abundant, avoiding the more open and more passable ridges of hard wood; and his bed at night is in the blanket he carries laid without a shelter in the deep snow.

We will trace this route from Keweena Point on the south shore of Lake Superior through to Green Bay. The first stage is to the Anee settlement, at the head of the Point and of Keweena Bay. The distance is 75 miles, most of the way by a very poor and blind trail. When the bay is frozen over the

carriers pass on the ice, but this is very precarious. By another route, past Portage Lake, they are often obliged to wade for miles in the water on the surface of the ice. For greater safety two travel together. Each carry a pair of blankets only, and pork and flour sufficient for two days. The mail weighs about 40 pounds. Besides this they carry other matter, amounting in all not unfrequently to 80 or even 90 pounds each man. At the Anee they meet the mail, which has been brought through the woods by the same kind of conveyance from the Ontanagon, 50 miles distant.

The next stage is to the White Rapids on the Menominee, a distance of 135 miles. For this the carriers take a week's supply of provisions, consisting of sixteen pounds to each man. If the mail is light they carry an extra quantity, which they hang in the trees for times of need. In the first 20 miles the track crosses high ridges, 1400 feet above the lake. It then strikes the head of the Bebeshegaming, the east fork of the Menominee, and continues down its course, crossing many streams and lakes. As many as ten of the latter occur in one day's journey, rendering this route altogether impracticable when they are not frozen over. On this long stage severe storms are almost certain to be encountered; and the strength of those unaccustomed to such expeditions is severely tried. Every Winter there are more or less persons who take advantage of the company of the mail carriers to make this journey. The last winter a young man, unused to wearing snow shoes, became too lame to proceed, and was left alone quite exhausted and unable even to sit up. A camp of boughs was made for him, a pile of wood gathered together, and what provisions could be spared were left for his use. Six days passed before assistance could reach him, when he was found sufficiently recovered to collect sticks to replenish his fire, without which he must have perished of cold. The mail carriers themselves are sometimes lost on this route, by breaking through the ice.

At the White Rapids are two resident French Indian traders. Here new supplies are obtained for the next stage, which is to the mouth of the Menominee, 40 miles distant. This too is by a poor trail used only at this season—the river at other times being preferred, though the distance is increased 20 miles. This is a region of fine timber, and men are scattered through it during the winter, "lumbering;" but the only settlement is at the mouth. Yet

even here the dangers of the journey are by no means passed. The end of the route is at Navarino, 60 miles up the bay towards the south, and to this place there is no road. Horses with sleighs travel over the ice of the bay in from one to two days. The journey is attended with much danger, and men and horses are often lost through the ice. In the spring and fall it is necessary to go by foot through the woods on intricate and blind trails leading from one saw mill to another.

As an uninterrupted intercourse with the southern shores of Lake Superior is becoming every year more and more important, the time is probably not very remote, when a road will be opened through this region. This would tend to the rapid settlement of large tracts of valuable territory, which now lie unimproved, simply because it is difficult of access, and its products have no outlet to a market. A large portion abounds with excellent pine timber, which must some time or other be brought out to the shores of Green Bay, and some is good agricultural land. Were such a road now open it would be traversed by droves of cattle and sheep for the supply of the mines. Stock is now a very expensive item, and fresh meat is rarely had, for though the pasturage is very good during the summer, grain is yet too scarce to admit of keeping beef cattle through the winter. It would certainly be a great benefit to the country, and perhaps a wise expenditure if Congress were to authorise the opening of a military road from Green Bay to Lake Superior. It would be wholly through territory belonging to the government, the sale of which would be rapidly hastened by such an improvement, and we hope the subject will soon receive the attention it merits. II.

TRANSLATION FROM *Traite de la Fabrication du Fer*, BY M. B. VALERIUS. Published at Brussels, 1843.

Section III.—OF THE FURNACES.

Chapter 1.—Reverberatory Furnaces.

Article 3.—Gas Furnaces.

Page 85.—Advantages of Gaseous Combustibles.

Continued from page 705.

87. *Manner of Taking the Gas from the Blast Furnace.*—The exact height, at which the gas should be taken from the blast furnace, depends on the nature of the charges, the dimensions of the furnace, the temperature of the blast, and on other circumstances.

If the point is too high, the gas will contain too much watery vapor and carbonic acid, and its composition will vary too much with the charges. On

the contrary, in placing it too low, it will derange the working of the furnace. For an ordinary charcoal furnace the gas can be taken most advantageously at a point three tenths of the total depth from the tunnel head down.

The design, fig. 5, shows the manner in which the apparatus is arranged: the gas is taken from the furnace through the openings *a, a*, six in number, made in the lining of the furnace. They are rectangular, and have an area of 155 square inches each: they lead into the passage *b, b*, which goes all around the furnace, connecting with the cast iron pipe *d*, that leads the gas to the reverberatory furnace: in the lower part of this pipe is a register for regulating the admission of the gas. The flues *a, a*, and *b, b*, are of fire brick. The gas tends to move up along the walls of the furnace, because it finds there less resistance than through the charges. And for the same reason it takes the passages, *a, a*, instead of passing upward to the tunnel head; and it might be drawn in equal quantity through a less number of flues. Six flues, *c, c*, lined with cast iron, connect with the flues *a, a*, to afford an opportunity of cleaning them, which must be done once a week.

A deposit collects also in *d*, and *c* is a cast iron cover, by removing which the pipe may be cleaned. Where it is desirable to use more than one reverberatory furnace the pipe *d*, may be branched.

83. *Construction of the Gas Furnaces.*—Gas furnaces for re-melting pig iron, for puddling, or for re-heating, are constructed like furnaces for the same purposes using solid combustibles, except that they have no grate, and the chimney is much lower. The place of the grate in these furnaces is occupied by the bridge, which may be half as long as the furnace bottom, and of the same width.

The ignition of the gas is effected by air heated from 392° to 572° Fabr. This heat is obtained from the gas after combustion by the arrangement, fig. 10, placed in the chimney as seen at *fe*, fig. 7.

In the wall across the end of the furnace a rectangular cast iron box is placed horizontally, *a* fig. 6, by which the gas is introduced into the furnace.—This box rests, so to speak, on the bridge supposed to be prolonged: the top of the bridge, however should be a little higher than the bottom of the box, on account of the deposit of dust of charcoal and ore which collects in the box. One end of the box receives the pipe, that leads the gas from the blast furnace. In the other end is a hand-hole, which is kept closed except when the box is cleaned. The top and bottom of the box rest against the masonry at the end of the furnace opposite the chimney.

In each side of the box is a long narrow opening; on the side next the bridge this is of the same dimensions as the flue leading from the box over the bridge into the furnace: through this opening the gas passes into the flue and into the furnace. The other opening, which is outside at the end of the furnace, is narrower and shorter. To this is fitted a semi-circular cast iron box with a flange, by which it is bolted to the gas box. On the flat side of the semi-circular box are six or seven tweres, which pass through the two openings in the gas box, and extend beyond it about an inch into the furnace, *g*, fig. 8. The pipe conveying the hot air is fitted into the top of the semi-circular box, and from this the air passes through the tweres into the furnace. By this arrangement the air is mixed almost instantaneously with the portion of gas it will consume.—The combustion is effected in a very small space, and the maximum temperature is produced always in the same part of the furnace, and at a short distance from the orifice of the tweres. The tweres

should have the same inclination as the bridge—say about two thirds of an inch to a foot.

The figures 6, 7, 8, 9 and 10, show the arrangement and principal dimensions of a reverberatory furnace used as a refining furnace: *a*, fig. 6, is a rectangular box of cast iron to receive the gas from the blast furnace; this passes out by the long narrow opening, *g*, figs. 8 and 9, and is burned by the hot air from the seven tweres, *k*, fig. 8.

The air from the blowing apparatus first enters the quadrangular box, *f*, figures 7 and 10, which is placed 6½ inches above the velvety *x*, fig. 7. The cold air passes around the four sides of the box, as is shown by the arrows, fig. 10; the box being entirely enveloped in flame from the furnaces. From this apparatus the air is carried by the cast iron pipe *e*, figs. 10 and 7, into the semi-circular box at *c*, fig. 8, and delivered into the furnace at a temperature estimated from 572° to 752° Fahrenheit.*

The hot air tweres, *k*, may be of boiler plate iron or cast iron, and extend 2½ inches beyond the gas box into the furnace. They have the same inclination as the bridge passage, which is 3° 35'.

It is estimated that a reverberatory furnace of any kind will require about 280 cubic feet of gas per minute. The pressure of the gas is very little above that of the atmosphere. The difference is represented by a column of water from ¼ to 1½ inches in height. The quantity of air required is from 140 to 175 cubic feet per minute. From the average chemical composition of the gas, this quantity of air is less than what is required to produce complete combustion, as the effect of more would be to make the flame too oxidating upon the iron.

In fig. 6, *v, v*, are two tweres of wrought iron extending only to the interior face of the wall. They are used in refinery furnaces to deliver jets of hot air upon the melted iron. Their height is from ¼ to 2 inches above the surface of the metal. They are inclined and converge to a point near the flue bridge. For ordinary refining these tweres are unnecessary.

As in the puddling furnace, the bush of the door is open a greater part of the time, in order to prevent the flame from escaping by this opening and incommoding the workmen a small jet of air is introduced.

89. *Dimensions.*—The higher the temperature required, so in proportion the bottom of the furnace must be made smaller and the roof lower. Consequently puddling and refining furnaces (Weissofer, furnaces in which pig iron is melted and refined or converted to "fine or plate-metal" by the hot air passing over it) are built with larger bottoms and higher roofs than heating furnaces.

The length of the bridge (inclined plane) that serves for the grate, must be determined in each case by experiment. It depends on the greater or less facility with which the gas is ignited by the hot air. The combustion must be effected, and the air lose its oxygen upon the bridge. The length of the passage is diminished or increased according as the gas ignites with greater or less facility.

In gas furnaces the section of the flue is to the section of the furnace near the tweres as 1 is to 2½. The roof is very low and much inclined toward the flue in order to oppose the exit of the flame. When it is wished to increase the oxidation, as in the puddling furnace, the length of the bridge passage is shortened and the bottom enlarged by the same amount. But this can be effected by regulating the quantity of hot air admitted.

* This estimate is too high, judging from the hot blast apparatus.

The chimney flue is very small, that the flame may not escape too readily, and that there may be a greater concentration of heat in the furnace. When it is found that the temperature in the furnace is not high enough, the required temperature can sometimes be obtained by raising the flue bridge, so as to shut in yet more the passage. It is useless to give the chimney more than 3 feet 3 inches height above the furnace bottom.

In the wall at the base of the chimney, opposite the end of the flue, an opening is made below the air heating apparatus, for the purpose of introducing the pig iron intended for the next charge (*r*, fig. 7). Here it is partially heated before charging, as in the heating ovens sometimes added to the double puddling furnace. This opening is closed by a door of boiler-plate iron to prevent the cooling of the furnace. The temperature may sometimes be high enough to melt the iron. The numerals on the figures give in feet and inches the dimensions of the principal parts of the gas furnaces used in Germany. In the translation of the memoir of Mr. Faber du Faur, given below, all the dimensions are stated. To avoid dividing this memoir, I have placed it at the end of the chapter on the re-heating of iron.

90. *Transformation of Solid Combustibles into Gaseous Combustibles.*—Let us now examine the question of the generalization of the process followed in the combustion of the gas of the blast furnace, that is to say, the employment of a gas instead of a solid combustible. The quantity of air that escapes combustion in an ordinary well constructed reverberatory furnace is not exactly known. Some estimate it at one half, others at two thirds the whole quantity employed. It is probable that both are too high, at least for heating furnaces. Still air does escape unconsumed, and that which is used yields carbonic acid, but if the bed of fuel on the grate of the furnace was very thick, no free oxygen would escape, and the combustion would yield carbonic oxide, which in burning a second time would develop a very high temperature.

According to Karsten (*Handbuch der Eisenhüttenkunde*, vol. 3. p. 373) it is more and more confirmed by experience that the best mode of using fuel in a reverberatory furnace, is to convert it as much as possible into carbonic oxide, and burn this gas by hot air. It is the most economical, and will produce the highest temperature, and the highest chimneys now in ordinary use can be dispensed with. Besides it may be possible by this means to use fuel that does not cohere in coking, that is not very inflammable, or is impure, such as has not been heretofore used in reverberatory furnaces. To accomplish this an ordinary cupola, such as is used for re-melting pig iron, might be placed near the hinder end of a reverberatory furnace. The tunnel head of the cupola being lower than the bridge of the furnace, the gas would enter directly into the furnace, and be burned with hot air delivered from several parallel tweres, as described above. The cupola could be charged through one or more lateral openings, or by a hopper with two registers placed above the tunnel head. It would be well to blow hot air into the cupola, which would admit of a less height, and would change the carbonic acid usually generated in cupolas fed with coke more completely into carbonic oxide.

The iron melted in the cupola could be carried in pots to the puddling furnace; by inclining one of the tweres downwards, it could be whitened in the bottom of the cupola, and be thus prepared for the puddling furnace. If the motive power were not sufficient for the blowers of the cupola and the fur-

nace at the same time, a high chimney might be made use of to draw the air through the parallel tubes.

91. *Change Adopted in Belgium in the Manner of Firing under Steam Boilers.*—None of the changes above spoken of have yet been adopted in Belgium. In the works of M. Orban at Grivegne, and some others, the boilers of the blast furnace engine are driven by a fan blower. For this purpose the ash-pit is closed up, and the power to drive the blower is taken from the engine. By this arrangement they are able to burn dry or earthy coals instead of the clean and costly ones they consumed before. The use of the high chimneys generally built for stationary engines is also obviated. This change has given great satisfaction, not only at Grivegne, but also at many other works where it is adopted.

It is thought the same process might be employed in puddling and heating furnaces, but then there would be an expense in driving the fans, not incurred in their use under the boilers.

To be Continued.

[NOTE.—The cuts referred to in the above article will appear in our next number.] H.

The Pacific Railroad.

Substance of the remarks of the Honorable O. H. Smith, of Indiana, delivered before the National Railroad Convention, at its session of Wednesday last.

Hon. Oliver H. Smith, of Indiana, addressed the convention at length upon the resolution declaring that the road should terminate *outside of the States*. We cannot give the entire speech, as it has not been prepared at length, nor do we pretend to do justice to the speaker. We are happy, however, to give the substance of his remarks.—*St. Louis Rep.*

Mr. Smith remarked, upon rising, that he had not intended, until this morning, to address the convention. He had hoped that it would not be necessary for him to do so. He was, however, compelled to abandon his original intention, and would now claim the indulgence of the convention, while he gave his views upon this great national enterprise. Mr. S. said the resolution (which he read,) brought up for discussion the whole merits of the questions involved in the objects of the convention. He said he objected to that part of the resolution which confined the road to the country "beyond the States." This, he said, was, in his view, *vital* to the work, and he warned the convention, that if such a resolution should be passed by the convention, it were better that this convention had never been called, as such a resolution yielded the question, that the general government had not the constitutional power to construct or maintain this great national work through the frontier States. This was a doctrine to which he could never give his assent—a principle which, if maintained by the convention and Congress, must put an end to all prospects of the construction and maintenance of a Pacific and Atlantic railroad, until the constitution was amended, as he should in the course of his remarks, attempt to prove. He assumed the position that no one in his sense would, for a moment, maintain that the government would undertake to make more than one railroad across the Rocky Mountains. It was a great, a magnificent enterprise, worthy of this progressive age, and of the energy and high character of this great nation. But the very greatness of the enterprise gave the strongest assurance of its accomplishment. The American people love herculean labors, and they are ever found equal to whatever is required of them, if properly directed. But railroads were not to be made by mere resolves. He was a practical man, and he looked to practical action.—He came to St. Louis to attend the convention, for the purpose of giving whatever aid he could, to proceedings which might result in the construction of this great work, and he felt bound to oppose all action of the convention not directed to that most desirable result, or calculated to defeat it. He said that there was a great difference between railroads con-

structed on paper, and those constructed upon a proper substatum—a grade, with the materials upon which cars might run. The one was easy of construction, and might be brought into existence by the mere imagination of the draftsman, in beautiful language and high sounding terms. But such roads were useless for practical purposes. Railroads could not be built in the air. They had to be constructed on the earth, and none but practical men were to be trusted in their location or construction. Science was necessary, but plain practical sense essential to satisfactory results.

He said it because he was the fast and ardent friend of this great enterprise, that he opposed the resolution to stop the work at the western boundaries of the States. He argued the question of the practicability of the provision, as well as its constitutionality, at much length. Among his positions he said that the proposed commencement on the Pacific he did not specially object to, except that it would prove to be immensely costly in its construction, at the enormous price of labor and materials there. He objected to the point at the boundaries of the States, as the commencement of the eastern end of the line. He showed the folly of attempting to commence a road 350 miles in the wilderness, with no connecting link between that point and the Mississippi. He said it was not reasonable to suppose that the State of Missouri, or the State of Arkansas could raise ten or twelve millions of dollars to construct the road from the Mississippi through these States, to the western boundary of their respective States; and it was equally idle to expect capitalists of other States to furnish the money to build the road, and wait for returns until the government should build the road, two thousand miles to the Pacific, as the road never would ever pay a dividend on the costs of construction until the whole connection was made, and the line was complete to the Pacific. He said that all experience showed that railroads should be constructed in *continuous* lines, so that the iron and materials might be carried forward by the motive power of the road. He maintained that the aim of the government in making the work should not be paralyzed in requiring the commencement to be a wholly impracticable point, and he trusted that the convention, would not so direct.—Mr. Smith then took up the question. He had no doubt of the constitutional power of the government to construct this great national work, and if there were such doubts as should interrupt the work, they should be immediately removed by an amendment of the Constitution. He believed that the Constitution was living in its principles, that it gave ample powers, under either the war, post office, or commercial power, to make the road from ocean to ocean.

He illustrated these positions and maintained them at length; but he said (turning to the President) the telegraph is not the only discovery of modern times. New doctrines have been discovered since the days of Washington, Jefferson, Madison, Monroe, Adams and Jackson, depriving the American people of the constitutional power of protecting themselves, or of improving their internal condition, however national—while they gave ample powers to invade other countries, and to establish governments there. He said he asked one of this school of gentlemen how this was, and was answered that we had no power in this country because *we were under the Constitution here*, but when we were beyond the United States we were *sailing under the law of nations*. Mr. S. subscribed to no such doctrines, and yet these were the doctrines contained in the resolution before the convention. He said, for the purpose of argument, he would suppose that the principle was yielded, and that it was conceded that the road was to commence *beyond the States*; did not the gentleman see that they only increased the difficulty. Did they not know that before the road could be located, the arm of the general government would be struck powerless by the admission of California into the Union? A constitution for that country would be presented at the next session of Congress. So with other territories on this side of the mountains. New States would be made, and then the constitutional question would at once strike down the power of the government, within their boundaries. But suppose that the whole road could be made before any new State should be admitted, would that change the question? Did it not require

just as high an exercise of constitutional power to maintain a road, protect it, and keep up and collect a tariff upon it, as it did to construct it? Most certainly it did. If, therefore, the government had not ample powers to make and keep up and protect the road now, through the States, it would have no such power, although the work was commenced and completed before the territory became a State. It might be said that Congress could impose terms on the new States hereafter to be admitted, as to require the power to be conceded. He presumed that Congress had no such right.

If the state applying for admission presented a republican constitution, he presumed it would hardly be contended that the State could be required to embody any provisions at the instance of Congress, contrary to the provisions of the constitution as presented, unless such provisions were requisite to bring the State within its sphere of position upon the great and exciting slavery question, which he did not design to touch in this debate; but if Congress had the right, it could not confer the power in that way. He re-affirmed the position, that Congress had ample power to make the road, and if it had not, the power should be expressly conferred before a step was taken in the construction of the work, for it was worse than madness to begin a great national work, and expend millions upon it, when it could not be completed, maintained and protected, after it was made, only as long as the territories might remain in a state of vassalage to the States. And if this convention was prepared to maintain that position, it had but one duty to perform, and that was to memorialize to Congress to submit an amendment to the States, to the Constitution, expressly giving the power, adjourn and go home, and wait till the amendment shall be made. He repudiated all such doctrines, and trusted that the convention would sustain his position. Mr. S. then presented his views at length upon the lines and construction of the work, pointing to the map and directing the attention to them. He said it was impossible for the delegates to keep from their minds the interest of the people they represent, and he did not desire to do so. He said he wished distinctly to say, that his views of the lines of construction of the road were to run one line from St. Louis up the Missouri to the mouth of the Kansas, to intersect the line there with a southern line from Memphis, and a northern line from Chicago; that these lines would accommodate the north, the south, and the centre of the Union, and should unite all interests; that State and company branches would be made to them, of course, from all the Atlantic cities. He spoke of the Whitney route; was opposed to it as impracticable, commenced in private interests, and he feared would end in private speculation, without benefiting many. Such a work must be national; it should never be confined to individuals. But his main objection to it was, that it was so far north that the south and the centre could not unite with it. He said the same objection would lie as to the position of the southern route; the northern and the central could not unite with that. But the objection did not lie against the central or St. Louis route, as the connection with that route could be made at the point he had named, conveniently, by the north and the south; and he hoped and believed that his views would ultimately find favor with the convention and the American people. He had so written to the committee of the Memphis Convention; he said that the central line, striking the Mississippi at St. Louis, was the line for central Illinois, Indiana, Ohio, Pennsylvania, Maryland, Virginia—in a word, for the heart of the great Eastern States, and of the great commercial cities of Boston, New York, Philadelphia and Baltimore; and lines of railway were fast stretching westwardly towards the Mississippi at that point.

He alluded to the objections that had been urged against the convention fixing the line; it has been said that Congress alone was competent to discharge that duty. Turning to the President, Judge Douglass, he remarked that Congressmen were but men, and he mere circumstance that a man was elected to Congress, made neither a wiser nor greater man of him. If he was wise at home, he would be just the same there; but if good for nothing here at home, he would be just the same in Congress. And as to the time of fixing the line, his experience in railroad matters had been that the sooner the lines

were laid down and established the better, as the country would then adapt itself by lateral roads to the lines. After some further remarks, Mr. Smith closed by some patriotic allusion to the construction of the work and the perpetuity of the Union.

The speech was listened to with intense interest, only interrupted by applause. Immediately after Mr. S. resumed his seat, Judge Douglass, the President of the convention resigned the Presidency of the convention, with the avowed object of replying to the speech of Mr. S., which he proceeded to do.

Pacific Railroad.

Sketch of the remarks made at the Pacific Railroad Convention, held at St. Louis, in October, 1849, by Solomon W. Roberts, Civil Engineer, one of the delegates from Pennsylvania.

Mr. President: When I see this great rotunda filled with nearly a thousand delegates, representing about one half of the States of the Union, and that at a season so inconvenient for many to attend, I hail it as an evidence of the interest which is felt in the construction of a national railroad to the Pacific ocean. It is as one of the delegates from the State of Pennsylvania, and the only one present from the City of Philadelphia, that I wish to ask the attention of the convention for a very short time.—Pittsburgh, I am happy to say, is well represented; and it gives me pleasure to see one of her citizens presiding over this numerous and dignified body; but, of the fifteen delegates appointed by the Board of Trade of Philadelphia, I am the only one that has been able to attend on this occasion.

We have come together to compare opinions and to see whether we can agree to recommend a plan to Congress for the construction of a Pacific railroad. We are not to sacrifice the interests of those that sent us here, but to see whether we can unite them in a common effort to promote a national object.

Memphis, St. Louis, Chicago, all the proposed routes, and all the proposed termini, have their representatives and their advocates, here assembled. Each individual has his own point of view and looks at the object accordingly.

Mr. President—My point of view is Pennsylvania, the Keystone State of the Union. That map that hangs upon the wall is grossly inaccurate; it is a caricature of our country. But we all know the geographical position of Pennsylvania, it is unequalled and unrivalled. Washed on the east by the tide waters of the Atlantic, it reaches to the Ohio river, and to the shores of Lake Erie. Adopt what route you will, for a national Pacific railroad, it cannot reach the harbor of New York without passing through some part of Pennsylvania.

New York is the great emporium of the foreign commerce of our country, and that city is the fairest point from which to compute our comparative distance.

Boston, New York, Philadelphia, and Baltimore are all pushing our trunk lines of railway to the west. The commercial battle ground of these four great eastern cities, is upon the fertile plains of the state of Ohio. There the lines converge and come together, and there they must compete for through business. Each line will have its own trade and travel, sufficient to support it, but the through business will be divided among them.

The whole country has heard of the Boston railroads, the New York railroads, and of the Baltimore and Ohio railroad; but comparatively few have ever heard of "the Pennsylvania railroad," and of its western extension, "the Ohio and Pennsylvania railroad." Philadelphia and Pittsburgh were the last to enter the field; but, if they are true to their own interests, they will be the first to win the prize.

Mr. President—Every railroad question is more or less a question of route, and every railroad route depends, or ought to depend, upon the physical geography of the country. Local interests may sometimes divert railroads from their best courses, but time at last makes all things even, and administers severe correctives in such cases.

I will not argue the question of the importance of a national railroad to the Pacific. I will not dwell upon the grandeur of that idea, which strikes my mind as the sublime of civil engineering. I will not question the power of my country to do as much

for peace as she has done for war; or to do as much to improve a territory as she has already done to acquire it. If it be the will of the American people, they are abundantly able to construct a national railroad to span the whole American continent.—But it can only be done by a united effort, and by agreeing upon a general plan.

I will not speak disrespectfully of any of the plans which have been proposed; and in particular I have much respect for Mr. Whitney, and believe him to be actuated by highly honorable motives. But of all the plans which have come under my notice, that of Mr. Loughborough, of St. Louis, appears to me to be the most feasible.

We need a railroad communication with both California and Oregon, and it must be so located that the northern, the middle, and the southern states may all participate in its advantages. The general plan of which I speak will accomplish all this; and as to the details of any plan it is premature to speak.

Let the general government make a railroad—from some suitable point on the Missouri river to California and Oregon, through the territories of the United States. Let it then aid the states, by grants of public lands, to make three grand branches, or extensions, to Chicago, St. Louis, and Memphis. Then all will be accommodated and all ought to be satisfied. All the roads now in progress from the Atlantic and the Gulf of Mexico to the Mississippi and the lakes, will then be able to make good connections with the great iron girdle of the American continent.

The interests of the state of which I am one of the representatives, will be admirably suited. Our Central railroad of 358 miles from Philadelphia to Pittsburgh is progressing rapidly to completion; and its extension westward, 180 miles in length, of which I am the chief engineer, is in part under contract. It extends from Beaver, Salem, Canton, Massillon, and Webster, to a point a few miles beyond Mansfield, in Ohio.

These two roads together form a line of 538 miles, which is so located across the table lands of Ohio, as to be as much a trunk line to St. Louis as it is to Chicago, and as much a trunk line to Chicago as it is to St. Louis. We know that we must meet competition for the through business, both on the north and on the south; but we know very well that our route is the shortest from St. Louis to New York, and is also the shortest from Chicago to New York.

Whoever will examine a correct map of the United States may easily see why this is so.

On the 42d parallel of north latitude we find the boundary line of New York and Pennsylvania, the two most populous states in the Union. We also find there the city of Chicago; the South Pass, in the Rocky Mountains, and the dividing line between Oregon and California. It is well known that the South Pass is quite practicable for the construction of a railroad, and having in view a "great circle route," from the Middle States to both Oregon and California, it is just where we would wish to have it. Then it may be approached conveniently, not only from Chicago and St. Louis, but also from Memphis; and I wish to keep constantly in view all three of the connections.

If we look at the subject in another light, and seek to find a line which shall divide the population of the Union, as measured by Congressional representations, into two equal portions the line of the great Central railroad from Philadelphia to St. Louis, is, as nearly as possible, such a line. That line running between the Ohio river and the lakes, on a route almost direct from St. Louis to New York, through Pittsburgh and Philadelphia, is emphatically CENTRAL.

Pennsylvania then may well unite upon the route proposed by Missouri; for their interests in this matter appear to me to be both alike. Let Congress direct the necessary surveys to be made to determine the proper point of striking the Missouri river, and then let the States locate their own connections with the terminus of the government road. A wholesome competition is the best kind of stimulus to expedite the construction of public works;—but the right of way should be obtained in every case, if possible, before any part of the work is put under contract. A wise delay in this respect often saves both time and money in the end.

Mr. President—Accustomed as we are to view

our local and comparatively petty interests, from a low elevation, and within a narrow circle, it requires an effort to rise to the height of this high argument. But when we reach it, it gives a grandeur to the labors of all of us who are engaged in the construction of our public works, for we see how they may become component parts of one vast whole; and we see how we have been laboring, almost unconsciously, to promote this grand result. The railroads from Philadelphia to St. Louis, made by private enterprise, will form about one third of the great line to extend through the heart of the continent, from ocean to ocean.

From a boy I have been connected with the public works of Pennsylvania, and I came down with the first train of cars on the first railroad in the State. Prospering when they prosper and suffering depression when they are depressed, it delights me to look forward to the immense increase in the value of the public works of our State, which must result from the consummation of the enterprise we are discussing. All parts of the country must certainly be benefited by it, but it is as a citizen of Pennsylvania that I speak, and I wish others to speak for their own communities. The work, if properly conducted in a national spirit, will bring in its train an untold number of commercial advantages, political benefits, and moral blessings. But it would ill become me to take up the time of the convention, by endeavoring to say again what has been so much better said than I could say it, by the eloquent gentleman from Indiana.

It is not for me to attempt to occupy ground which others are so much better fitted to fill, but it is as a civil engineer that I wish to say a few words. There is, perhaps, no member of this convention that has had more to do with the location and construction of railroads than I have had. The enterprise which we are advocating is a much more arduous one than many people suppose, but it is entirely practicable and entirely within the power of the government. The people have already made about four times as many miles of railroads without government aid, and we now ask the government to make one.

But the immediate success or failure of all railroad enterprises depends very much upon the manner in which they are undertaken. The impatience of the people to reap the full benefits of such works along their whole extent, often delays their completion instead of expediting it. The attention of the inhabitants of every city and of every village, however small, is intensely turned to their own local interests. The general interest of the enterprise, as a whole, is a matter that they think concerns them comparatively little. No delay in their opinion is wise that retards the completion of the work in their neighborhood, every sacrifice ought to be made to hurry the completion of that division of the work in which they feel most interested. Clamors of this kind have too often had the effect upon boards of directors, and no man can compute the pecuniary loss that has resulted in consequence.

Let the government locate and make its own railroad through the government lands. Let a sufficient number of competent officers, who have been educated at West Point, and who are now in the pay and service of the government, be sent out to make the necessary preliminary surveys. When this is done, let the general route of this great national central highway be established by Act of Congress to be for all future time the great thoroughfare of the nation to Oregon and California. Then let the work of opening the road be begun upon the bank of the Missouri river, and let it be pushed out continuously westward. Locate the line for a railroad, then fit it for common travel, and turn the tide of emigration over it. Establish posts for the protection and aid of emigrants; hold out inducements for the formation of civilized settlements around them; and put up the telegraph wires. When the time has arrived for beginning to lay down the rails, let it be begun at the eastern end, and let it be carried on westward in a continuous line.

By pursuing this plan, every dollar that is spent will be usefully expended; the work will be useful from the beginning, and its usefulness will increase as the cost of it increases. The work may be hastened or retarded as the means of the government may justify or require; and even if it should be suspended for a time, that which has been done

would not be lost. Thus, as a child, by gradual growth becomes a man, the national road to the Pacific, thus begun, would become in a time shorter or longer according to circumstances, a complete and continuous first class modern railroad.

As soon as the point of commencement on the Missouri river is established, the States east of it will begin their connecting lines, and all will have an opportunity of sharing in the benefits which the work will confer upon the American people.

A railroad across the Isthmus of Panama is a useful project, which will, no doubt, soon be accomplished, but it is far removed from our shores, and is a matter of small importance to the people of the interior of our country. Besides which, it can only be made available by means of long and circuitous lines of steam navigation. Now let it be remembered, that a locomotive engine goes on a straight course, and travels three times as fast as a steam ship; and then the ship traverses the barren sea, and touches at foreign ports, while the engine will traverse the teeming land, and be every where at home.

One mind is most struck by one of the advantages of our national railroad, and another by another; but I confess that I am most impressed by the benefits which it will confer upon our own people, by becoming the great spinal column of our country; with which branches and arms in all directions will connect, and which will unite, strengthen, and invigorate all its parts, and bind them together in a more perfect union.

This, which is the first national convention called to promote the object, will very soon adjourn, and we may congratulate each other that its labors will long be remembered, for they have not been in vain.

We have gained a very important point, for we have united in a common effort the friends of the northern and central routes, and we have reason to hope that our southern friends will yet lend us their aid.

Mr. President—I thank the gentleman from Missouri who offered the resolution to hold another national convention, to promote the construction of the Pacific railroad, at the city of Philadelphia on the first Monday of April next. As a delegate from that city, I invite all who are now present to attend on that occasion. I assure them that Philadelphia will endeavor to reciprocate the hospitality of St. Louis. To those who are familiar with Philadelphia, that city needs no eulogy from me, and I assure those who have not yet visited it, that it will not disappoint their expectations.

Let every part of our country send up its delegates to the Philadelphia Convention. Let the people come together in their might and speak with that unanimity with which this convention has spoken. Then their voice will be heard in the halls of Congress; and it will reverberate from the Allegheny to the Rocky Mountains, and from the shores of the Atlantic to those of the Pacific ocean. It is the beauty of our system that the well ascertained will of our citizens is the law to those who control the legislation of our government, and the Pacific railroad will be sure to be accomplished when it is demanded by the united voice of the American people.

Maine.

Report of the President and Directors to the Stockholders of the Kennebec and Portland Railroad.

The Directors have the satisfaction to say that twenty-three miles of your road, between Bath and the Atlantic and St. Lawrence railroad in North Yarmouth, were so far completed that the Engine and Cars were run over it on the 4th of July last. Since that time the trains have made regular trips without accident; and the greater part of the road is ballasted and in good condition.

It is gratifying that the travel over this portion of the road has exceeded our expectations, and gives promise that the whole road, when finished, will add greatly to public accommodation, and yield to the Stockholders a fair remuneration for their expenditure in making it.

The grading of that part of the road, between the depot in Brunswick and the village in Richmond, is nearly done, and the timber for the bridges and superstructure has been procured and is being prepared for use, but it is yet uncertain whether the entire

excavation of rock and earth near Cathance river can be completed, or not in season, to lay the rails and run the road the coming winter.

On that part of the road from Richmond village to Augusta but little has been done during the past year; but arrangements are made for working the hard places the coming winter, so that the road may be used in all next year, if the means to do it shall be provided.

Our road for the present, connects with the Atlantic and St. Lawrence railroad in North Yarmouth, where our passengers and freight are transported to and from our cars to theirs, and from the cars of that company to ours, at such hours only as suit the convenience of that road, and at such rates of fare as that company please to take, and so must be for all coming time, unless our road be extended into Portland and connected with some road having a gauge similar to ours.

The difference of the gauge of the Atlantic and St. Lawrence road from that of all others in New England seems to render it impracticable for our passengers and freight to be accommodated by that road; and all the efforts which have been made to find some mode of securing to the business of our road, such accommodation on that road as is deemed by us vital to its success and prosperity, have proved unavailing.

The means already provided for making the road from Brunswick to Augusta should not be diverted from that object, and hence the necessity of finding other means, temporarily, to secure the making of the road into Portland without delaying other parts of the work, and meantime retaining the control of that portion of the road and securing it ultimately to the corporation. The running of our engines and cars into Portland, instead of stopping at North Yarmouth while the engine and cars of another company take our passengers and freight into and out of Portland, would add but little to the running expenses of our road, and would not require additional force or equipment; and if by doing this we can have the road made into Portland, thereby adding greatly to the accommodation of the travelling public and increasing the travel on the residue of our road, the directors would strongly recommend the adoption by the stockholders of the necessary votes to enable the directors to accomplish that object.

There is yet due from original subscribers to the road over 100,000; a part of which cannot be collected, a part of it will be absorbed in the settlement of claims for land damages, but the greater part we trust will be collected and made available to the company as the work on the road shall progress.

The whole amount of expenditure and indebtedness for the road, including land purchased and damages paid, rails delivered and remaining on hand, materials for bridges and superstructure, part of which is not yet used, kyonizing shop and apparatus, and all incidental charges, is nearly a million of dollars, of which about 600,000 dollars have been expended on that part of the road already in operation, and the residue has gone for labor, purchase of land and materials on the road between Brunswick and Augusta.

From the experience we have had we do not apprehend that the cost of the whole road will exceed the original estimate, although the claims for land damages are in many instances beyond our expectations, and more than we can believe to be just.

The indebtedness of the company is about 400,000 dollars, 100,000 of which will be payable in November 1850, and 85,800 in Sep. 1852, and the balance as our means will enable us to pay. And the means of the company are the balances due from original subscribers, 100,000 promised by the Portland, Saco and Portsmouth road, and the preferred stock authorised by the stockholders in June last, part only of which has been taken up, and the balance of it, we trust, will be taken by original shareholders, or disposed of within the limits prescribed by the stockholders's vote. And these means are enough for existing engagements, but not enough to finish the road to Augusta; and for this further provision is to be made.

Whoever will give attention and see what has been the amount of travel on the road from Bath to North Yarmouth, since that part of the road had been used, and estimate the amount of business that must come upon our road, when it shall have been made to Augusta and extended into Portland and

there connect with roads having the same gauge as ours and leading westward, thereby securing a connected and uninterrupted line of travel between east and west, cannot hesitate to believe that our road, when thus made and connected, will abundantly repay to the stockholders all its cost, and be a lasting benefit to a populous, enterprising and growing portion of Maine. And, although it will require great effort to obtain it, we look forward with pleasure to a time when the income of the road will give good dividends, and all will admit that the patrons of such a work are entitled to greet credit for their untiring efforts and perseverance in overcoming the many obstacles in accomplishing it.

REUEL WILLIAMS, President.
Bath, Oct. 4th, 1849.

Virginia.

Eighteenth Annual Report of the President and Directors to the Stockholders of the Winchester and Potomac Railroad Company, made October 27, 1849.

The revenue of the company from transportation, for the last twelve months, ending on the 30th September inclusive, was \$91,435 29, being \$9,508 06 more than the revenue of the preceding twelve months, and the largest annual revenue which has at any time been realised by the company. Of this sum \$2,725 35 were received for the transportation of passengers, being \$1,384 73 more than were received during the preceding twelve months from that source.

There were 38,640 tons transported over the road during the year, being 124 tons for each working day. Of the whole tonnage 25,028 tons were from west to east, and 13,612 tons were ascending tonnage. Of the former there were 20,004 tons, or 200,040 barrels of flour, 2,011 tons of iron (pig and bloom), 2,855 tons of miscellaneous merchandise and produce, and 158 tons of manganese. Of the latter, there were 8,360 tons of merchandise, 4,076 tons of gypsum, and 1,176 tons of coal. With the exception of iron, there has been an increase in every species of tonnage, and in the principal article of flour, the increase over the last year was 54,133 bbls.

The income of the company from all sources, for the last year, has been \$125,869 99. Of this sum, \$24,618 58 has been received from the negotiation of the bonds of the company, issued under the act of assembly, and constitutes the balance of the loan authorised by that act.

A statement of the financial condition of the company accompanies this report, being treasurer's exhibit E. From this it will be seen that the company had on the 30th September, a floating debt of \$20,965 39, and has no other debt, except its funded debt due in 1867. Since that report the company has paid 7,164 35 of its floating debt, having anticipated the last payment for iron in New York, which was not due before July, 1850.

The balance of the floating debt consists of 6,500 dollars, due one of the banks in Winchester, and several small sums falling due in the course of the next twelve months.

The general state of the company has improved upon that reported to the stockholders at the last annual meeting. All the engines of the company are in good running order, and have had duplicate wheels and axles purchased during the last year for each one. There have been built, at the company's shops, five new freight cars, and a large amount of other duplicate machinery, both for engines and cars has been prepared in the shops during the year.—Additional side tracks have been constructed, necessary for the increased and increasing business of the company; and the bed and superstructure of the road are improved, and in a regularly improving condition.

The whole business of the company has been transacted with regularity and a sound expedition, so that it is not known that a single just complaint, or even cause for complaint, has existed, nor has any accident occurred by which any passenger, or any person in the service of the company, has suffered any injury. There have been no failure of the mail on this road during the last eight months, and only four failures during the year. The whole loss and damage account, upon a transportation of one hundred and twenty-four tons per day, during the year, is \$143 19.

It will be the proper policy of the company to keep

every branch of its service in a constant and gradual state of improvement, so as not only to do its duty to the public, but to invite other and additional trade and travel. To look with no jealous eye upon apparently rival improvements. To lend a kind look, and, it may be, a kind hand, to every kindred effort. To exact from every officer in its service, not only exact obedience, but strict exercise of the courtesies and amenities of life, so as to secure a friendly public sentiment, which is as much a part of the capital of a corporation as it is of an individual.

All which is respectfully reported.

WM. L. CLARK, President.

STATEMENT E.

Financial condition of the Company on the 30th September, 1849.

Capital stock	\$180,000 00
Funded debt due in 1867	120,000 00
Annuity to the State \$5,000 principal ..	83,333 00
Floating debt	20,965 39

Ohio.

Cincinnati, Hamilton and Dayton Railroad.

In another column will be found an advertisement of letting on this road. As this is comparatively a new project with which our readers may have but little acquaintance, we extract from the prospectus of the company the following statements relative to the route of the proposed road, the resources of the country through which it runs, etc., etc.

1. *The Route is Graded by Nature.*—Passing from Dayton down the valley of the Great Miami to Hamilton, on an alluvial plain of sandy loam resting upon limestone gravel, at an average descent of five feet per mile, and thence down the valley of Mill Creek, it approaches Cincinnati, directly, by the most natural, easy and commanding way to that emporium. It meanders around no sliding hill sides encounters few obstacles requiring expensive cuts and fills, abrupt curvatures or heavy grades, but lies, throughout its whole length, in broad valleys admitting curves so easy, and grades so light, as to amount, in practical operation, almost to that great desideratum in railroads, a right line, on a level plain.

2. *The right of way from Hamilton to Cincinnati,* where alone much difficulty was apprehended, has been mainly compromised, granted or determined by the verdicts of juries at a cost, just and equitable to the parties, and satisfactory to the company. At Hamilton, a donation has been made of sixteen acres of land, lying advantageously with reference to the town, and partly adjoining the hydraulic works, whereon water power may be displayed to great advantage. A tract of five acres of valuable land, lying almost in the heart of Cincinnati, and of easy and cheap approach, has been secured for a passenger and freight depot; also an additional five acres of land, lying convenient to the deepest water of the river, at all seasons, have been obtained for a freight depot, where it is intended the heavy freight destined for the southern markets, and all points on the Ohio, Mississippi, and their tributary rivers, and the heavy importations for the interior, will be received and discharged. For the manufacturing and repairing purposes of the company, seven acres of ground, near the freight depot last mentioned, have been appropriated.

3. *The facilities, both of natural approach and artificial accommodation, can hardly fail to make this road the great avenue and common terminus of several important railroads.* The road itself is the southern section of the Mad River and Lake Erie railroad, now in successful operation from Lake Erie to Springfield, and which is under contract and will be completed to Dayton before this road can be. The Mad River and Lake Erie railroad now constantly employs 18 locomotive engines, 14 for freight and 4 for passenger trains, and its business and receipts during the past year, demonstrate that it will throw upon the Cincinnati, Hamilton and Dayton railroad, freight and passengers enough to pay interest upon the cost of construction, aside from our connection with other roads, and the immense amount of local business along the line of this work, hereafter to be noticed.

A glance at the hills which environ Cincinnati,

indicates that there are but three approaches to the city on the north side of the Ohio river for railroads—one down the river, occupied by the Little Miami railroad; one up the river, occupied by the Whitewater canal; and this, directly into the interior up the valleys of Mill Creek and the Great Miami river to Hamilton and Dayton. The Belpre and Cincinnati railroad company, to avoid the confined approach to the city through Fulton, have surveyed a line with which they are much pleased, across from the valley of the Little Miami into that of Mill Creek, so as to avail themselves of the terminus of this road. Other lines from Hamilton up the valley of the Four and Seven Mile, into the interior of western Ohio and into the heart of Indiana, connecting us with Eaton, Richmond, Indianapolis, Peru, Terre Haute, and via Lafayette to Chicago and Galena, are many of them in progress of construction, and will find their way over this great thoroughfare into Cincinnati.

4. *The Cincinnati, Hamilton and Dayton railroad occupies the most fertile, populous and productive region in the State of Ohio.* At one end of the road is the city of Cincinnati, with her hundred thousand inhabitants, her great manufactures, and her exports of 55 millions per annum; at the other the active and enterprising manufacturing city of Dayton, containing over 12,000 souls; and between lie the rich counties of Hamilton, Butler, Warren and Montgomery, with flourishing towns, such as Hamilton, Rossville, Middletown, Franklin, Germantown, Miamisburgh and Carrollton, along the line. The Great Miami, with a minimum volume of 25,000 cubic feet of water per minute, as actually ascertained by scientific engineers, descends from Dayton to Hamilton at the rate of five feet per mile. At Dayton and at Hamilton hydraulic works of great power have already been constructed, and similar works are in contemplation at Rossville, Middletown, Franklin, Miamisburgh, Carrollton and other places, all of which are directly tributary to the road.

There are now running between Hamilton and Cincinnati five daily lines, two of six-horse omnibuses, and three of four, each way, besides one daily line of canal packets. From Dayton to Cincinnati there are, independent of the foregoing omnibus lines from Hamilton, four daily lines, one of six horses, and three of four, each way, and one daily line of packets. The average number of passengers as ascertained from the agents of these lines, from Hamilton to Cincinnati, in public conveyances, is one hundred each way, daily. The number from Dayton to Cincinnati and back, is about sixty. Add to these passengers whatever the reader may estimate from the lake and other roads, from the other towns of the valley, and from the increase of travel by railroad, and each may form his own estimate of the revenue of the road from travel alone.

The cost of construction of the road, from Cincinnati to Dayton, a distance of 56 miles, using the T rail, is estimated at, \$896,000. To which add rights of way, depot grounds, buildings, salaries of engineers, and contingencies

104,000

\$1,000,000

To recapitulate:—From the nature of the ground over which this road passes, and the cheapness and safety of its construction; from the fertility, wealth and population of the region through which it passes; from its connections with the lakes of the north, the rivers of the south, and other contemplated railroads of its vicinity; and from its occupancy of the most natural and commanding avenue to the great agricultural, manufacturing and commercial emporium of the west, the inference is irresistible that it will pay a large profit, and that it ought to be made without delay.

We have always entertained the opinion that the western roads would eventually turn out to be the most profitable of any in the country. That this should be the case is very plain. Take for instance the States of Ohio and Indiana. The character of the people of these States justifies the opinion that their roads will be as well managed as any road we have. The West is capable of maintaining, and will soon possess the most dense population of any

part of the Union. Her products are now chiefly agricultural. The immense surplus which she raises seeks a distant market, and from its bulky nature, pays a large freight. The soft and yielding nature of the soil of that section, unfitting it for ordinary roads, must always secure to railroads and canals the carriage of this surplus. Railroad companies in the West, too, possess this great advantage over those in the eastern States, in the cheapness with which land for depots and right of way can be obtained. The cost of land for our eastern roads terminating in our large towns is a very large item of their cost. The great necessity that exists for roads in the west, and the desire to encourage them, secures land for these purposes at a very small cost. The entire cost of a road there is nearly all included in the construction account. We know of no road in Ohio, either built or in progress, that does not bid fair to be good property; and though this fact may not induce eastern capitalists to take stock in her roads, the general confidence felt in these undertakings, will enable companies to negotiate their bonds at a fair rate, and by this means obtain from abroad such balance as may be necessary to complete them.

This company we learn has, since the 1st of October last, secured reliable subscriptions to its stock of over half a million of dollars, which is a full guarantee of the success of the work. Ample means must exist in that part of Ohio interested in this work, to build the road. In our opinion it occupies one of the best, if not the best, route, as far as business prospects are concerned, of any in Ohio. If it should have no connection extending beyond Dayton, it would be good property. But as it will soon be the great trunk of others connecting with it, and penetrating different sections of Ohio and Indiana, we see no reason why it should not take rank among the best paying roads in the country.

The contracts advertised are to be paid for in cash, and they will undoubtedly attract the attention of those of our subscribers who are engaged in such works.

Illinois.

The Great Western Railway Company.—We understand that the agent who went to England to purchase the Iron for this Road, has returned in the *Cambria*—with proposals to furnish the whole quantity required for the Road from Cairo to Chicago, receiving in payment, the six per cent. Sterling Bonds of the Company payable in London. This Road is deemed one of the utmost importance to the whole West, and especially to the State of Illinois. It was commenced as a *State work*, and upwards of one million of dollars had been expended on its construction, when it was suspended, after the grading and embankments for nearly 40 miles from Cairo, and as much more from other sections, had been completed. It begins at the head of river navigation for large vessels, at a point where the Mississippi is *always navigable and always open*. It runs through the *centre of Illinois*, and has aptly been termed "*the backbone of the State*"—for, with this Road all others will intersect or unite. It is equi-distant between the rivers Mississippi and Wabash, which are not navigable a large portion of the year, in consequence of ice and low water, and thus the necessity of having a railway to run through the whole length of Illinois, on which the produce of the State can be transported to a *port of shipment*, which should be open to the seaboard the whole of the year. Its Southern terminus has therefore been fixed at *Cairo*, at the mouth of the Ohio, from whence the Mississippi is *navigable every day in the year*—communicating at all seasons with New Orleans and the Gulf of Mexico. The Railroads now in progress of building, from *Mobile* and *Charleston*, have located their western termini at the mouth of the Ohio, opposite to, and to unite with the Great Western Railway.

This Road, therefore, in connection with the Illi-

nois and Michigan Canal, from Peru to Chicago. will possess and enjoy a monopoly, a large portion of the year, of the transportation business and travel of nearly the whole State.

Alabama.
Selma and Tennessee Railroad.

Another convention in aid of this project, was held at Selma on the 24th ult., at which the Hon. Wm. R. King, of Dallas, presided. The Vice Presidents were Edmund King, of Shelby, R. A. Baker, of Mobile, Wm. M. Murphy, of Greene, C. C. Lenier of Autauga and William Huntington, of Perry; D. M. Riggs and St. George S. Lee acted as Secretaries.

We copy from the Selma Reporter the following account of the proceedings of the convention.

Great interest is being manifested in the proceedings of the convention, and much enthusiasm prevails.

It being late, the convention adjourned to meet at half past 7 o'clock.

When the convention met, a report of Mr. McCracken, an engineer, was read, who was sent to examine the route, where the road diverged from the old survey from Montevallo, through the county of Talladega, &c., it having been reported that the road might not be practicable. The report was very favorable, showing that the route is not only practicable, but unusually favorable for a road, and gave much satisfaction to all present.

After this report was read, very able and interesting addresses were delivered by Mr. Storrs, of Shelby, and Mr. Parham, of Autauga.

On Thursday morning the convention met pursuant to adjournment. On motion of Mr. Lapsley, a resolution of Mr. Storrs, of Shelby, offered the preceding evening, to the effect that books for the taking of stock, be now opened, was taken from the table and unanimously passed. The meeting was then very ably addressed by Mr. Lapsley, who was followed by Mr. Calhoun, of Dallas, and Mr. Murphy, of Greene, in speeches of great power, which were well received by the convention.

Since the foregoing was written, books of subscription to the capital stock of the company have been opened, and nearly one hundred and twenty thousand dollars were subscribed within a very short time. The convention has not yet closed, and the work of subscription is still going on.

From the spirit which has been manifested, and the deep and general interest which on this subject prevades the community, we feel great confidence that the assurances which have been given from this section will be fully realized.

We copy the following from the Mobile Planter relative to the above:

We have seen one of the delegation to Selma.—The railroad convention, or mass meeting, went off well. Our worthy senator, Wm. R. King, presided, and not only made a fine address, but gave the best earnest of his feelings in regard to the enterprise, by subscribing liberally, very liberally, to the work. Mobile had nine delegates present, and her interests and claims were favorably discussed. Col. Murphy, of Greene, made the speech on the occasion, which was exceedingly well received, and more especially on account of his favorable allusions to our city.

If we can judge from the feelings manifested by our own delegates, and delegates from other counties now in the city, the work goes bravely on. No doubt is expressed or felt of its final and speedy success. Indeed, its influence extends beyond our first ken.

North Carolina.

Meeting of the Stockholders of the Wilmington and Roanoke Railroad Co.

On Thursday and Friday last, the stockholders of the Wilmington and Roanoke railroad company held their annual meeting in this town. Mr. L. H. B. Whitaker, of Halifax county, acted as chairman of the meeting on the first day, and Ex-Gov. Dudley on the second day, and Messrs. Henry Nutt and C. W. Bradley as secretaries. Gov. Manly, ex officio president, and Dr. F. J. Hill, member of the board

of internal improvements, appeared as the representatives of the stock owned by the State. The attendance of private stockholders was about the same as in former years.

The President of the Company, Gen. Alexander McRae, submitted on behalf of the directory a report of the operations of the past year, and the 'Examining Committee' laid before the meeting their report of a scrutiny of the books and accounts of the company. From the latter account we take the following comparative statement of the annual receipts, expenditures and profits, and number of passengers for the year ending on the 1st of October last:

	No. of passengers.
Receipts.	11,207
Expenditures.	27,575
Profits.	11,207
Through.	27,575
Way.	11,207
Total.	310,397

A committee, consisting of Messrs. John McRae, Jere. Pearsall and Richard Washington was appointed to devise means of raising funds to pay the duties and other charges on several cargoes of iron lately imported for re-laying the track of the Road. They reported in favor of an assumption of responsibility on the part of the Stockholders generally for the purpose of raising money, by borrowing from Banks or otherwise.

The report was adopted, and to carry the same into effect, the annexed resolutions were passed:

Resolved, That the Stockholders of this Company will join in a letter of Attorney to the Treasurer of this Company, authorizing and empowering him to sign their names as sureties to such bonds as may be made by the Company, for the purpose of raising a sufficient sum to pay the freight and duties on the iron now received or to be received, for the use of the Road; the amount for which each Stockholder shall be liable to be set forth in such letter of Attorney.

Resolved, That Messrs. P. K. Dickinson, O. G. Parsley, J. G. Green, and A. J. DeRosset, Jr, be appointed a committee to wait on the Stockholders and obtain their assent to become sureties to such bonds as may be made by the Company for the purpose of raising money to pay freight and duties on iron.

The President and Directors elected by the Stockholders, unanimously, are the same as before, namely: Gen. Alex. MacRea, President, and P. K. Dickinson, Gilbert Potter, Edward B. Dudley, Wm. A. Wright, O. G. Parsley, and James T. Miller, Directors. The Board of Internal Improvements appointed James S. Battle, James Griswold, and A. J. DeRosset, Jr., Directors for the State, who also have served heretofore in the same capacity, so that no change was effected in the composition of the Board—a deserving tribute to the zeal and fidelity of the members thereof.—*Wilm. Chron.*

New Hampshire.

Portsmouth and Concord Railroad.—We learn that contracts have been entered into for completing the road from Concord to Canada, 17 miles. The road will be open for use from Portsmouth to Epping about the 1st of December. From Epping to Raymond, six miles, the grading is nearly completed. The only portion of the road which is not now under contract, is from Raymond to Candia, six miles.—*Portsmouth Journal.*

Kentucky

Lexington and Covington Railroad.—Our readers who have heretofore known our opinions on this subject, will be gratified to learn that Messrs. G. C. Sellers, brother, and assistants, reached our city on Sunday morning, after a thorough and laborious reconnaissance of the proposed general route of the above road, and have ascertained by actual survey, its entire practicability, in a much shorter distance than its most sanguine friends expected, and at a grade, at no place exceeding 51 feet in the mile. The general course is up Licking river to Falmouth, cutting off all the bends by easy grades. Thence up the valley of the South fork to Cynthiana and thence to Lexington, passing near the town of Paris. The whole distance being under ninety miles—about 86.—*Lex. Atlas.*

The First Locomotive in Tennessee.

We learn from the Chattanooga Gazette, that a locomotive of the Western and Atlantic Railroad, entered that town, one day last week, the first ever in the State of Tennessee. The work is rapidly drawing to a close, and we soon may expect to have a continuous line of Railway from Charleston to Chattanooga. Of the 1477 feet, which constitutes the length of the tunnel, there now remain (according to the Ringgold Republican, 20th Inst.,) but one hundred and fifty-five feet of excavation, to complete the mammoth enterprise. Since the 20th of August, the date of a visit paid by us to the tunnel, the contractors have penetrated one hundred and sixty two feet, their progress on both sides, the Eastern and Western, being for the most part through a solid rock. This obstruction has now, however, disappeared, and their future course will be proportionately rapid. The calculation is that the cars will be running through the tunnel by the first of December.—*Charleston E. News.*

ACCOUNT OF THE EXPLOSION OF THE LOCOMOTIVE ENGINE "ALTOONA," ON THE GEORGIA RAILROAD.

The engine "Altoona" left Union Point on the morning of the 11th October, 1849, in charge of R. E. Allen, who had been in the employment of the company for upwards of ten years, and was considered by the officers of the road as their most reliable, skilful and experienced engineer. The train arrived at Bel-Air (10 miles from Augusta) at the usual time, with 13 eight-wheel box cars loaded with cotton, and five eight-wheel platform and stock cars, with about half loads of cotton. Eleven eight-wheel platform cars were standing on the turn-out to come down, loaded with wood. The "Altoona" "backed in" to take on five of these, leaving the remainder for the second downward train—and the conductor "uncoupled" accordingly. But one of the "wood men," fearing that the second engine might not take his wood, stealthily replaced the coupling just as the train was on the point of starting. The engine therefore left the Bel-Air turn-out with 29 cars and proceeded one-quarter of a mile down a grade of 20 feet per mile, and then commenced ascending a grade of 33 feet per mile, and one mile in length. After running one-third of a mile up this grade the explosion took place. The whole of the dome part of the boiler was blown off, down to the line of rivets, on a level with the "crown sheet," or top of the fire box—together with about 18 inches of the cylindrical part of the boiler. The remaining part of the boiler, the fire box, and running gear of the machine, were not injured. At the time of the explosion, the engineer was trying his guage cocks, having his arm around an iron brace running from the hind part of the frame to the boiler. This brace was blown off, shattering the right arm of the engineer, and striking his breast, produced internal injuries which terminated his life within an hour and a half after he was brought to town. Two firemen (black) and a white man standing upon the foot boards of the engine and tender escaped without injury, except that one of the firemen had his arm slightly sprained—the engineer being thrown back upon him.

The upper flues afford no indication of low water—and the firemen distinctly recollect of notising steam and water issue from the middle gauge cock just before the explosion. Both the conductor and firemen heard the engine "blowing off" at the station and until the catastrophe happened. The spring balance was found broken, but the position of the "thumb screw" showed that the safety valve was only screwed down to indicate the usual pressure for this engine, viz: 120 lbs. per square inch. The firemen state that the engineer was not "holding down" his safety valve lever at the time of the explosion, and that he had never been in the habit of doing this. The engine was working very freely and running 10 miles an hour up the grade, with occasional slipping of her wheels, notwithstanding there was a dry and favorable rail. The whole of the boiler plate blown off exhibits a thickness of one quarter of an inch, and at several of the lines of fracture the thickness is only three-sixteenths of an inch. It is, however, probable that the thickness at these points was reduced at the time of the explosion. At these points of failure, the boiler iron is also found defective in being composed of two plates (not welded) instead of one solid plate.

The engine was the last purchased by the com-

pany, and had only ran 11,706 miles. She had 8 wheels, all connected, and 44 inches in diameter, with 13 inch cylinders, and a stroke of 18 inches, and weighed 18 tons. Her boiler showed some symptoms of weakness soon after she commenced running, and was strengthened in the shops of the company by additional "stay rivets," from the fire-box to all the surrounding parts. This precaution, doubtless, prevented much more fatal and destructive effects from the melancholy accident. As already stated, the engine has been but a short time in use; and, notwithstanding her increased weight and number of driving wheels, had not been required to pull heavier trains than the six wheel freight engines, with a weight of only 15½ tons.

From the above statement it will appear plain that the combined causes of the accident were, that the engine was accidentally loaded beyond her capacity, and had a too weak and somewhat defective boiler.—*Augusta Chronicle,*

AMERICAN RAILROAD JOURNAL.

Saturday, November 17, 1849.

Communication between New York and New Orleans.

The immense amount of travel between these two cities, the commercial emporiums of the Atlantic and the Gulf of Mexico, renders it a matter of great importance to ascertain the route by which the passage between them can be effected in the shortest possible time, and at the least possible expense; and as this subject is attracting the attention of capitalists, and those interested in the lines of steamboats running between New York and New Orleans, we propose to examine in our present number the evidence applicable to this question.

The peninsula of Florida, projecting many hundred miles into the Gulf of Mexico, and the dangerous navigation of its southern shore, early suggested the idea of avoiding the long and dangerous circuit of the cape, by a canal across the neck of the peninsula. As canals, for the purpose of travel, have been superseded by railways, it is now contemplated to construct a railroad on the site of the proposed canal, to connect at either end by a line of ocean steamers running to New York and New Orleans, thus forming one of the lines of travel between these cities. Another, and which may be regarded as the only rival Atlantic route to the above, a portion of which is now followed by travellers taking the southern route between these cities, leaves the Atlantic at the cities of Charleston, or Savannah, and running through the State of Georgia by way of the Georgia railroads, to Pensacola; thence by steamboat to New Orleans.

The question which we propose to discuss is— which of these two routes, everything being considered, is best adapted to command the travel between these cities. The distance by these two routes is nearly equal, the Georgia route being about 30 miles the shortest. The length of railroad required for the Peninsula route is about 145 miles; for the Georgia route about 490. It is estimated that by the former the whole distance between New York and Orleans could be performed in 105 hours; by the latter, in consequence of its greater extent of railroad, in 92½ hours. All other things being equal, the Georgia route has the decided advantage, unless this saving in time is more than balanced by the superior economy of the more southern route.

Georgia, one of the most active and enterprising of the Southern States, has already completed a road from Savannah to Macon, a distance of 191 miles, and is now engaged in extending this line from Macon to Fort Gaines, a distance of 150 miles. The first named road finds ample support in the local

trade and traffic of the country it traverses, and it is believed the road from Macon to Fort Gaines will be equally successful, as a paying road. From Fort Gaines to Pensacola the distance is 150 miles. Pensacola is well known to possess the best—in fact the only good harbor on the Gulf of Mexico. Now the same reasons exist for building a portion of this road, as that from Macon to Fort Gaines, as a portion of it traverses an equally fine country; and when we take into consideration the fact that this extension would open a direct railway communication between the Atlantic and the gulf, and the great advantage of such a connection to the railways of Georgia and South Carolina, and the vast amount invested in these roads, we have a right to expect that all these influences combined, will lead to the commencement of the link between Pensacola and Fort Gaines as soon as the latter point is reached and its completion at an early day; thus forming a continuous line of railway between Savannah and Pensacola. The inducements to the construction of the portion of this line already built, have been the local travel and traffic of the country traversed; and the same inducements will extend the line to Pensacola. Local considerations will construct the whole line, and whether profitable or not as paying road, the forwarding of such through travel and business as may pass over it, will add but little to the expense of running the road, while at the same time it will add materially to its receipts.

There exist no such inducements for the building of the road across the Peninsula in the local travel or traffic of the country. The route of the proposed road is through an unsettled country, and one incapable of sustaining a dense population. It connects no important towns. The whole route from Savannah to New Orleans, in case the steamers should touch at Savannah would be a through route.— Now if there is any one fact demonstrated by railway experience it is, that roads built exclusively for through business, never pay. No matter how important the points, or the sections of the country connected. The business received from such connections alone never support a road. A more important through road, than the one from Boston to Albany can hardly be supposed to exist. The whole of the Eastern States receive a great part of their food from the West via Albany, and in return forward over the same route an immense amount of manufactured articles. Yet of the vast revenues of this road, a very small proportion is received from through business, and it is admitted that, as far as its through business is concerned, the road is a failure, though its great local travel and traffic, far greater than even anticipated, places it among the first class of paying roads in Massachusetts. Where no such local trade or travel existed, roads have proved failures. Take for instance the Stonington, and the Long Island roads. The history of this last road is a case exactly in point, though occupying a much stronger position than the Peninsular road.— It is one of the links of the most direct routes between two of the leading cities in the country, and enjoys much local traffic. Nowithstanding all this it is abandoned as a through route, the travel not paying the expense of running trains, and the stock is almost worthless. The Stonington may on the whole be considered as the favorite route between New York and Boston, yet with an immense thro' travel and freight, its stock is worth but about fifty cents on the dollar. The want of local traffic is the great reason why the roads of Virginia and North Carolina have turned out so badly. It is but a few days since we were reading a letter from General

McRae of Wilmington, N. C., President of the Wilmington and Raleigh road, to Gov. Morehead, of that State, in which he discussed the probabilities of the N. C. Central railroad being a paying road, and he decides in the affirmative from the fact of its great prospective local traffic, and states that the great want of success of roads previously constructed in that State is owing almost entirely to the fact, that they were built for a through, and paid no attention to local business of the country. Better authority upon this point could not be adduced, as it comes from a gentleman better qualified perhaps than any other in the country, from his great experience, to speak upon this subject.

As the Peninsula route will have no other resource but its through business, it must be supported out of the profits of the steamboat lines connected with it. The amount required for its support over its earnings, must of course depend upon the amount of its business and the cost of the road. The expense of constructing and maintaining the road across the peninsula must be very great. Florida can furnish but very little material for such a work. This must be imported from abroad. Now, in military affairs we all know that expenses increase in proportion as the theatre of operations is removed from the base. The base of operations for a Florida railroad must be some other section of the country, which must furnish the food, the labor, the machinery and the greater part of all the material necessary to its construction.

In every densely populated part of our country, no matter in what enterprise you may be engaged, competent persons are always at hand to perform any service, or furnish any material, at a fair compensation, no matter how difficult the service required. It is this fact which constitutes the great difference in the cost of a work in the old and in the newly settled portions of our country. In the latter case we must collect, if we can, the suitable materials for our work, and the proper men to execute it, and take them with us to the scene of operations.— Now, the qualities of moral as well as material agents can only be determined by experiment, and it will often turn up, that we find ourselves, with all our care mistaken in our selections. This compels us to return for a new supply, which we must again take on trust; and thus it frequently happens that it costs more to get the right kind of materials and men upon the ground, than to complete the whole work after these are procured. We do not enumerate these difficulties as anything new, though they are very seldom properly appreciated even by practical men, but only to show that the cost of the Peninsula railroad is not to be measured by that of the cost of ordinary roads. They furnish no guide in this case, because the conditions under which they have been constructed are so entirely different.

For similar reasons, the cost of management of other roads can furnish no criterion for this. It will require to be doubly equipped and manned to meet the accidents which will constantly occur, and which cannot be repaired as in thickly settled parts of our country, at a moment's warning. A large force and a large equipment must be constantly maintained to meet unforeseen casualties as they occur at the same expense as if constantly at work, although they may be employed but a small part of the time. To form this line, therefore, a vast outlay will be required to construct the railroad link of one hundred and forty miles, which will have no other support but the through travel. In addition to the road it will be necessary to construct extensive wharves, piers and warehouses, solely for the use of the road. Large

depots for coal must also be established, both for the use of the boats and the road.

We have briefly indicated the arguments against the Peninsula route. They may be expanded, or a more precise form given to them by those possessing the requisite knowledge upon the subject. The question can be argued only upon general principles, because we have no precise data to go upon, no estimate of the cost of forming or maintaining either of the lines, or of the business they will possess. Our firm conviction is, from what we may term the universal experience of railways, and from the great difficulties to be overcome, that the Peninsula route if opened, could not be maintained, that the travel over it would not pay the expenses of keeping it up, even if the other route referred to should not be opened, and this should enjoy the monopoly of the travel going by the southern route, and that the same would of necessity be abandoned after being entirely completed.

We have thus far examined this subject in the most favorable light for the most southern or Peninsular route. We have, we think, shown that its success is impossible without any rival; but to decide upon the merits of this work as a matter of investment, we must take into consideration the fact that a rival route for the travel it seeks to accommodate will always exist; for we shall take it for granted that the inland route from Savannah to Pensacola will be constructed whether the Peninsula is or not.—Should the Peninsula route be constructed, the question then is, which can successfully compete for the business which legitimately belongs to a through route?

We have shown that the Georgia route will be built for, and sustained by the local trade, and that the through business while it will add to its income will not increase in the same ratio to its expenses. This business can be accommodated on this road with but little additional investment of capital; consequently it can transport through passengers over it at a nominal charge, and as the two companies would have adverse interests we have a right to suppose that the Georgia route would transport passengers and merchandise over its line, so long as two routes should exist, at a rate far below what the Peninsula route could do; consequently it would have, as far as expense is concerned, a perfect monopoly of the business. It would prove the shortest and cheapest route. It would certainly be the most convenient route, as very few go from New York and New Orleans without having occasion to stop at some of the important points on the upper line, such as Charleston, Savannah, Augusta, Macon, Pensacola, &c. This fact alone would draw nearly all travellers from the more southern line.

It will prove the shortest, the most expeditious, and the most convenient one. It will certainly be the most attractive and pleasant one. It traverses one of the finest portions of the south. We leave to the experience of our readers whether, after reaching Charleston or Savannah, they would prolong their sea voyage down to the Gulf, or cut it short by taking the longest land route. If both routes were maintained, and the steamers of the Peninsular route touched at Charleston and Savannah, ninety-nine out of every hundred would take the land route.

From the most careful attention we have been able to give to this subject, we cannot find a single inducement to the construction of the southern route. If it could command a monopoly of the business, this would not support it. Even in such an event, it must prove a failure; but from the superiority of other routes, it could never attract to itself any busi-

ness or travel, and it must be regarded as a most disastrous undertaking in whatever light viewed.

New York and Erie Railroad.

The receipts of the Erie road for the the month of October, 1849, were as follows:

From freight.....	\$50,465 95
From passengers and mail.....	50,254 36
Total.....	\$100,720 51

The receipts for the month of October, 1848, were \$28,969 98.

CANADA.

Toronto, Simcoe and Lake Huron Union Railroad Co.—We learn that a new project under the above name has recently been started in Canada, to construct a railroad from Toronto to Georgian Bay, on Lake Huron, and that a charter for this purpose was recently granted by the Colonial Parliament, which has since received the Royal assent. One great object of this road is, by connecting Lake Ontario with Lake Huron, on the shortest line between the two, to save the long and tedious circuit through Lake Erie for travelers going to the Lake Superior and Michigan region. It would shorten the distance as at present travelled about 600 miles, and would form a part of a very direct route between the East and the West.

In addition to the through travel, it would command a very large amount of local traffic. It is well known that the portion of Upper Canada traversed by the proposed road is exceedingly fertile, superior to almost any other part of Canada, and now furnishes a very large amount of finest wheat for exportation. In the event of annexation of the Province to this country, the importance of this road would be immensely increased. One of the most important features in the charter, which is very liberal in all respects, is the mode by which the means are to be raised for the construction of the road.

The capital of this company is divided into one hundred thousand shares of twenty dollars each.—These shares instead of representing an interest in the capital stock to the amount of the share is in fact a right, a ticket in the nature of a lottery ticket. After the shares are sold, the whole capital stock is to be divided up into a given number of shares, or prizes, of such amount as the directors shall determine, and drawn for by those holding the tickets. It is believed that the capital of the company will build the road, and that there will be no difficulty in readily disposing of the tickets, and those interested in the road will very readily hazard the purchase of a few shares for the sake of a chance at the prizes, feeling the building of the road to be a greater object than the loss of a few hundred dollars, should the tickets turn out blank. The great object of those getting up this scheme is to build the road, and the above plan was proposed as most likely to secure the necessary means. In this respect we believe that they have judged rightly; for we cannot imagine any more effective plan to invite the whole community, as every individual in the hope of drawing one of the prizes, will take as many shares as possible; and if he should not prove so successful a competitor for the prizes, he gets the benefit of the road, and may be vastly the gainer by this means, though he may lose the amount of his stock.

The directors of this company are F. C. Capreol, H. J. Boulton, John Hibbert, R. E. Burns, J. Morrison, Charles Berezzy, J. D. Ridout, G. Barrow, A. Furniss, and B. Holmes, Gentlemen of the highest standing in Canada, and a number of them members of the Provincial Parliament, which affords

every guarantee of its proper management. We learn that steps have been taken to bring the stock immediately into market.

Georgia.

Organization of the Savannah and Albany Railroad.—We learn from the Albany Patriot that the 25th ult. witnessed a most important movement in Southwestern Georgia. A preliminary meeting was held in Albany on that day, when the Rev. N. W. Collier was called on to preside. On the following day books were opened and sufficient stock taken to authorize an organization of the Company and a commencement of the work.

By-laws were then adopted, and the following gentlemen chosen President and Directors:

President—Col. Nelson Tift; Directors—Dr. L. B. Mercer, Rev. N. W. Collier, A. B. Lawton, John F. Spicer, A. Y. Hampton, P. M. Nightingale, and Wm. Hampton, Esqrs.

An installment of one per cent. on the stock subscribed, was assessed and paid. The Stockholders then adjourned to meet on Saturday, the 3d day of November.

The president and directors met on the 29th Oct., after the adjournment of the stockholders, and elected the following officers under the By-Laws of the Company:

Treasurer, John F. Spencer, Esq.; Secretary Archibald Hunt, Esq.; Chief Engineer, T. G. Westfall, Esq.; Assistant Engineer, A. H. Swinney, Esq. The gentlemen were present, accepted their appointments, and entered at once upon the discharge of their duties.

Connecticut.

Willimantic Railroad. The Directors of this road and invited guests made a trial over the road from Hartford to Willimantic, on Saturday. The editor of the Hartford Courant says of it—

We left this city at half-past nine, and after passing over the level of the East Hartford plains, ascended the grade to Manchester. Here there is a short ascent of sixty feet to the mile, and then several miles of a level grade, and then another ascent of the same number of feet to the Bolton Station. Between the Manchester and Vernon stations there is a high embankment which arrests the attention of all travellers, it being raised seventy feet above the level of a road that passes beneath it.

From Bolton we passed through Andover to the village of Willimantic, the road being completed to within a mile and a half of that place.

We think no railway will be considered so beautiful as this when the summer verdure shall have covered these valleys.

It is understood that the road will soon be finished to New London.

Mississippi and Atlantic Railroad.

The project of extending the Georgia Western and Atlantic railroad to the Mississippi at Memphis, is taking strong hold of the people of Northern Alabama and Mississippi, and Southern and Western Tennessee; and we feel confident is destined soon to be realised. The route is certainly one of the most important of any in the country, and is one in which every portion of it is interested. The engineering difficulties are surmounted when the Georgia road reaches the Tennessee river. The road can be constructed at very low cost, and will traverse one of the oldest settled and wealthiest sections of the Southwest, filled with an active and enterprising people. In addition to the means for its construction which exist in the country through which the road proposes to run, it will, if necessary, receive substantial aid from the roads of Georgia and South Carolina, to which it is of the utmost importance. With so many reasons existing for the construction of the proposed road, with so few obstacles in the way, and with so strong an interest arrayed in its support, we cannot doubt of its speedy construction.

A mass convention was held at Holly Springs, Miss., on the 20th ult., for the purpose of adopting

measures to promote this work, which was very numerously attended not only by citizens of Mississippi, but Tennessee and Alabama. At this meeting Gov. James C. Jones, of Tennessee, presided, assisted by John Pope, of Tennessee, Nicholas Davis, of Alabama, and John D. Martin, of Mississippi, as vice presidents. After a full discussion of the subject, the convention adjourned to meet at Memphis, immediately after the rising of the great Pacific convention held there on the 23d ult.

The convention re-assembled by adjournment, at Memphis on the 27th ult., and, as at its preceding meeting, was very numerously attended, and its proceedings were characterised with great spirit, which gives every assurance of the speedy and vigorous commencement of this work. After the passage of the following resolutions, expressive of the sense of the meeting, it adjourned to meet at Huntsville, Alabama, on the 26th instant.

1. Resolved, That in the opinion of this convention, the railroad from Memphis to the Atlantic should pass through or near Florence or to Tusculumbia—through Huntsville, and intersect the Nashville and Chattanooga railroad, at some suitable point on said road, or with the Georgia route, at or near Rome, in the State of Georgia.

2. Resolved, That this road be called the Tennessee, Mississippi and Alabama railroad.

3. Resolved, That a committee of three be appointed by the president of this convention, to confer with the president and directors of the Memphis and LaGrange railroad company and ascertain the terms upon which said company will dispose of the bed of the road from Memphis to LaGrange, and that they report the result of such conference to the adjourned meeting of this convention.

4. Resolved, That a like committee be appointed to confer with the president and directors of the Tennessee Valley railroad company, and ascertain the terms upon which said company will dispose of their road, and that they report to the adjourned meeting of this convention.

5. Resolved, That a committee of three be appointed by the president of this convention to examine the various charters granted by the respective states through which it is recommended the proposed road shall pass, and report to an adjourned meeting of this convention what further legislation may be necessary.

6. Resolved, That this convention adjourn to meet again at Huntsville, Alabama, on the 26th day of November, 1849, for the purpose of further deliberation and action in reference to the contemplated railroad.

7. Resolved, That the people of the counties of North Alabama be invited to hold primary meetings, at as early a day as may suit their convenience, to take this interesting subject into consideration, and send delegates to represent their views and wishes in said adjourned meeting of this convention.

8. Resolved, That we invite the co-operation of the friends of the contemplated improvement in Mississippi, Tennessee, Georgia, Virginia and S. Carolina, and request them also to send delegates to said adjourned meeting.

9. Resolved, That a committee of three be appointed to confer with the president and directors of the Mobile and Ohio railroad, to ascertain if a union between their road and the Memphis and Charleston road may not be made by which the terminus of said Mobile and Ohio railroad may be at Memphis.

In compliance with the foregoing resolutions the chair appointed the following gentlemen on the respective committees.

The committee under the third resolution—L. H. Coe, R. C. Brinkley, and F. H. Cossitt.

The committee under the fourth resolution—A. Mil's, R. Walker and C. C. Clay, Sr.

Committee under the fifth resolution—John D. Martin, Dr. Thos. Fearn and W. T. Brown.

Committee under the ninth resolution—R. Topp, Geo. W. Smith and John Trigg.

New Jersey Zinc.—We were yesterday shown some specimens of this new and beautiful metal. It has been worked up into covers, spoons, forks, wire, etc., and it certainly makes very handsome ware. As the ore from which this metal is produced has *nowhere* been discovered, save in Sussex County, N. J., we would recommend all interested in American minerals and home manufactures, to call at the store of Messrs. Balley & Co. in Chestnut street, and examine the articles mentioned. So valuable has this metal become, that hereafter we shall measure a lady's charms by her zinc instead of tin.—*Phila Sun.*

CHRONOMETERS.

MERCHANTS, Ship Owners, Captains and others, are invited to examine the advantages offered in the purchase of Chronometers, by Hewitt & Son, Makers, 92 Wall Street, (up stairs,) in their superior quality and great reduction of price.

H. & S. have for many years been engaged in the manufacture of Chronometers, for the first houses in the trade; and also, for the Navy of most Nations, and have received numerous rewards for their superior performance. Their Chronometers may be obtained from the Observatory at Liverpool, by order from H. & S., and at City Road, London. They are warranted to give satisfaction; but if not approved of, will be exchanged in New York, London, or Liverpool.

Rating, Cleaning and Repairs, at low charges.

The Trade supplied on the most liberal terms.

November 17, 1849.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thick-nesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse. **JOHN GREACHEN, JR.,**
99 Broadway, opposite Trinity Church.
New York, October, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by **E. & G. W. BLUNT,**
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

RAILROAD

India-rubber Springs.

IF any Railroad Company or other party desires it, the **NEW ENGLAND CAR COMPANY** will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.

E. CRANE, 99 State Street, Boston.

May 24, 1849.

Engine and Car Works,

PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.

May 12, 1849.

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NOTICE TO CONTRACTORS.—Office of the Cincinnati, Hamilton and Dayton Railroad Company, Nov 3d. 1849.

Sealed Proposals will be received at this office until **THURSDAY**, the 13th day of December next, for the Grading, Masonry and Bridging of the Southern Division of the Cincinnati, Hamilton and Dayton Railroad, extending from the city of Cincinnati to the town of Hamilton, Butler county, a distance of about 25 miles.

The work will be ready for inspection in ten days previous to the letting, and all the necessary information will be given by the undersigned and the assistant Engineers.

Proposals to be addressed to S. S. L'Hommedieu, Esq., President of said Company, or to the undersigned. Bidders not known to the President and Directors, or to the undersigned, will be required to give satisfactory testimonials as to character and qualifications.

R. M. SHOEMAKER, Engineer.

ETNA



THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers,

No. 85 Liberty St.

NEW YORK.

And in the principal cities and towns in the U. States.

The Premium of the **AMERICAN INSTITUTE** was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849.

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C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williams's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished, Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849.

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Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 28 feet.
- 1 Wood dwelling house, 21 by 28 feet.
- 1 Brick block, six tenements, two stories.

A number of building lots.
Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBERICH,
46 South 8th St., Philadelphia. 6m*

November 3, 1849.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5 1/2 Pine St., New York. 3m

October 27, 1849.

To Proprietors of IRON FOUNDRIES.

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; **Charcoal Blacking**; **Lehigh Blacking**; and **Soapstone Dust**; also **Black Lead Dust** for facing very nice work, always on hand and for sale by

G. O. ROBERTSON,
303 West 17th St.,

or 5 Liberty Place, between Liberty st. and Maiden Lane, New York. 1m

November 3, 1849.

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO. PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.

CHARLES F. M. GARNETT,
Chief Engineer.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection on and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.— Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,
Chief Engineer J. R. & K Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. }
Newark, Ohio, October 17, 1849. }

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,
Superintendent, etc,

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, to work for himself, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL,

A General Newspaper and Weekly Review; To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social Life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence*; being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment*; combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors*; both at home and abroad, each one of whom will have a separate department under his charge.

IV. *Freedom from Deceit*; by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression*. While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. BEN: PERLEY POORE.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,

142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO.,

114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (worked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " Baltimore to Richmond, 7 00
" " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore
STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.

April 11, 1849.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address
VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849. 3t45

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,

IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

**Railroad Car Manufacturer's
Furnishing Store.**
F. S. & S. A. MARTINE,
IMPORTERS AND MANUFACTURERS OF
**RAILROAD CAR &
CARRIAGE LININGS,**
PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.
3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Buntlings

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

J. A. Burdett,
BLACKSMITH,
No. 176 Chambers street,
(Between Greenwich and Washington.)
NEW YORK.

Quarry Sledges and Hammers, constantly on hand
and made to order, & warranted. Forger or all kinds
of Ship, Steamboat and Bridge Work. Also, Forging to
Draft or Pattern.
Screw Bolts, Dock Bolts and Spikes. 1m45

To Engineers and Surveyors.
E. BROWN AND SON Mathematical Inst. ma-
kers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
A Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. Burr Hewson, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.
500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by
COLLINS, VOSE & CO.,
159 South St.
New York, November 17, 1849. 1m46

Railroad Iron.
THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.
COLLINS, VOSE & CO.,
159 South St.
New York, November 17, 1849.

Railroad Iron.
1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
580 " " 53 " "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.
They offer also to import and contract to deliver
ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc. by
JOHN A. ROEBLING, *Civil Engineer*,
Pittsburgh, Pa.

These Ropes are now in successful operation on the
planes of the Portage railroad in Pennsylvania, on the
Public Slips, on Ferries, and in Mines. The first rope
put upon Plane No. 3, Portage railroad, has now run
four seasons, and is still in good condition.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms. ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent*.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes 1847 be had at factory prices, of
Erastus Corning & Co Albany; Merrill & Co., New
York; E. Pratt & Br. 1st, Es. Street, Md

**LAP—WELDED
WROUGHT IRON TUBES**

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron. THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Bol-
ter rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. J. F. WINSLOW, *President*
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phœnix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.**FOR SALE,**

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catactin " " "
250 " Chikiswalungo " " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x 1/4 Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler* and *Flue Iron* from the mills of *Edge & Hilles* in *Delaware*, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/4 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the *Caledonian Tube Company*, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover Iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Pudding Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the *New-Jersey Iron Company*, are prepared to execute orders for the different kinds and sizes of iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.

100 " No. 2 do. do. do.

300 " Nos. 2 & 3 Forge do. do.

100 " No. 2 Glendon do. do.

140 " Nos. 2 & 3 Lehigh Crane do do.

100 " No. 1 Pompton Charcoal do.

100 " New-Jersey Blooms

50 " New-Jersey Faggoting Iron, for shafts

Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.

Do do Rounds and Squares, 1/2 to 3 inch.

Rounds and Squares, 3-16 to 1 inch.

Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.

Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.

Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS'**CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes. German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/4 to 6 inches in width, and of any thickness required; large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.**The Union India Rubber Company,**

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,

NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Piano Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheetting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattress Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with all new applications of the *Patent Rubber*, which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

* * * All orders for special articles to be manufactured, should be accompanied with full descriptions and drawings.

October 20, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

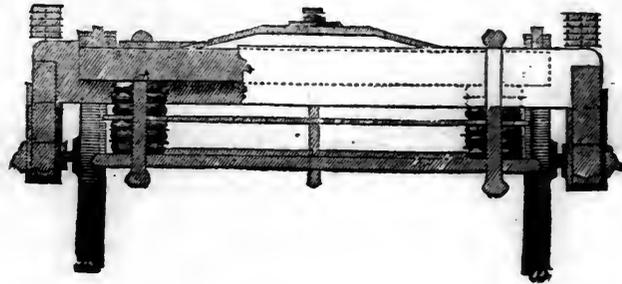
Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.

This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationery Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 99 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are **G. M. KNEVITT,** 33 Broadway, N. York, General Agent for the U. S.; and **JAS. LEE & Co.,** 18 India Wharf, Boston. **JOHN THORNLEY,** Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, **JOSEPH P. PIRSSON,** Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: **Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burr, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.**

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets, Philadelphia.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

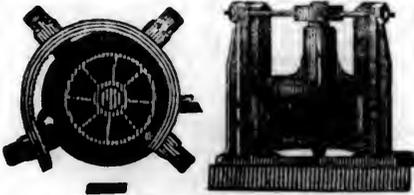
THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. **M. M. White, Agent,**
au7f No. 74 Broadway, New York.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

A. T.

ENGINE AND CAR
WORKS.

DAVENPORT & BRIDGES,

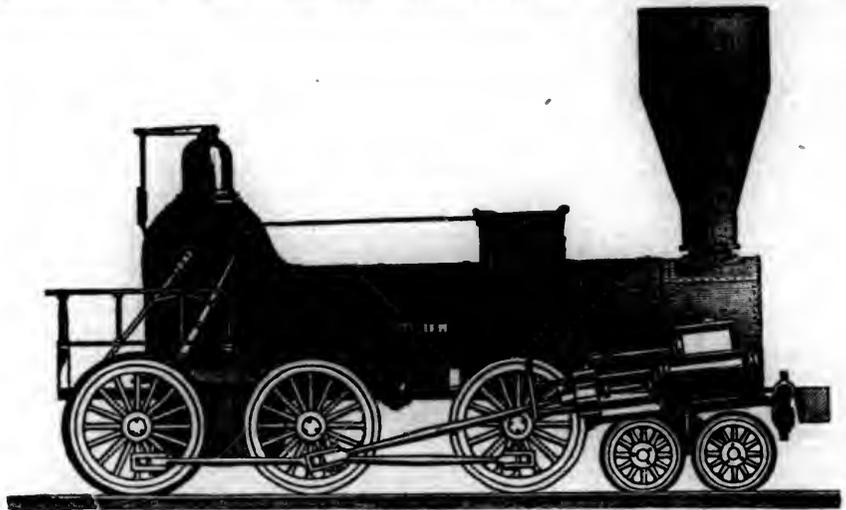
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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 GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., 136 NASSAU ST.

Saturday, November 24, 1849.

TRANSLATION FROM *Traite de la Fabrication du Fer*, BY M. B. VALERIUS. Published at Brussels, 1843.
 Continued from page 721.

Section IV.—MANAGEMENT OF THE FURNACES.

Chapter 4.—Gas Furnaces and Cannon Foundries.

Page 192. *Object of the Chapter.*—In this chapter is given the translation of the unpublished memoir of M. Faber du Fauver upon the gas furnaces of his invention, and a description of the means employed to obtain in the cannon foundries cast iron of the greatest strength. The motives for publishing the paper of M. F. du F. were given in pp. 85 and 89. The other part of this chapter will not be found out of place in this work, when it is considered that gun metal should possess in the highest degree the properties desired in that employed in the principal machinery of a rolling mill; and the proofs to which it is subjected to ascertain its strength and durability, should serve for models and guides to the con-

structors and managers of iron works in their daily investigations of the qualities of wrought and cast iron.

For example, the secret of the manufacture of handsome boiler-plates consists in great measure in a proper choice of pig iron used in making the rolls. Moreover the re-melting of pig iron in reverberatory furnaces may be considered a partial refining, since the object is to modify the composition of the metal.

Still the reader may consider this chapter as not strictly within the plan laid down for the work.

ARTICLE 1.—GAS FURNACES.

193. *Gas Furnaces for Re-melting and Refining Pig Iron; their construction.*—Gas furnaces intended for melting and refining pig iron differ from the ordinary reverberatory furnace heated with solid fuel, in the absence of a grate, the small height of the chimney, and the great length of the passage that serves for the bridge. Another difference is, that the combustion is effected by means of a current of hot air under pressure. The air is heated in the same furnace to a temperature of 482° to 707° F.

Figures 6 and 7 represent a refinery furnace used at Wasseraalengen. The length of this furnace, including the binding plates, is 12 feet 8 inches, Wurttemberg measure.* Its width is 4 feet 8 inches, and its height 5 feet 5 inches. It is anchored and bound with cast iron plates like an ordinary reverberatory furnace. The walls are ten inches thick, and the whole furnace is built of fire brick.

The top of the roof is covered with sand and plaster. A gas box *a*, figs. 6, 7, 8 and 9, placed as shown in figs. 6 and 7, is built into the end of the furnace, and on the same inclination as the bridge passage, which falls two inches in three feet. The opening by which the gas passes into the furnace is 2 feet 6 inches long and 5 inches high. The hot air is delivered by six tweres. These enter the gas box by an opening 2 feet 2 inches long, and 3 inches high. The gas enters the box at *t*; the extremity of the box *g*, is closed by a boiler plate cover, which can be removed when the box needs cleaning.

The furnace is built on a foundation of common brick a foot and a half high. The bridge, which occupies the place of the grate, is three feet long from the box to the furnace bottom, and 2 feet 6 in.

* The Wurttemberg foot is divided into 10 inches, and these into ten parts. It is to the English foot as 2865 : 3043, these numbers being the length of each in parts of a metre.

wide from side-wall to side-wall, which is the width of the furnace. From the top of the bridge to the roof is 5 inches. The bottom is 4 feet 8 inches long, 2 feet 6 inches wide. It is inclined one inch toward the tap hole, *w*, fig. 6, which is 10 inches from the flue bridge. From the tap hole to the flue bridge the bottom rises half an inch. In addition to this, the bottom has a transverse inclination toward the door, to facilitate the flow of the refined metal in tapping the furnace. The bottom is 2½ to 3 inches lower than the fire bridge. It is made of fire brick placed on edge and set with as close a joint as possible. The bricks and mortar are composed of two thirds burned fire clay, and one third not burned.—The brick work is all grouted and pointed with mortar.

The tap hole is one and a half inches wide in the furnace, and two inches near the exterior of the furnace. The passage has a fall of 3 inches. The flue bridge is 6 inches above the bottom; it has the same width as the furnace, and its distance from the roof is 2½ inches. It is 1 foot 6 inches across, and slopes in this distance 4 inches. The flue leads into a chamber, which is 2 feet 7 inches long, 1 foot 3 inches wide, and 2½ feet high, which serves both for a chimney and for the preparative heating stove.

In the upper part of this chamber 2 feet 1 inch from the bottom, is placed a square cast iron box for heating the blast. This box is 2 feet 8 inches long, outside measures, and its sides are 1 inch thick. The bottom and sides are cast in one piece with lugs, to which the top is bolted fast. Through the middle of this box, fig. 10, is a passage 1 foot 8 in. long by 4 inches wide, which forms a part of the base of the chimney. In the interior of the box at one corner is a partition cast with the bottom and sides, which forces the air to go all around the box before escaping.

The cold air is conducted to this box by a round cast iron pipe 2 inches in diameter inside, with a cock to regulate the quantity admitted. A pipe of the same size is screwed to the hole in the top of the semi-circular box, *b*, fig. 8. This is fastened to the box, *a*, by screw bolts, and has an opening 2 feet 3 inches long by 3 inches high. Between the sides of the box, *a*, and the flange by which *b* is bolted to it, is placed a sheet of strong boiler plate iron, armed with six tweres of the same material, luted with fire clay. These tweres go through the box *a*, and extend beyond it about one inch. The pressure of the cold air in the regulator is equal to a column of wa-

same as in the refinery furnace. Nothing is easier than to vary the heat to suit the different stages of the process, as is practised in the ordinary puddling furnace, opening or closing of the registers being all that is required. But M. F. du F. does not follow this practise. He advises the employment of the maximum heat throughout the whole operation.—The amount of hot air should be so regulated that an excess of gas shall always be present in the furnace, otherwise the flame would become oxidating, and the loss would be too great. The flame coming from the chimney indicates whether the proper amt of air is admitted. The same precaution should be observed for every kind of blast furnace, whether for puddling, refining or heating, unless it is desired to oxidate the metal, as is sometimes done with very bad qualities of pig iron.

After having heated the charge in the stove from 30 minutes to an hour, it is removed into the furnace. The pieces of refined metal, being 10 or 12 inches square, are placed on edge along the back wall of the furnace from the bridge to the flue. A bed of rich cinder, obtained from the shingling of the preceding lumps, is then spread over the bottom of the furnace, more especially near the charging door, which is then closed. After about three quarters of an hour, when the iron approaches a white heat, the pieces are turned, which operation is repeated, until they are all uniformly heated. The workman then endeavors to divide the iron with a paddle, taking care not to leave any of the metal attached to the side walls or bottom of the furnace.—After this the iron melts and the cinder rises, and then he works with all his might to mix the whole mass thoroughly. After some minutes the iron begins to solidify, and to rise in clots to the surface of the cinder, which is called "coming to nature."—The endeavor of the workman is to work the iron as quickly as possible, and to reduce it to small lumps, which is necessary to refine it quickly and thoroughly. He stirs the iron from the bridge towards the flue, and vice versa, so that there is always one half of the furnace bottom nearly bare, which becomes properly heated before it is again covered with iron. When the iron is refined it is made into six or eight balls.

During the working of the heat a small jet of air is thrown against the flame, that comes out of the bush of the working door, to set it back and prevent its burning the workman. The labor of puddling is easier than by any other method of firing.

If any portion of the bottom has melted, it is covered with cold cinder, which is melted, and the next heat then charged with cinder as before described. The cinder bottom is renewed, which may be necessary every two to four months, as follows:—The old bottom is all taken out, the furnace is then fired up, and brought nearly to a white heat. Refinery cinder well broken and cleaned is then spread all over the bottom to a depth of one and a half inches; the heat is then increased, and the cinder perfectly melted. A second portion of cinder is then added and melted, but not allowed to become so fluid as the other. Lastly a third portion is added and melted to the consistency of a thick paste. The inequalities are then levelled down with a peel, and the furnace allowed to cool off. It is necessary to take good care of the cinder bottom, and to watch that the iron bottom does not become red hot. If this should happen, it may be corrected by placing a vessel filled with water under it; the evaporation will keep the plates cool. The best weight to charge is found to be 310 lbs. of plate metal and 52 lbs. of mottled pig. Each heat requires about two hours' work. The

loss does not exceed two per cent. A furnace will make from 9½ to 11½ tons of blooms per week.

Trials made on the plan already described give the temperature in the furnace at 2153° Reaum = 2692° Cente. = 4879° Fahr.

The furnace is manned as follows—

1 master puddler who receives 84 cts. per day.	
3 helpers, each	63 " "
3 men, "	42 " "
3 " "	33 " "
3 " "	21 " "

This comprises the men at the hammer and generally all the men, who work for the furnace. The labor amounts to \$33 86 per week = \$3 56 per ton of iron made.

197. Gas Furnaces for Heating.—Construction.—

These furnaces very much resemble the refinery furnaces already described. The width of the bridge, bottom and flue is 2 feet 5 inches, as in the refinery furnace. From the bridge to the roof, under the key brick, is 5 inches. The length of the bridge is 3 feet 6 inches; that of the bottom 4 feet 8 inches; and of the flue 1 foot 3 inches. The distance from the roof to the bottom is from 7 to 8 inches. Height of the flue 2 inches. All the other dimensions are the same as in the refinery furnace. The bottom is made with mortar of raw and burned fire clay mixed. If the bottom wants repairs while the furnace is working, it is done with fire brick pounded to the size of a walnut and cinder. Near the flue is an opening for the flow of the cinder which forms during the heating. The cost of a heating furnace is, for cast and wrought iron work \$247 38, and all other materials and labor \$172 62 = \$420.

198. Working of the Furnace.—The furnace is lighted and brought to a white heat as explained in the account of the refinery furnace. The iron to be charged is then plunged into a thin grout of clay and pulverised cinder, put into the stove, dried and brought to a red heat. It is then charged into the furnace—care being taken that the blooms do not touch each other. When they are heated on one side they are turned, and when they attain an uniform and proper heat, they are drawn. A charge is from 4 to 6 cwt. Half an hour is sufficient to heat them. It is well to keep a bed of fluid cinder in the furnace from 1 to 2 inches thick, by which means the loss is lessened. Should it exceed 2 inches in depth, the furnace should be tapped. A bottom will last from 5 to 8 heats. The loss is from 10 to 12 per cent. The quantity heated per week is about 14½ tons. The temperature, by experiments made at Wasseralfingen is 2480° Reaum. = 3100° Cente. = 6852° Fahr. The furnace is manned by four men, two of whom are paid 42 cents each, and the other two 21 cents each, which is equivalent to 85 cents per ton of iron.

MEMPHIS CONVENTION.

ADDRESS OF LIEUT. MAURY.

Gentlemen—I am under obligations which I cannot express for the honor done me. I am sensible that I am more indebted to your kindness than to any fitness on my own part, for the distinguished position to which you have called me. I must beg that you will let your charity be as broad as your kindness, and with it cover up all my short comings.

For what have we here assembled? It is because the country in its upward and onward progress has arrived at that stage from which increased facilities of communication between the Atlantic and Pacific oceans are required for the great purposes of State. Why am I, an officer of the navy, here present to take part in your deliberations? It is because the people of this great valley, without distinction of party, have assembled here in the persons of their representatives, to deliberate on measures of national defence. It is well known that the acquisition of

California was regarded with no favorable eye by that power, "the sound of whose morning drum encircles the earth, and upon whose flag the sun never sets"—and that in case of a war with that power, should a war unfortunately ever occur, her first effort would be against California. And the only means by which its possessions can be rendered secure in such an emergency, is by the construction of a railroad from some point in this valley to those shores, over which troops and materials can be transported with facility.

In consequence of the use of railroads and other improvements and inventions of the age, the whole system of national defence as hitherto pursued by this government, has been brought to a stand still.—The item in the annual navy appropriation bill for the gradual increase of the navy, and on which many millions of dollars have been expended, has ceased to find a place in the navy estimates, because the inventions and improvements to which I have alluded, have exploded the plan of increasing the navy according to our former notions. For the same reasons the construction of railroads along the Atlantic seaboard has, in a great measure, put an end to the drafts upon the treasury for lining the coast with forts and castles. In contemplating the changes which the introduction of steam on the ocean and of railroads on the land will make in the system of warfare, we, as military men, are almost ready to exclaim with the Moor in the play, "Othello's occupation's gone." In the first war, in which this country shall be required to put forth her energies, it will be found that railroads are the strongest fortifications, and the magnetic telegraph the most powerful battery that has ever been brought into play in military operations. By treaty with Mexico this nation is bound to prevent Indian depredations upon that country, and this great national railway to the Pacific would greatly facilitate the government of the United States in preserving the public faith as pledged by treaty stipulation. We build fortifications, and they remain mere piles of stones and mortar, of which the public can make no practical use until we are overtaken by the emergencies of war. And what, though this railroad to the Pacific in time of peace, should be of great advantage in promoting the welfare of the Union, in subserving the interests of commerce, and in advancing the prosperity of the people, should it on this account be regarded the less as a fortification?

Gentlemen have assembled here to consider of this measure with a single eye to the good of the country, of the whole country, and nothing but the country; party spirit, sectional feeling and local prejudice, I am assured from the character of the delegates here present, are to have no part in the proceedings of this convention. We are not in possession of information sufficient to justify us in saying at present where the railroad shall begin, what route it shall take, or where it shall end. We want it to take the best route that full and complete examinations and surveys shall point out. We want it to begin and we want it to end at those points which shall be found most convenient for the great national objects and ends for which it shall be constructed. If after such examinations and explorations it shall be found that St. Louis is the best point for the eastern terminus, let it begin there—if Memphis let it begin here—or if at any other point between the two, or any other point north or south of both, in the name of the people of the United States, and in consideration of their national destinies, there let it begin.

It has been urged as an objection to this railroad that it cannot support itself. Pray does the navy support itself? Do our fortifications support themselves and make dividends? Where is the work connected with the national defences of these United States that supports itself or makes dividends? If those who take this view expect dividends of cent per cent, wrung from passengers and merchandise to be transported over this national work, I hope it never will make dividends. It will bring forth fruit far more valuable than it is possible for the largest dividends ever to be. It will be to the immense region of country between this and the Pacific ocean what the Mississippi is to this valley. It will spread out its branches to the North and the South. It will enrich the people and increase the capacities of the country to sustain population, and it will give to this government the power to tax and to raise revenue from the wealth, and from that increased popula-

tion and its posterity forever. These are some of the peaceful fruits—*dividends* if you please—of this great national defence.

The articles besides troops and munitions of war which are to be transported over this road, are that class known in railroad tariffs as the light and bulky, or the more valuable articles of merchandise. We may expect branch roads to be built by private enterprise from it into Northern Mexico, and they will extend down into the heart of the country until the expense of transportation by the iron horse from the north, shall meet on equal terms with the cargoes brought over the mountains on the backs of mules and asses from the ports of Mexico. All the Mexicans above this line will be supplied with foreign merchandise over this railway. They will amount to several millions of dollars; and this country will have the monopoly of that commerce. We may expect each Mexican to consume of the goods of Lowell and other "Yankee nations," at the least, two or three dollars per head; and we shall receive and return therefor the produce of the Mexican mines. But there are other articles of commerce—such as the great agricultural products of this country, which cannot afford to pay the expenses of transportation from one end of this road to the other. I have examined the tariffs of freights on merchandise as per fifty odd railroads in this country. Merchandise is divided generally by them into three classes. The first class consists of those heavy articles, such as coal and iron, which require the rudest open cars for transportation, which do not require houses for storage, and which are not liable to loss or injury by weather on the road.

The second class consists of such articles as grain, provisions, &c.; and the third class consists of light and bulky articles, which are charged by measurement and not by weight, and which consists of the most valuable articles of commerce, such as cloths and manufactured goods. The average rate of freight charged by these fifteen odd roads on the first and cheapest class of these articles is four and a half cents per ton per mile, and the average rate on the third and dearest class is eight cents per ton per mile. Now suppose that we take but one third from the cheapest class, and say that this railroad which has no dividends to make, can afford to carry all articles of merchandise at the rate of three cents per ton per mile, the distance of the length of the road by an air line will be about 1500 nautical miles, which increased by necessary *detour*, would give us the length of the road say 2000 statute miles, which at three cents per ton per mile, would require a toll of \$6 per ton from one end of the road to the other. I appeal then to the gentlemen present from Illinois, Missouri, Ohio, Kentucky, Tennessee and the Southern States, and ask if their hemp, their wheat or their flour, their pork and beef, their tobacco or corn, their cotton, their sugar or their rice, if any one of these articles can afford to pay \$60 per ton as a part of the expenses only of finding a market among the six hundred millions of people who inhabit the counties washed by the Pacific? To find a market there for any one of these articles requires the construction of a commercial thoroughfare across the isthmus which joins the two Americas.—It can be shown that all these articles can pay the expenses of a sea voyage to the Isthmus of Panama, and a toll of ten cents per ton per mile to a railroad there, and be delivered in the markets of Peru is less than one third the time, and at one half the cost that it now takes by the way of Cape Horn.

Let us for a moment consider the commercial advantages which we derive from the course of our rivers and from the geographical position of that wonderful ocean basin, which is composed of the Gulf of Mexico and the Caribbean sea.—They are in truth the Mediterranean of the New World. A river which runs north or south, crosses parallels of latitude and consequently passes through various climates; therefore a variety of productions is to be found along its banks, and assortments of produce are delivered at its mouth, to be borne across the ocean by the wings of commerce. The Mississippi river crosses more parallels of latitude than any river in the world, and therefore we find in its valleys a greater variety of agricultural staples than on the banks of any other river. We have wheat and corn, hemp and tobacco, provisions, cotton, sugar and rice, with a vast variety of articles of minor importance. A river which runs east or west crosses no parallels of

latitude; the same climate which exists at its mouth is found at its source, and there is no variety of agricultural productions along its banks. In this fact we see one of the great sources of commerce and wealth afforded by the Mississippi river. A sea commercially speaking, is important in proportion to the extent and climate of the back country by which it is drained. And in this point of view, there is no part of the wide ocean which is comparable to this Mediterranean sea in our midst. It is midway between North and South America; rivers that run from the northern and southern hemisphere empty into it; in their course they cross seventy degrees of latitude, and embrace all the agricultural climates of the world. The back country, drained by these rivers, is greater in extent than all the back country that is drained into the Mediterranean of the old world, added to all the country which is drained from Europe into the Atlantic, and all that is drained from India into the Indian ocean. There, their rivers, are all in the same hemisphere, and they have but one harvest in the year. Here our rivers rise in both hemispheres, and we may have a harvest every six months. There they have to sail 20,000 miles to exchange the products of the river basin for those of another in a different climate. Here we can do it within a distance of 2,000 miles. There, it is as much as a ship can do to make one voyage in a year between their remote river basins. In the same time here, one ship may make ten voyages between our remote river basins.

What is it that has caused the nations of Europe to attach so much value and importance to the commerce of the Indies? It is because the river basins there, lie in latitudes which are not found in Europe, and which therefore supply commerce with staples that are not produced there. All the supplies that are to be found in the basins of Europe and of India, with the exception of mere spices, abound in far greater profusion in the magnificent system of the New World. As before stated, this Mediterranean sea is midway between the two Americas; only give us therefore, a commercial highway across this Isthmus, and we make it the commercial centre of the earth. It will then stand midway between Europe and Asia.

As surely as a railway is constructed across the Isthmus, so surely will it lead to the construction of a ship canal. For experience will prove that all the railways that can be constructed across the Isthmus of Panama and Tehuantepec will be incapable of transporting the merchandise which will seek a transit there. With a ship canal, a vessel may sail from Liverpool, to New York, or Charleston, or New Orleans, and entering the trades, may with fair winds and flowing sheets sail the world around and accomplish the voyage in much less time than it is possible to do. Such a commercial thoroughfare will place the Atlantic and the Gulf part of the United States on the way side of commerce, and in the great avenues of trade; and on the return voyage from India, the ports of California will be the halfway house.

Owing to the course which the winds made it necessary for vessels to pursue, Great Britain is nearer than we are by ten days' sail and upwards, to all the foreign markets of the world, except those of the Gulf of Mexico and the Caribbean Sea; notwithstanding this advantage, we, by our superior energy as ship builders and ship sailors, have been coming up with her hand over fist, and the commercial race has now become neck and neck. She is a throat-latch ahead. Only give us this highway across the Isthmus, and we shall turn the corner and at a single bound come out a clear full length ahead. England will be distanced, and will then remain forever under the Yankee stern. A demand for goods takes place in the markets of China—advices are brought over in thirty days by the line of steamers that assume to run between California and that Empire—the magnetic telegraph takes up the intelligence and instantly delivers it at the Atlantic ports and on board the steamer bound for Europe. While that steamer is on the way, the American merchant ships the goods, sends the invoice with the intelligence across the railroad to California, there it is delivered to the mail steamer bound for China, and in a few days reaches his eastern agent.

In the mean time his ship is running down the trades at the rate of eight miles the hour, passes through the Isthmus canal, and reaches her destina-

tion thirty, forty or fifty days before the Englishman can arrive there. Thus we shall have the control of the market for a month before any other nation can send its ships to compete with us. Do you want any greater advantage? Great Britain is aware of this. She well understands the advantages over us which she now enjoys in the voyage around either of the capes. In proof of this I have but to call your attention to the fact that although Great Britain has been making attempt after attempt to discover a northwest passage, and in her efforts has expended life and money without stint, yet she has never once entertained the idea of opening a commercial highway across the Isthmus. She has striven against hope to find a northwest passage, for should a practicable one be discovered there, it would then give her the advantages which a route across the Isthmus would give us. To illustrate the feeling of the English people on this subject, I may be excused for mentioning a circumstance which has come indirectly to my knowledge, and which is this—You, gentlemen, will recollect that the right of way across the Isthmus which has been granted by New Grenada, was first given to a company of Frenchmen. They sent an agent to London to solicit subscriptions to their stock. The reply of the English capitalists was, "No!" "Why?" "Because a commercial thoroughfare across that Isthmus will put the Americans on the wayside of the great channels of trade, and will give advantages over us under which there will be no longer competition between us and them." It was then proposed to incorporate a feature in their charter by which double tolls could be exacted on all American merchandise. With that drawback they were afraid to enter the list there with us.

I regard the route across the Isthmus of Panama as the link which is required to make complete the great railway chain from the valley to the Pacific Ocean. It is near the great circle route from the western coast of South America to China. It will bring all the travel between those shores to California and China through this valley and across that railway. It will bring New Orleans as near to the markets of six millions of people in Peru and other Spanish American States, as New York now is to those of the Mediterranean.

In contemplating the commercial advantages of this Mediterranean Sea of ours, and in attempting to draw a picture of the elements of power and greatness which are entered there, the brain becomes bewildered, and the mind dazzled with the immensity of the prospect.

Lieut. Maury was applauded throughout his speech, and sat down amid the tumultuous cheers of the audience.

COAL MINE IN RHODE ISLAND.

The Bristol Phenix reports that a vein of anthracite coal of good quality has been discovered in that town convenient to several manufacturing establishments operated by steam. The discovery was made by Messrs. O. M. Dimon & Co. in digging a well for the supply of water to a new sugar refinery in Thomas street. The following is the account given by the Phenix of the discovery—

About 14 feet below the surface, they struck a bed of coal, and have continued their operation to about 9 feet lower and find as yet no signs of reaching the bottom of the ledge. We are aware how much is usually said on making discoveries of this kind, above what results prove to be real; and therefore we mean to express ourselves with all due caution. As to the quality of the coal that has been thrown out, we think there can be no mistake. It has been tested by some dozen of our citizens and found to burn freely in close stoves. It leaves no cinders, and deposits ashes of a greyish color. The mine having but just been opened, it has been visited as yet by no scientific miner. This will soon be done, and the extent of its locality explored. There is every indication on that we have struck upon a bed extending almost indefinitely to the North and the South, and which lies near the surface. It would be premature to suffer our thoughts and our pen to take wing as to what may be the results of this providential discovery. That we may have found coal good for all manufactory purposes, promising abundance and easy access, in the heart of our town—at the ve-

ry door of the steam engine, there can be no rational doubt. And there we leave the subject for the present in the hands of the operators and such professional men as may be tempted to test the locality, promising our readers that in due time they shall hear from us again, when future developments will authorize us to speak.

Since the above was in type, several lumps weighing from 300 to 500 pounds have been taken from the well, and the quality is considered to be equal to the coal from Pennsylvania.

State Tariff Convention.

At one o'clock, P.M., the convention was called to order by Col. Joseph Jackson, of Morris, who nominated Peter Cooper, Esq. of the Trenton Iron Company as President of the convention; which nomination was unanimously concurred in, and Mr. Cooper took his seat in the Chair.

Col. Joseph Jackson, of Morris, William P. Robertson, Esq., of Warren, and Thomas H. Richards, Esq., of Burlington, were then appointed Vice Presidents.

Messrs. William Green, Jr. of Morris, and Abraham S. Hewitt, of Trenton, were appointed Secretaries.

Messrs. Edward Post, of Sussex, William Green, Jr., of Morris, Peter M. Ryerson, of Passaic, Thos. H. Richards, of Burlington, Charles Scranton, of Warren, and Abraham S. Hewitt, of Mercer, were appointed a committee on resolutions.

On motion of Mr. Edwin Post, the convention then adjourned till 3 o'clock, P.M.

Three o'clock—the convention re-assembled.

Mr. Post, from the committee to draft resolutions, reported the following:

Resolved, That it is the deliberate sense of this convention, composed of men of all parties, and from all sections of the State, that the tariff of 1846 has now had a fair trial, and that while some of its features are unobjectionable, its operation has been very injudicious to all the great manufacturing interests of the state; and the agricultural classes, in the absence of European famine, have found the uncertain foreign demand a most meagre substitute for the steady cash market at home.

Resolved, That the next Congress of the United States will be called upon to decide a question of great magnitude to New Jersey; whether the tariff shall be modified in some of its most objectionable features, or whether the manufactories of this State shall remain closed, and the most serious injury be done to all its branches of protective industry.

Resolved, Therefore, that it is the solemn and paramount duty of the members of Congress from this State to urge as the united voice of New Jersey, such modifications of the tariff as shall again put our machinery in motion, and afford full and profitable employment to the operatives who are now idle, and a home market for the surplus produce of the farmer.

Resolved, That we do not recommend an indiscriminate and hasty repeal of the tariff of 1846, but that our members of Congress are as much bound to contend for such of its provisions as may have been found to operate advantageously as against those which have paralyzed the strong arm of labor.

Resolved, That we do not ask for such duties as shall prohibit the introduction of foreign merchandise—but such rates merely as will enable us to enter into fair competition with foreign manufacturers, without reducing the wages of our operatives to the European standard; and that we are then ready for the contest between American industry, skill and enterprise, based upon well paid, intelligent labor against superior European capital, working with half-fed and half clothed operatives, ignorant of the true value of their toil, because they have never received its just reward.

Resolved, That a com. of corres. consisting of five members, be appointed by the chair, whose duty it shall be, to set forth the issue between the modification of the tariff, and the permanent suspension of our manufacturing establishments—with power to add to their number for the purpose of circulating petitions, praying Congress for suitable immediate action in the premises; for collecting information and statistics in regard to the industrial interest of the State; and that they cause the same to be laid before Congress at the earliest practicable period, at its next session.

Resolved, That Messrs. Wm. P. Robertson, Adam

Lee, Peter Cooper, and Edwin Post, be appointed delegates on behalf of the State of New Jersey to attend the Tariff Convention to be held at Pittsburg, on the 21st inst., and that they have power to add to their number, and appoint substitutes in case of their inability to attend.

On motion of Mr. Post, the resolutions were considered separately, and after some discussion by Messrs. Hewitt, Jackson, Perdicaris and the President, were unanimously adopted.

The Chairman announced the following gentlemen as the Committee of Correspondence: Messrs. Edwin Post, Thomas H. Richards, William Green, Jr., Abraham S. Hewitt, and John Travers.

On motion of Mr. Post, the President of the convention, Mr. Cooper, was added to the committee.

Mr. C. C. Haven offered a resolution in favor of the protection of *voluntary* labor; but it was objected to as likely to operate against the objects of the convention, whereupon the mover withdrew it.

Mr. Jackson moved that the proceedings of the convention be published in the papers of this state, and of New York and Philadelphia; which was agreed to.

The convention then adjourned.

Pacific Railroad.

CHAMBER OF COMMERCE,
New York, Nov. 5, 1849.

To Messrs. William Ingalls, E. H. Derby, James C. Dunn, P. P. F. Degrand, O. D. Ashley, Committee, Boston:

Gentlemen—Your favor of the 10th September addressed to the Chamber of Commerce, was referred by that body to the committee previously charged with the consideration of the subject of "Whitney's railroad." It accordingly becomes our duty to acknowledge your favor.

When asking the chamber to explain how the use of the road can be obtained for the present generation by Whitney's plan, you say—"It proposes first to build ten miles of road, and then, by the sales of the lands, to create the means to build the next ten miles." Allow us to remark that the plan proposes to sell the lands to *reimburse* the cost of the first ten miles. There is no suggestion made for *waiting* until these sales shall create the means for building the next ten miles. You then assume that it will take one year to build ten miles—one year to sell the lands—and then three years more to get the money, and that thus, at the end of five years the contractor would be ready to commence the second section of ten miles; and we are quite willing to admit at once, that, *at this rate*, it would indeed require a long period you name to complete 1700 miles of road.

We had supposed, however, after the first ten miles had been completed, under the sanction of an act of Congress—with the confidence it would beget, and the advantages it would confer, that the lands along the route would readily sell for much more than the cost of the road; that emigration would rapidly follow, if not accompany its progress, as labor would be in demand in the first instance, and provisions be required in the next. The work would thus turnish to a great extent, the means for its own prosecution; for the sale of the products of the soil would increase the means of the emigrants, and the settlements would add materially to the value of the lands.

In this way the long delay in selling the lands and getting the proceeds, which you appear to apprehend, we should hope may not be found to exist;—but that provision would thus be furnished to advance the road far more rapidly than you seem to think possible.

This committee having submitted their views in opposition to the other modes that were suggested, and stated their reasons for preferring the Lake Michigan route, believed that the plan of selling the public lands along the road, with the stimulus that would be afforded to emigration, and the efficient aid to be derived therefrom, presented the only available means for the accomplishment of the object;—and was therefore well worth the experiment. With the expression of our regrets, therefore, for the difference of opinion that exists between us as to the best mode of undertaking this truly national work, and without feeling too sanguine of a speedy result, we will venture to express the hope that the important object in view may be found worthy of the trial we

thought it our duty to recommend, and which has already received the sanction of the chamber.

We remain, very respectfully,
Your obedient servants,

Signed,
JAMES D. OGDEN,
CHAS. KING,
CHAS. A. DAVIS,
L. BIERWIRTH,
O. SLATE, Jr. } Committee.

CHAMBER OF COMMERCE,
New York, 6th Nov., 1849.

At a regular meeting of the chamber, held this day, the original document, of which the foregoing is a copy, was presented and read, and the same received the sanction of this chamber.

Attest: M. MAURY, Sec'y.

High and Low Fares on our Railroads.
The Result as it is.

There has been some discussion in the railroad community, as to the effect of high and low fares. During the early part of the session, when business and traveling were checked by the cholera and scarcity of money, the impression began to prevail that the rates of fare adopted on our Northern lines were altogether too low, and injuriously affected the income of the railway companies, and we have shared in the doubts expressed by stockholders; but since the money market has improved, and the cholera panic passed away, the revival and rapid increase of business are creating different impressions. Within the past year the following railway companies have reduced their rates about 20 to 25 per cent, viz: the Boston and Maine, the Fitchburg, and the Auburn and Rochester,—the first two carry passengers at two cents, and the last at rather less than two and a half cents a mile. The receipts of these companies for October, have been nearly as follows:—

	Oct., 1849.	Oct., 1848.	Inc.
Boston and Maine.....	\$51,000	\$42,000	\$9,000
Fitchburg.....	50,000	38,000	12,000
Auburn and Rochester....	61,000	42,000	19,000

These lines, with such an income continued, must be earning ten per cent, and cannot reasonably desire more favorable results, aided, as they must be, by the natural growth of trade for the future. Low prices stimulate trade, mar villages, travel, and the growth of both villages and seaports. A few years since there were those who considered it a wise policy in the Boston and Lowell Railroad Company to charge four cents per passenger a mile, but since 1844 that company has about doubled its income—while reducing its charges from four to two cents per mile. It is now one of the lowest in its charges, and among the most successful in the show of its results—*Boston Courier.*

We publish the following extract from a letter of Mr. Gadsden, of South Carolina, to the Committee of the Memphis Convention:

The projected road from the valley of the Mississippi to the Pacific will be the life of the American railway system; and the responsibility for the present postponing or consummating the noble enterprise rests with the two conventions to be held at St. Louis and Memphis.

If local interests, unimagined rival routes, or sectional jealousies are not permitted to mar the project; if harmony of action, on a common design, is had among the wiser heads who will confer on those occasions; if the projected railroad from Lake Michigan to Oregon, from St. Louis, or Natchez to San Francisco or San Diego, (whatever just divisions of opinion may exist as to the relative merits of each route) are permitted to be absorbed in the more harmonious approval of a railway from the valley of the Mississippi to the Pacific, you may approach the assembled wisdom at Washington with a memorial strongly influencing their action on the initiatory steps which may lead to consummation. The project is too grand, its designs too important to the varied interests of the whole Union to be frittered away in sectional and local conflicts on routes, each party more emulous of the improvement of their state or city than in accomplishing the greater object of extending the social, commercial and political relations of the Atlantic with the Pacific States of the Union.

The only action, it seems to me, therefore, fruitful of favorable results, which can be had at your respective conventions, would be a joint memorial to Congress for a thorough scientific exploration of all the practical routes of railroads from the Mississippi to the Pacific. Scientific reconnaissance, the theodolite, the level, and the chain, can alone shed light on the comparatively value and productiveness of the country through which the road is to pass; of the inequalities of the ground, and the mountain elevation which interpose obstacles to cheap construction, and of the distances which will have to be overcome. Impartial comparison, after careful examination and survey, can alone decide the merits of each route. And, whether that decision be the most favorable to the lake, the middle, or the southern, so let science and knowledge be the arbiters to conciliate conflicting interests in united action on the direction of a railway which will most certainly accomplish all the objects of a union between the ocean frontiers of the Atlantic and Pacific.

Respectfully,

JAMES GADSDEN.

To J. T. Trezvant, Esq., and Committee of the Memphis Convention.

Pennsylvania.

Philadelphia and Reading Railroad Company—Officers for 1849.—President, John Tucker; Managers, Samuel Norris, John Towne, William R. Lajie, Hugh Campbell, Christopher Lower, of Orwigsburg; Mathias S. Richards, of Reading; Secretary and Treasurer, Samuel Bradford. G. A. Nichols, Engineer and general superintendent, Reading.

Pennsylvania Railroad—Directors for 1849.—Samuel V. Merrick, George W. Carpenter, Robert F. Stockton, Christian E. Spangler, David S. Brown, Thomas T. Lee, Stephen Colwell, Wm. C. Patterson.

By the Mayor, Aldermen and citizens of Philadelphia John Wisgaud, Morris L. Hollowell, Geo. Howell.

By the Commissioners of the county of Allegheny, William Wilkins, John H. Shomberger. Geo. N. Bacon, Treasurer.

J. Edgar Thompson, Chief Engineer.

Cumberland Valley Railroad.—The Chambersburg Intelligencer says that the Cumberland Valley railroad is to be relaid in the coming spring with a new and substantial T rail, and adds—

By the time the road is relaid, the railroad from York to Harrisburgh (which connects with the Cumberland Valley railroad at this end of the Harrisburgh bridge) will be completed, and we will then have direct communication by railroad from here to Baltimore, and our merchants and farmers will have a choice of markets. The time, too, necessary to make the trip, will be so much shortened as to ensure almost all the travel and freight to the railroad.

Ohio.

At a meeting held at the Court House last evening, in relation to a railroad from this place to Hillsborough, Gen. Walke having been called to the chair, and Calvin Shaw appointed Secretary, on motion of Thos. T. Scott, Esq., it was

Resolved, That a committee of three be appointed to draft and report resolutions to an adjourned meeting, and that a committee be also appointed to confer with the Directors of the Cincinnati and Beleppe railroad.

Thos. T. Scott, Esq., and Drs. Davis and Trimble were appointed on the first committee, and Judge Reeves and Morris and Messrs Welsh, Woodbridge McDougal, Silvey and Gen. Rowe, on the last.—*Chillicothe Adv.*

Columbus and Xenia Railroad.

"We are gratified in being able to announce that the most active measures are being employed to complete the above railroad. A commencement will be made on Monday next to lay the track at this end of the road, and a sufficient number of men are employed to secure at least three-fourths of a mile per day being laid. The entire road from Xenia to this place will be completed by the first of February, and sooner if the weather and other influences be favorable, but not as early as the first of

January it is now believed. The most improved description of T rails will be used which are now stacked upon the ground opposite P. Hayden's Factory. Those bars are 18 feet long, and weigh each about 400 pounds, and a very large portion of them are ready to fit down to the ties, having been prepared in England at the establishment from whence they were imported. We understand that the rails were delivered at Montreal at a cost of one and a half cents per pound, which, with the transportation to Columbus, will bring it up to a little upwards of three cents per pound.

An engine was brought on the ground this afternoon from Cincinnati, which will be used to transport the iron from the banks of the canal in this city to the point where it is required to be laid down. The bars will be fastened to the ties at the joints where they meet, by an entirely new process, termed chairs, which simply consist of a plate of wrought iron half an inch thick, 6 by 7 broad, being firmly attached to the ties by four half inch bolts, the two outside centres of which are turned up, forming a semi-circle precisely the dimensions of the two ends of the bars—in addition to this, bolts will be driven through the rails into the ties on each side at a distance of three feet asunder.

The grade of this road throughout the entire route is almost entirely level, and nearly in a straight line, and in this respect has not a rival in the United States. When completed this is calculated to be one of the most perfect railroads in the Union enabling the locomotives to travel at the rate of 30 miles an hour, conveying a train of cars with the utmost facility.—*Ohio Statesman.*

Virginia.

The Farmville Republican publishes the proceedings of a meeting of the people of Farmville and other citizens of Prince Edward, on the subject of the extension of the South Side railroad, from Petersburg to Farmville. Resolutions were adopted in favor of the measure, supported by speeches from Messrs H. E. Watkins, W. C. Flournoy, S. C. Anderson, and Dr. Leach. A committee was appointed to represent the Farmville meeting at a conference with a committee of Petersburg, and was authorized to assure that committee that in the opinion of the meeting one hundred thousand dollars can be raised by the Farmville community for the accomplishment of the desired extension.

We learn from the Norfolk Herald that the company who purchased the old Portsmouth and Welden railroad, are determined to push the work thro' at the earliest day. The road is already under way the sills are laid to Carsville, and a contract made for extending them to Franklin, (seven miles further,) within the next 25 days. Iron is contracted for, to be sent from England direct to Norfolk, and the first cargo is expected within the next six weeks.

Indiana.

Indianapolis and Peru Railroad.—The State Journal learns that the work on this important road is progressing as rapidly as was anticipated by its friends. Stock has been taken to the amount of \$135,000, and the citizens along the whole line are determined to greatly increase that amount. Portions of the road between Peru and Noblesville have been let to responsible men, who are to receive their pay in the stock of the company. In a short time the whole of the grading and bridging between these places will be let out in the same way.

Wabash and Erie Canal.—The first boats on this canal arrived at Terre Haute on the 25th ult. The Express rightly notices the fact as a "new era in the business and commercial prosperity of Terre Haute." There were dinners, speeches and the roar of cannon, to mark the great occasion. The Express says:

We congratulate the country, particularly the Wabash valley, upon the bright prospects before them, and we have to say to the farming classes, attend well to your soil and you will soon be the most wealthy yeomanry of the Union. To our friends south, we promise all our aid in sending them too, the benefits we hope soon to enjoy, and

when the waters of the lake mingle with the beautiful Ohio, we hope to meet you at some point upon the canal line to celebrate an achievement which promises so much for our people.

South Carolina.

Columbia and Greenville Railroad.—A meeting in favor of the railroad was held at Greenville on Tuesday last. Judge O'Neill, the President of the company, delivered an address, in the course of which he stated that the construction of the road was going on rapidly. By January, the road would be finished from Columbia to the crossing of Broad river, some 26 miles, and by the fourth of July next, to Newberry C. H. 48 miles. By the 3th of July next, all the grading to Anderson C. H. would be completed. The iron for the entire road to Anderson is procured, and enough for a portion of the road from Brown's to Greenville. The road and branches would be completed for about \$1,200,000—the cheapest road in the United States.

Illinois.

Railroad from Rock Island to Peru.

The citizens of Rock Island and vicinity, embracing a portion of Iowa, are agitating the construction of a railroad from the Mississippi river at Rock Island to Peru, the southern terminus of the Illinois Canal. A public meeting was held at the former place on the 24th ult., to consider this subject, at which Alfred Sanders, Esq., of Davenport, Iowa, was chosen President, and A. M. Hubbard and Dr. S. T. Hume, of Moline, and Mr. Walker, of Henry county, Vice Presidents; and Fernando Jones, of Rock Island Secretary. The meeting was addressed by Hon. J. P. Cook, of Cedar co., Iowa, Messrs. Fulton and Price, of Davenport, and Messrs. Osborne, Norris, and Waite of Rock Island, and also by Col. J. L. Sullivan, President of the Central O. railroad. A good degree of spirit was manifested at the meeting, and the addresses, particularly that of Col. Sullivan, were received with much applause. Various committees were appointed to procure funds for a preliminary survey, to obtain statistical information, etc. etc.

The distance from Rock Island to Peru is about 80 miles, and the route, as usual in the west, is very favorable for railway construction. It is estimated that \$3,500 per mile will prepare the road for the iron. This estimate may be somewhat below the mark, but the road could undoubtedly be constructed at a very low cost.

Railroads running west from the great lakes may be now regarded as of prime necessity, as opening outlets in a proper direction for western produce.—the value of which in new settlements, depends upon the facility with which it can be got to a market. In reference to the probable effect of this road upon the value of produce, we copy the following from the Rock Island Advertiser:

It is plain that whatever cost of transportation is paid by the exporters of our produce, must come, eventually, from the pockets of the farmers. If not paid in the discount upon the price of grain, it must be paid in the increased price of the articles of merchandise bought in exchange. It is frequently the case that when wheat commands 75 to 80 cts. in St. Louis, it is worth but 50 cents here, owing to the cost of transportation over the Lower Rapids.—The cost of transporting wheat from Rock Island to Peru by railroad will not exceed 3 cents per bushel. It can then be taken down the Illinois river to St. Louis, at greatly reduced rates, the rapids being avoided; or it can be taken on other railroads which will then connect Peru with the eastern cities, and thus go directly to New York and Philadelphia. In this way will a market be opened directly with the east and with St. Louis, the competition in which together with the decreased rates of transportation,

will raise the price of wheat in Scott county, at least fifteen cents on the bushel.

Tennessee.

Mr. Trousdale, the Governor of Tennessee, among other important things in his message to the legislature, says that the present common school system of that state is inefficient, owing to the limited amount of the annual appropriation. He recommends that it be largely increased, for which purpose he recommends that taxation be resorted to. He recommends that the aid of the state finances be extended to the four great railroads which now occupy public attention there, viz: the proposed railway from Virginia line to Knoxville—the Tennessee and Georgia road, already in progress of construction connecting Knoxville with the Georgia road, and the Nashville and Chattanooga, in rapid progress of construction, connecting Nashville with Chattanooga and that portion of the Mobile and the Ohio railroad proposed to be extended from south to north through the Western district of Tennessee.

Alabama.

Selma and Tennessee Railroad.

This work appears to be going ahead very rapidly, and is receiving a most liberal support from those immediately interested in it.

The Greensboro' Beacon gives some interesting facts in relation to the work in Dallas. Two gentlemen, Messrs. Weaver & Goldsby, subscribed each \$20,000 on the spot, and pledged themselves to increase their subscriptions to \$50,000 each. A delegate to the Selma convention from Shelby—Mr. McClannahan—who has extensive iron works, offered to take \$25,000, payable in iron. He also pledged in the same way, another gentleman in that county for 10,000. An individual in Benton, also extensively engaged in iron works, pledged his profits for five years as a subscription.

At a meeting recently held in Perry county, the following resolution, among others, was passed:

Resolved, That we believe the road, as proposed to be constructed by the Alabama and Tennessee railroad company, is entitled to the fund donation by Congress and accepted by this State, to promote the connection of the navigable waters of the Mobile bay with the Tennessee river; and that we respectfully petition the legislature to appropriate the same accordingly at its next session.

It will be seen from the following resolution passed at a recent railroad meeting held at Mobile, that an effort will be made to obtain some aid from the general government in behalf of the railroads in Alabama:

Resolved, That we do most earnestly urge upon the general assembly of Alabama the propriety and necessity of memorializing the Congress of the United States upon the subject of the public lands held by the U. States within our State—that the vast mass of these lands so held operate as a burden upon us and a great grievance—that they retard and prevent our prosperity—that they should be disposed of as quickly as possible; and could not, in our opinion, be better disposed of and applied than in works of internal improvement within our state, of which we stand in great need.

The following named gentlemen have been appointed Directors of the Alabama and Tennessee railroad company for the purpose of temporary organization:

- Edmund King, Shelby county,
- P. G. Weaver, F. S. Beeton,
- T. B. Goldsby, John Mitchell,
- J. W. Lapsley, John Connolly,
- W. Plattenburg, G. C. Phillips,

Kentucky

Louisville and Frankfort Railroad.—The Louisville Journal says—"Thos. Smith, Esq., president of the Louisville and Frankfort railroad company,

has succeeded in selling \$120,000 of our city bonds in New York at 87½ cents on the dollar. He has also contracted for 3,500 tons of railroad iron of first quality, at \$30 per ton, the company paying duty and freight from New York. This iron is sufficient to complete the road to Frankfort.

Georgia.

Burke County Railroad.—We learn that an election was held recently, at Waynesboro' for directors of the Waynesboro' railroad. The following gentlemen were elected—

Burke County—Mr. Douse, and Mr. John Poythress.

Savannah—A. R. Lawton, James P. Scriven, J. Stoddard, Wm. Duncan and C. F. Mills.

Mr. Alexander R. Lawton was elected president of the company.

Vermont.

Vermont Valley Railroad.—At a meeting of the stockholders held on the 11th inst., at Brattleboro', the following directors were unanimously chosen—Horace Brooks, New York; Franklin Evans, Boston; F. R. Griffin, Guilford, Ct.; Dr. C. Chapin, Brattleboro'; P. R. Chandler, Putney, Vt.; Hugh H. Henry, Chester, Vt.; A. Crocker, Fitchburg.—At a meeting of the directors, Dr. C. Chapin was chosen president, and H. R. Harris, clerk.

The Valley road will connect at Bellows Falls with the Sullivan and Vermont Central, leading to Ogdensburgh, Passumpsic, Northern, Cheshire and Rutland and Burlington, giving to all the above roads direct communication with New York, over Vermont and Massachusetts, Connecticut River Hartford, New Haven and New York.

Maine.

Atlantic and St. Lawrence Railroad.

The following is a statement of the receipts for freight and passengers by the Atlantic and St. Lawrence railroad company for the quarter ending with October last:

	Passengers.	Freight.	Total.
August...	\$7,517 56	\$2,714 97	\$10,232 53
September.	7,317 76	2,725 43	10,013 19
October...	7,525 22	4,608 88	12,224 10
	\$22,360 54	\$10,139 28	\$32,499 82

Of the several amounts above stated, there were received for the transportation of freight and passengers between Portland and Yarmouth, which came from, or were transferred to, the Bath road, the following sums:

	Passengers.	Freight.	Total.
August...	\$1,819 64	\$21 74	\$1841 39
September.	1,899 85	42 63	1942 54
October...	1,765 90	85 13	1851 03
	\$5485 50	\$140 50	\$5635 00

New Hampshire.

Ashuelot Railroad.—We are happy to announce, says the Keene Sentinel, that the contract for building the Ashuelot railroad, was closed with Messrs. Boody & Co., of Springfield, on Tuesday week, at the directors' meeting at Hinsdale, and that the work will be commenced immediately. The contract is for the entire work, and the road is to be put in running order in one year from this time, and from Keene to West Winchester by July next.

New York.

Syracuse and Rochester Railroad.—At a meeting of the board of directors of the Auburn and Syracuse, and Auburn and Rochester railroad companies, held at Auburn on the 15th inst., we understand it was resolved by both boards to join in application to the legislature to consolidate these companies into one corporation, with the name of "The Auburn Syracuse and Rochester railroad company," with

power to construct a branch road through the canal villages between this city and Syracuse. This branch will serve the purpose of a double track, and will shorten the distance between this city and Syracuse about 20 miles.—*Roch. Adv.*

Notice.

Believing the time has fully arrived, when Forge and Furnace owners, and those interested in the manufacture of Iron in Vermont, should make some demonstration in favor of Protection of this branch of National Industry: We therefore cordially invite all as above interested, to meet us at the Town Room, in Middlebury Village, on Friday, the 30th of November, at 10 o'clock, A. M., to appoint delegates to meet Iron Masters of New York State, in Convention to be holden in Troy, sometime in the month of December next.

As an opportunity is thus afforded to co-operate with those thus engaged in this important movement, already extending through the country, to if possible, through the influence of facts and statistics, influence Congress so to remodel the tariff of 1846, as to give protection to the vast body of citizens directly and indirectly concerned in this branch of industry. It is to be hoped, that there will be a large attendance. Forge owners and others are earnestly solicited to collect all necessary information in the shape of statistics connected with the Iron business, and present them to the meeting when convened.

Nov. 19th, 1849.

- W. H. HOLLYF,
- O. W. BURNHAM,
- L. MUNSON,
- E. CHAPMAN,
- SLADE, FARR & CO.,
- A. B. HUNTLEY,

Newspapers are respectfully invited to copy the above.

Michigan.

Michigan Southern Railroad.

The above road was one of the great lines of public works projected in Michigan in 1836, and designed to connect Lake Erie and Lake Michigan, by running through the southern counties of this State. Like most of the works of the Western States growing out of the extraordinary speculative movements of the period referred to, its progress was arrested by the revulsion which followed, after reaching Hillsdale, a distance of 66 miles, from the inability of the State to construct it. In 1846 it was sold to a private company, with liberal provisions, either to continue it on the line designated by the State Commissioners, "or any where further southward than said line," or with liberty to abandon any portion the purchasers saw fit.

This company now propose to extend this line to Chicago, running through partly through the State of Michigan, and partly through that of Indiana, for which the company has charters in each State—forming a direct line of railroad between the southern shore of Lake Michigan and Lake Erie, ultimately to form one of the links in the great line of railway extending west from New York along the southern shore of Lake Erie. With a view to ascertain the cost of this extension, F. Harbach, Esq., an engineer well known to the public, was directed to prepare an estimate, the substance of which we now lay before our readers:

The characteristics of this combined route are:—A maximum grade going west—from Lake Erie to Hillsdale, 40 feet per mile—west of Hillsdale, 40 feet per mile—going east, 30 feet per mile, east of Hillsdale, and west of the same 25 feet per mile.

For alignment, no road can compare more favorably—consisting of long tangents and curves, where they occur, of large radii.

The country traversed by the proposed route of your road, is most beautiful and productive, being one continual line of small prairies and oak openings, from Hillsdale to Michigan City.

The soil for the road bed, for the whole extension,

is most unexceptionable; and I know of no road in the Union of the length of this, which can be kept in repair for so little expense. The bed for a portion of that part now in operation, is not so good, and must be replaced by other proper material.

The cost of extending your road westward to Chicago, via Coldwater—through Constantine to Goshen—and by South Bend, Laporte and Michigan City, including depot buildings, and a full equipment for the road will be as follows:

Grading, masonry, bridging, timber, chairs, spikes, laying tracks, rights of way, and all contingencies connected with these, for the entire line.....	\$1,600,000
Iron rails, 60 lbs. per yard, for 175 miles and five miles for turnouts, at \$50 per ton, delivered at Toledo or Monroe..	900,000
Depot buildings at the termini.....	100,000
3 machine shops and fixtures.....	75,000
10 intermediate water stations.....	50,000
10 " lesser.....	25,000
20 additional locomotives, at \$7,500....	150,000
100 " freight cars.....	150,000
20 " passenger, \$2,000.....	40,000
30 second class, baggage and Post office do.....	30,000
80 gravel, lumber and repair cars.....	20,000

Total cost of extension, and additional shops, &c., for the whole road.....\$3,140,000

The road is in fair condition for doing the local business for two or three years, and perhaps until the main line is extended through; and then it must be rebuilt, with some of its grades modified. The cost of this, with its present value as fixed, should be added to the foregoing estimate, and a sum sufficient to relay it with a 60 lb. rail.

Present value of 78 miles of road and branch, and the equipment.....	800,000
Cost of relaying 68 miles main line, 60 lb. rail.....	510,000

Total for 248 miles, Lake Erie to Chicago, \$17,943 per mile.....\$4,450,000

For this sum the head of Lake Erie, either at Monroe or Toledo, will be connected with Chicago by a railroad of the first order, not exceeding in length, by more than ten miles, the shortest possible line which can be constructed, and with a maximum grade going eastward, of 30 feet per mile, which is 15 feet less per mile than that of the direct route as reported by Mr. Baldwin.

To make perfect the connections with the roads along the southern shore of Lake Erie, and to connect this line with the great corn market of Lake Erie, Toledo—the Erie and Kalamazoo railroad, which extends from Toledo, 33 miles, to your southern road at Adrian, has been permanently leased to and is operated by your company. This must be rebuilt within two or three years; and it will cost, as rebuilt, and relaid with a 60 lb. rail, \$550,000.—For this sum, interest or rents must be paid. Consequently, this sum should be added to the sum before named, as a part of the aggregate capital of this line of railway, which will then amount in gross to \$5,000,000.

For this sum your company will have the main line, Lake Erie to Chicago.... 248 miles.
The line Toledo to Adrian..... 33 "
Branch to Tecumseh, now in use.... 10 "

\$17,182 per mile.....294 miles.
The following is Mr. Harback's estimate of the income of the road:

Probable Income.—Mr. George R. Baldwin, in his elaborate report on the Buffalo and Mississippi route, (from Toledo to Chicago,) in 1847, has collected very extensive statistics of the resources and business of the district traversed by that line, and at page 70 he estimates the gross revenue from it at.....\$1,347,000

On account of the advantages of your route as combined with that, you may safely add 25 per cent to the local business of the consolidated line..... 336,750

Giving a gross income of.....\$1,683,750
50 per cent is a large allowance for ex-

penses, on a line so cheaply repaired and so easily run. This gives a net income of..... 841,875
—nearly 17 per cent on a capital of 5 millions.

If Mr. Baldwin's estimate is thought too large for the first years of running, the gross income may be reduced to \$1,200,000—and allowing one-half for expenses, as before, it will give a net income of 12 per cent. on the estimated capital of 5 millions, to begin with, and this will be increased as the business advances.

AMERICAN RAILROAD JOURNAL.

Saturday, November 24, 1849.

Railroads in New England

In every part of New England the interest in railroads is on the increase, unless possibly in Massachusetts. Nearly every town of any considerable importance in that State has a railroad built, or in process of construction, running into it, or within striking distance. The feeling in favor of railroads, which was for a long time confined principally to Massachusetts, has extended itself into every part of New England, and will not be satisfied or put to rest till throughout all New England similar accommodations are secured.

MAINE.

In Maine the railroad movement is taking fast hold of the people in all parts of that great State.—One hundred and forty-two miles of railway have been opened in that State since July 1, 1848, viz:
Atlantic and St. Lawrence.....47 miles.
Buckfield.....13½ "
Kennebec and Portland.....26 "
Androscoggin and Kennebec.....55½ "

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The roads under contract and in progress are as follows:

Atlantic and St. Lawrence.....	100 miles.
Kennebec and Portland.....	44 "
York and Cumberland.....	48 "
Androscoggin.....	22 "

Total.....244

The Androscoggin and Kennebec railroad is to be formally opened on the 27th November throughout its entire length, 55½ miles.

The Buckfield branch about the same time, and the Atlantic and St. Lawrence railroad a few days later, as far as Paris.

The Kennebec and Portland railroad has recently put its road under contract from North Yarmouth to Portland, and the same unites with the York and Cumberland, a few miles from the depot in the city of Portland. The two companies have purchased a depot site in common, and are to build a depot of sufficient size to accommodate all the roads terminating at Portland. For this purpose it is proposed to build a passenger depot 100 by 500 feet.

The Androscoggin railroad has been recently put under contract upon more favorable terms than any road yet constructed in New England.

A survey is now going on under charge of Col. A. C. Morton, of the river railroad from Bangor to Oldtown, on the shore of the Penobscot, under the charter of the Bangor and Oldtown railroad. This road, it is proposed, will be so located as to accommodate the vast lumber trade of the Penobscot, by running to more than 200 mills where are annually sawed from 150 to 175 millions feet of lumber.

At no time in the history of Maine has such a general feeling prevailed in favor of public improvement as at the present moment, and this feeling will

not be checked till all her people are supplied with railway facilities.

NEW HAMPSHIRE.

New Hampshire has already some 560 miles of railway in operation, and nearly two hundred miles now in progress of construction all of which are being steadily pushed to completion by the unconquerable energy of her people.

We gave a list of her various railroads during the summer. Contracts have since been entered into for the construction of the Ashuelot railroad from Keene to the Connecticut river near Brattleboro'.

The Manchester and Lawrence railroad is finished, and a portion of the Portsmouth and Concord railroad is also done. The Boston, Concord and Montreal road is being steadily pushed on towards Rumney.

The New Hampshire Central is to be finished this year.

The Concord and Claremont is in part opened.

The Contoocook do.

The Cochecho do.

The Great Falls and Conway do.

VERMONT.

In Vermont unusual efforts are apparent in all parts of the State, to finish up the old works already under contract, and embark in new ones.

The Rutland and Burlington railroad is finished with the exception of 23 miles.

The Vermont Central is within 26 miles of Burlington.

The Rutland and Whitehall railroad is going forward.

The line from Brattleboro to Bellows Falls is under contract.

Numerous applications for new railroad charters have been acted upon by the Legislature of Vermont at its recent session.

The Montpelier and Connecticut River railroad has been chartered, to extend from Montpelier to Wells river. The route of this road has been recently surveyed and a very favorable line found.

The Rutland and Burlington railroad company have obtained an act authorising them to extend their line to St. Albans to a point of connection with the Vermont and Canada railroad. And in case the latter company do not construct their road to Canada line within a given time, the Rutland and Burlington company are authorised to extend their own line to the same point.

An additional act has also passed the Legislature of Vermont in aid of the road between Brattleboro' and Bellows Falls, and the construction of this road is soon to be entered upon.

There has been a movement for a charter for a railway from the mouth of the Passumpsic river to connect with the Atlantic and St. Lawrence railroad, which has been finally granted, under the name of the Vermont Eastern railroad.

This we regard as one of the important railway movements in New England. A connection with the Portland and Montreal railroad in the Connecticut valley will make a route to the White Mountains and Portland direct from the city of N. York, embracing a greater variety of attractive scenery than can be found on any route now travelled.

The trade and travel between New York and Canada East will pass over this line. Instead of injuring the prospects of Portland in view of the Montreal business, the effect of it will be to attract to Portland much of the trade of Upper Vermont and New Hampshire which is now drawn off to Concord and Boston.

Maryland.

Extension of the Baltimore and Ohio Railroad to the Ohio River.—At a meeting of the directors of this road, held at Baltimore on the 14th instant, the President of the company submitted a report upon its extension to the Ohio. It is an interesting and able paper, and we regret that we have room for only the more important portions of it. Our readers will see that the means at the command of the command of the company fully justify the assumption that the road can be completed within the time stated. The report was unanimously accepted, and it was voted to put the whole line immediately under contract.

We heartily congratulate the people of Baltimore on the prospect of the speedy completion of their cherished hope. The construction of this road will give to that city a position which can be taken from her by no rival work, and which will ever constitute her one of the leading cities of the country.

Estimated cost of the Baltimore and Ohio railroad from Cumberland to Wheeling, revised to present date:

I. GRADUATION, MASONRY AND BRIDGING.

From Cumberland to Tygart's Valley Bridge as per contract prices of first 3 lettings..... \$2,150,439
Add for tunnel arching and Bridge superstructures..... 173,432

Total from Cumberland to Tygart's Valley Bridge, 103½ miles..... \$2,323,871
From Tygart's Valley Bridge to Fairmont, 21 miles..... 302,524
From Fairmont to mouth of Piles Fork of Buffalo, 17 miles..... 207,805
Mouth of Piles Fork to Wheeling, 70 miles..... 1,208,141

Total from Cumberland to Wheeling, 211½ miles..... \$4,042,341
Off 10 per cent. from estimated cost of 103 miles from Tygart's Valley Bridge to Wheeling, which has not yet been let and which amounts to \$1,718,470, 171,847

Total cost of Graduation, Masonry Bridging from Cumberland to Wheeling..... \$3,870,494

2. RAILWAY TRACK.—Single track with 1 mile in 20 for sidings, 211½ miles, at \$9,000..... 1,903,500

3. DEPOTS AND WATER STATIONS at \$500 per mile..... 105,750

4. RIGHT OF WAY—Per contracts of Agents in part, and per estimate for rest, 100,000

5. Superintendance and Contingencies 5 per cent. on the above..... 298,987

Total estimate of cost of road complete from Cumberland to Wheeling 211½ miles, at an average of \$29,657 per mile..... \$6,278,731

The entire cost of the road, then, to the city of Wheeling, supposing the reduction upon the letting to take place west of the Tygart's Valley river, to be less by 12 per cent than the line already under contract, would not exceed \$6,278,731; and should the subsequent contracts prove as favorable as those already made, the total cost would not exceed by a very large amount the original conjectural estimate of \$6,000,000.

What then, is the ability of this company to provide the requisite funds?

In addition to the revenue of the work itself, it is known that the company had originally \$3,200,000 of the 5 per cent Sterling Bonds of the State of Maryland. Of this fund \$5,000 were disposed of by my predecessor, and \$200,000 during the past year. Under the effect of this last sale of \$200,000 to the Messrs. Baring, Brothers & Co., it was confidently expected that the remaining bonds in the hands of the company would enhance rapidly—both at home and abroad. The confidence inspired by a strong and influential house, among European capitalists,

in the soundness and credit of the state of Maryland, could not fail to be attended with the happiest results. These Bonds have gone on to improve gradually until they have reached a limit which justifies the belief that this company may reasonably calculate on \$3,000,000 from this certain and reliable resource. Indeed it can hardly be foreseen, in view of the prosperous condition of the state of Maryland, and her improving credit under the wise policy adopted by her Executive, that any contingency likely to arise, can deprive this company of their full par value, in any sales which may be made hereafter, whether at home or abroad.

If we estimate the proceeds of the bonds then at..... \$3,000,000
The receipts from revenue during the progress of the work at..... 1,000,000
and the subscription of Wheeling at.... 500,000

We have an aggregate of..... \$4,500,000 or more than two thirds of the whole amount required to complete the connection with the Ohio river. In any state of the money market, the completion of the road being certain, and its present revenue more than equal to any amount of interest likely to be required, the credit of the company may be expected to afford essential aid. Nor is it doubted, that in contracting for the work that still remains to be let, west of the Tygart's Valley river, arrangements could be made to use the stock or bonds of the company as is customary in the construction of similar works; and the 20 per cent. reserved as a security for the faithful execution of their contracts might be stipulated to be paid to contractors in bonds instead of cash.

These and other similar arrangements which would be open to the company in the event of a failure of more advantageous plans, it would be their interest to resort to rather than encounter the ruinous sacrifices which must ensue from further delay in the prosecution of the road.

But it will appear by reference to the estimate of the Chief Engineer that the 22,000 tons of iron required for the superstructure of the entire road between Cumberland and Wheeling, constitute a large proportion of the aggregate cost as stated by him.—A correspondence has been opened abroad to ascertain the probable availability of the Company's Bonds meeting this heavy expenditure; and I feel justified in the expectation from the present state of the negotiation that the wants of the company may not unlikely be reduced to the extent of this item.

Assuming the estimate of the engineer then at..... \$6,278,731
Supposed available resources to be deducted..... 4,500,000

1,778,731
And estimated cost of rails if purchased on time, exclusive of duty and other charges, say..... 650,000

Leaves to be provided..... \$1,128,731

This amount accomplished, the whole line of road from Cumberland to the Ohio river can be let to contractors early during the coming spring.

Various plans have been suggested to make up the deficiency which would thus appear, on a fair estimate of the available resources now at the disposal of the company.

Those to which I would particularly invite the attention of the Board are

I. The issue of a preferred stock, to be subscribed for by instalments of 6, 12, 18 and 24 months, from the 1st of June next, so as to make the whole available in two years thereafter, being the period within which the road is expected to be opened.

Upon this issue I would recommend to the company the payment of 6 per cent., and the holder to have the benefit of its enhanced value, on reaching the Ohio river, by incorporating himself with the general stockholders, if he should so desire; but to make his election within a period to be fixed, whether he will retain his position as a preferred stockholder at a rate of interest not to exceed 6 per cent. This stock would be free from taxation, would take precedence of all other stock, and would not operate as a tax upon the resources of the company beyond the rate of interest which it is proposed to guaranty.

II. The issue of the company's bonds having a

long period to mature, and guaranteed against both city and state taxation.

This would contemplate an early application to the Legislature of the State for an exemption from taxes of all bonds, in addition to those now in circulation, which may be issued in the direct prosecution of the road. That such an application would meet with a ready response from the Legislature, I cannot permit myself to doubt.

Should the plan of the preferred stock be selected as most likely to accomplish the object we have in view, I should still deem it important to secure this privilege—in any issue of bonds which the company might be called upon to make, either for the prosecution of its road, or the increase of its power.

During the past summer and autumn one hundred and three miles of this road, comprising the entire space between the town of Cumberland and the Tygart's Valley river, intersecting the N. W. turnpike a distance of a 100 miles from Parkersburg, have been placed under contract, and are now in active progress of construction. These lettings comprise every difficult section upon the extended line to Wheeling, leaving no part of the work which may not in the judgment of the engineer, be urged to completion in two years from the 1st of June, 1850.

This road, if completed in the next three years, would be the first avenue opened to the trade of the West; if made dependent upon our own revenue, it must subject us to a competition which every day's delay must only contribute to render more formidable and alarming.

The Baltimore and Ohio Railroad, gentlemen, was originally chartered with a view to the trade of the Ohio river, without reference to those more extended Railroad connections now in progress of formation. South of the city of Wheeling there can be no line of road which could, by possibility, interfere with the superior facilities of the Baltimore market. It may be safely assumed, that the resources of the Ohio river alone, for which there can be no competition, will require more accommodation than this road when finished, will be able to extend without the aid of a double track. The transit of both passengers and tonnage from Cincinnati to Wheeling by the river transportation can be effected at rates which leave no doubt that this great highway must always command its full share of patronage.

The inducement which would be held out to commerce, and the general activity which must result as a consequence from a continuous communication with the resources of the great West, would give increased employment to capital, and attract the attention of business men in the city of Baltimore, as a point where they could safely calculate on a steady advancement in all the departments of trade and commercial enterprise.

It seems to me then, gentlemen, in consideration of the important facts to which I have endeavored to direct your attention, that no time should be permitted to pass in maturing plans to press on with this work. Delay would be as fatal at this critical juncture as the total abandonment of the enterprise.—It becomes every property holder in the city of Baltimore, to lend his cordial co-operation in making the credit of this Company available, to whatever extent it may be necessary to carry out the object we have in view. If success attend our efforts the risk cannot be great. By the completion of this road you have a line 390 miles in extent, between Baltimore and the city of Wheeling, forming an uninterrupted connection with the Ohio River—nearer to Columbus by 55 miles than Philadelphia, 216 than New York, and 336 than Boston.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also, COAL, of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Picton, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also, Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has constantly for sale Steam Engines, Boilers, Lathes, Chucks, Drills, Planers, Force and Suction Pumps; Tenoning, Morticing and Boring Machines, Shingle Machines, Bolt and Nut Machines, Belting, Oil, Iron and Lead Pipe; Rubber, Percha and Leather Hose, &c., &c.

S. C. H.'s arrangements with several machine shops are such that he can supply, at very short notice, large quantities of machinery.
November 23, 1849.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND
ENGINEERING AND MACHINE FILES,
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,
100 William St., New York.

November 23, 1849.

To Proprietors of IRON FOUNDRIES.

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust for facing very nice work, always on hand and for sale by

G. O. ROBERTSON,
303 West 17th St.,

or 4 Liberty Place, between Liberty st. and
Maiden Lane, New York.

November 3, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIERRICH,

46 South 8th St., Philadelphia.

November 3, 1849.

TO CONTRACTORS. SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection or and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

NOTICE TO CONTRACTORS.—Office of the Cincinnati, Hamilton and Dayton Railroad Company, Nov. 3d. 1849.

Sealed Proposals will be received at this office until THURSDAY, the 13th day of December next, for the Grading, Masonry and Bridging of the Southern Division of the Cincinnati, Hamilton and Dayton Railroad, extending from the city of Cincinnati to the town of Hamilton, Butler county, a distance of about 25 miles.

The work will be ready for inspection in ten days previous to the letting, and all the necessary information will be given by the undersigned and the assistant Engineers.

Proposals to be addressed to S. S. L'Honmedieu, Esq. President of said Company, or to the undersigned. Bidders not known to the President and Directors, or to the undersigned, will be required to give satisfactory testimonials as to character and qualifications.

R. M. SHOEMAKER, Engineer.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. }
Newark, Ohio, October 17, 1849. }

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,
Superintendent, etc.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.— Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,
Chief Engineer J. R. & K Co.

Richmond, October 17, 1849.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorized to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse.

JOHN GREACHEN, JR.,

98 Broadway, opposite Trinity Church.

New York, October, 1849.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steam-boat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
54 Pine St., New York.

October 27, 1849,

3m

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ETNA



THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers, &c

No. 85 Liberty St.

NEW YORK.

And in the principal cities and towns in the U. States. The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849.

ly

C. W. Bentley & Co ,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849.

ly25

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—*Fuller's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,

Warehouse 23 Courtlandt street,
New York, May 21, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufacturer.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.

August 24, 1848.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,

No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 19 inches stroke of piston. Tenders on 4 wheels. Address

JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by **POWERS & WEIGHTMAN**, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office*, adjoining the *Washington Railroad Ticket Office*, Pratt Street, Baltimore.
STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS,

SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,

President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849.

3443

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Bulder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

Samuel D. Willmott,

MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,

IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,

ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.

SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,

IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium,
May 26, 1849.

Railroad Car Manufacturer's Furnishing Store.

F. S. & S. A. MARTINE,

IMPORTERS AND MANUFACTURERS OF

RAIL ROAD CAR & CARRIAGE LININGS,
PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Moireens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF **STEAM BOILERS,**
52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging of all kinds.
For particulars see Adv. in another column.

J. A. Burdett,
BLACKSMITH,
No. 176 Chambers street,
(Between Greenwich and Washington),
NEW YORK.

Quarry Sledges and Hammers, constantly on hand and made to order, & warranted. Forger or all kinds of Ship, Steamboat and Bridge Work. Also, Forging to Draft or Pattern.
Screw Bolts, Dock Bolts and Spikes. 1m45

To Engineers and Surveyors.

F. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.

Ma. M. Butt Hewson, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.

500 Tons, afloat, weighing 57 pounds per lineal yard, for sale by
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849. 1m46

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
590 " " 53 " "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.
They offer also to import and contract to deliver ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.
ILLIUS & MAKIN,
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Br. 1st, Esplanade, Md.

LAP—WELDED
WROUGHT IRON TUBES
FOR

TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER,
Patentee.
28 Platt street, New York

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Philadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, JR., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing,
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,
 300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " " "
 50 " Catoctin " " "
 250 " Chikiswalungo " " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x 1/4 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order,
GOODHUE & CO.,
 New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at
 the *Catoctin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast* Charcoal *Pig Iron* from the *Clover-*
dale and *Catawba*, Va., *Furnaces*, suitable for *Wheels*
 or *Machinery* requiring *extra* strength; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hilles* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *A-*
gents for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/2 to 15 inches diame-
 ter, and any length not exceeding 17 feet—manufac-
 tured by the Caledonian Tube Company, Glasgow, and
 for sale by
IRVING VAN WART,
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 October 30, 1848. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite *Pig Iron*,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best *Pud-*
dling Iron, *Juniata Blooms* suitable for Wire, *Boiler*
Plate, *Axe Iron*, *Shovels*, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the *New-Jersey Iron Company*, are prepared to
 execute orders for the different kinds and sizes of
 iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 *Boonton Foundry Pig Iron.*
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 *Forge* do. do.
 100 " No. 2 *Glendon* do. do.
 140 " Nos. 2 & 3 *Lehigh Crane* do do.
 100 " No. 1 *Pompton Charcoal* do.
 100 " *New-Jersey Blooms*
 50 " *New-Jersey Faggoting Iron*, for shafts
 Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
 Do do *Rounds and Squares*, 1/2 to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
 Half *Rounds*, 1/2 to 1 in. *Ovals & Half Ovals* 1/2 to 1 1/2 in.
 Bands, 1 1/2 to 4 inch. *Hoops*, 1/2 to 2 inch.
Trunk Hoops, 1/2 to 1 1/2 in. *Horse Shoe & Nut Iron.*
Nail Plates. Railroad Spikes.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

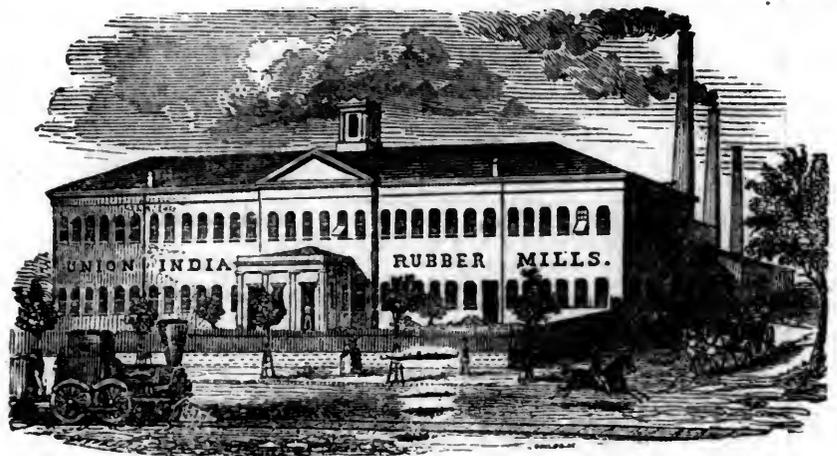
The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," I. Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged in
 manufacturing spring steel from 1 1/2 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Ameri-
 can iron, at their works at Jersey City, N.J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,
 Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

- Articles which this Company has the exclusive right to make comprise in part
- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggins, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Horse Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Mattress Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Shower Baths, |
| Pants, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders. |

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine
 Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
 will be sold to the Trade at Factory prices.
 All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
 ings.
 October 20, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing.

It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

Utica N. Y. Sep. 1849.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1y48

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

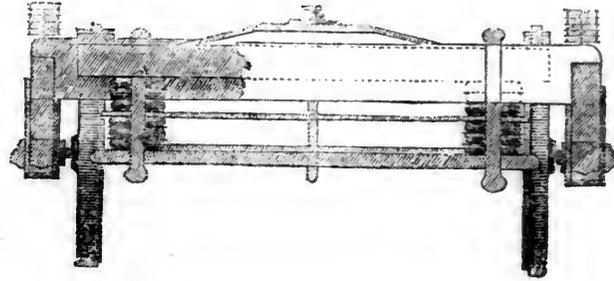
H. B. TEBBETTS,

No. 40 Wall St., New York.

May 12, 1849.

1m19

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorized to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York,

General Agent for the U. S. ; and

JAS. LEE & Co., 18 India Wharf, Boston.

JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,

Civil Engineer, 5 Wall st.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849,

au7tf

M. M. White, Agent,
No. 74 Broadway, New York.

To the Proprietors of Rolling Mills and Iron Works.

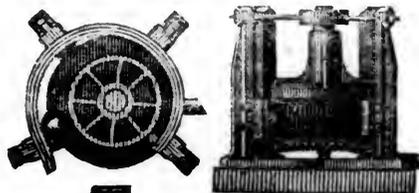
THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of Rolls (Rollers), both chilled and dry-sand, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Salsut & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849,

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

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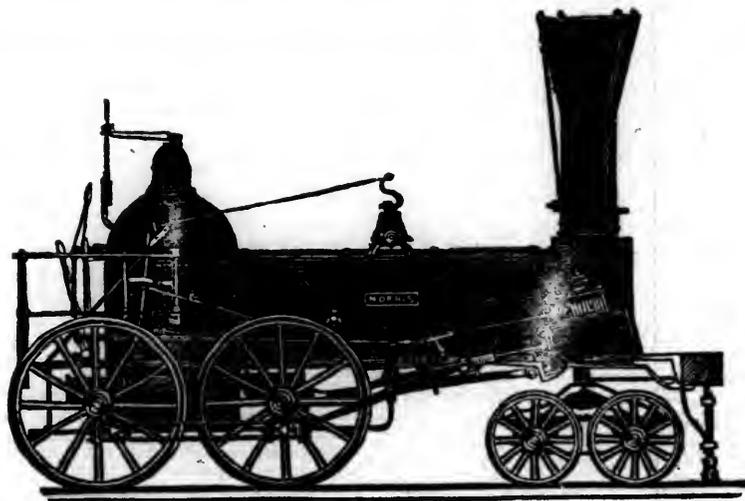
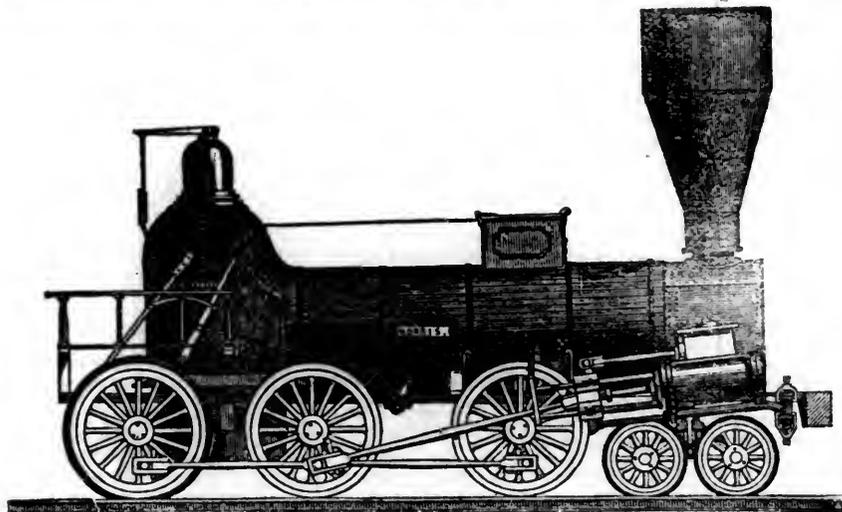
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Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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GEN. CHAS. T. JAMES, *For Manufactures and the
Mechanic Arts.*
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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, December 1, 1849.

Since the publication of the article on the Minnesota mine in the number of the Journal for Sept. 1, farther developments have been made in this section of the mineral region of Lake Superior, which confirm the favorable opinions I then expressed of its economical importance, and by their extraordinary character add much to the interest of the region. One of the most remarkable features in the topography of the country is the uniformity and continuity of the ridges of trap rock, which extend in a northeast and southwest direction. They occur in a group of three or four parallel ridges, and excepting in the passage of the Ontanagon river, and in the broken country about the head of Fire Steel river, these ridges are generally plainly conspicuous, and form striking objects in the scenery of the country. In the accompanying map, (fig. 1) they are designated on rather a limited scale, but sufficiently large to show their general character and range.—The figure is based on the government map, the topography somewhat corrected. Their average elevation above the lake has been overrated, I think, at 1100 feet. They do not appear higher than other

points I have found by barometrical measurements not to exceed 850 feet. Their elevation above the valleys between them ranges from 200 to 500 feet. On the south side they generally expose a precipitous wall of trap rock, and in the north slope gently away. From the head of the Fire Steel to the Ontanagon, about 10 miles, and about the same distance on the other side of this river, the ridges maintain the same geological structure, and generally the same mineralogical features. The prevailing rock is amygdaloidal trap; greenstone trap is by no means so common as on Keewena Point, and I am not aware that it can be traced in any regular bands.—Porphyritic trap is rarely seen; I have noticed it only on one of the southern ridges of the Minnesota tract. Sands and conglomerate occur interstratified with the amygdaloid, generally at the southern base of the cliffs, dipping under them; but these strata appear to be of little extent, and cannot be regarded as of any importance as affecting the character of the lodes, for these do not penetrate the sedimentary rocks, and if they did, these rocks are of too limited extent to affect their value. The adit to the Minnesota mine passes through a red shale or indurated marl, whose dip is the same as that of the veins and of the amygdaloid above. Between the layers of the marl are frequent little veins, green with the carbonate of copper. Above the marl and just below the lowest vein a stratum of the conglomerate is seen in several places, but was not reached by the adit when I was last at the mine. This appears to come close up to the foot wall of this vein. These occasional bands of sandstone, conglomerate and shale, found among the trap rocks, appear to be the floors, upon which the successive overflows of trap were poured; finally lifted up together they all conform in dip. Some distance north of the trap ridges these sedimentary rocks are the prevailing formation. The greater abruptness of the south side than of the north would seem to be a natural result of drainage acting upon piles of strata inclining steeply in the latter direction.

Their summits are narrow, often not exceeding one hundred feet; their distance from the lake in a straight line is about twelve miles. The descent is gentle and regular; it is rarely interrupted by hills and may be traversed without crossing any bar-streams or ravines, excepting near the Ontanagon river. No surface could be better adapted for plank roads, over which the great amount of transportation has to be in the downward direction.

The figure 2 shows some of the tracts contained in figure 1, drawn to a larger scale, and consequently better adapted for showing the minor features of the topography. The dotted lines along the summits of the ridges are intended to represent the extraordinary workings of the ancients, of the extent of which they will not convey an exaggerated idea. Fig. 2 is a portion of the Minnesota tract and of what was the southern half of the same, now owned by a Philadelphia and Washington company, called the Ontanagon company.

The vein of the Minnesota now wrought, which was partially exposed to view between the two shafts when I saw it in the summer, has since been broken down and extracted to the floor of the level. It did not throughout afford such continuous masses of copper as were expected, though it has still far exceeded the production of any other mine in richness of stamp work and size of masses for its depth. The greater part of the lode proved to be stamp work of good character, with occasional masses of copper. Of these, in one small spot, about thirty tons have been extracted, and there still remains projecting in the same place other parallel masses, whose thickness as they stand in the vein with very little stone intermixed exceed six feet. These have long defied the labors of the miners to break them down, and it was thought they could not be extracted for shipment this season. Small masses and rich stamp work are probably quite as profitable as these huge blocks of copper. The lode is remarkable for its great size, the props put in after its removal being from six to nine feet long. It may be estimated at from four to six feet, though in places it runs less than this. The deepest workings are forty-five feet below the surface. An adit is now nearly run up to a new shaft, which will drain to about the depth of eighty feet. As will be seen by fig. 2, there are several other veins, marked by the ancient pits, which run parallel or nearly so with the vein worked, and very near to it; the same adit might advantageously cut all these, as yet none of them have been proved. Two lines of pits appear to converge towards the present workings; possibly two veins meeting there may give rise to the great swelling out of the metallic portion of the lodes. The progress of the adit will throw some light upon this.

While I was recently at this mine an experiment was tried with fire upon one of the large masses of copper raised to the surface. The object was to remove from it the veinstone which adhered closely to

and filled its interstices. After being surrounded by burning logs and wood for a day or two, cold water was thrown upon it, and the stone by this means was rendered much more fragile, so that the labor of many days was saved by the operation. Witnessing the group of men busy about this mass, one could not but be carried back to the time, when on this very spot another people were occupied with the same labor. No memorials remain of their existence but the vestiges of their works upon the surface. So it must be with us; though for centuries we may draw upon the great resources nature has provided for the use of man, they cannot be exhausted, and future races may yet look in wonder upon the vestiges of our operations, and apply new forces to obtain the larger supplies which proved beyond our reach.

On the northern portion of the tract of the *Ontanagon Company*, which is the tract south of the *Minesota*, are cliffs of promising appearance, so far as I had an opportunity of examining them. I do not know whether the same ancient works are found upon them or not. A vein has been opened, which I examined, and found of very encouraging character. A shaft was sunk forty or fifty feet deep, and considerable stamp work was extracted, a portion of which now lies on the surface; masses of copper were found also, as I am informed, of more than one hundred pounds weight. The appearance of the veinstone is very favorable, being a rich mixture of calcareous spar, laumonite, quartz, prehnite and copper. It seemed to me the work had been abandoned prematurely, for few veins present so near the surface so promising an appearance. Its proximity to the river, which is only two to two and a half miles distant, as well as its adjoining a mine already in successful operation, add to the importance of the locality.

As I was about leaving the country, I met Mr. Charles Whittlesey on his way up to recommence operations at this mine, and understood he was to employ a party of about twelve men during the coming winter.

The *Aztec mine*, as seen on fig. 1, lies about seven miles to the northeast of the *Minesota*. The tract, which is one mile square, has been but partially explored; and though very extensive ancient works have been discovered upon it, it is probable there are still more to be found. On the ridges between this and the *Minesota* other lines of old pits are of frequent occurrence following the veins. Very little digging in them is sufficient to turn out numbers of stone hammers, and to expose the veins beneath. I am not aware of any failure to discover in them rich stamp work or solid copper in masses. On the *Aztec* the principal ancient mines are along the south edge of the cliffs, pitching into the hill as they follow the vein downwards. When cleaned out they appear often like caves in the solid rock, and in several instances they have led without any blasting to the uncovering of sheets of copper fast in the vein, which I found at three different places measured six inches across the surface. Short drifts are seen running in upon the veins, and the excavations, partly in earth and partly in rock, are sometimes eighteen feet deep. The only work done on this tract has been the clearing out of some of these ancient holes; and though the land has been purchased by individuals living in the country, it is doubtful whether the capital they can control will be sufficient soon to warrant their commencing mining operations, as these require at once the building of houses and opening of roads.

The tract called the *Adventure* has been purchas-

ed by the *Adventure Mining Company*, also composed of individuals belonging to the *Lake country*.—It is also remarkable for its ancient workings, and in these presents a promising show of metallic veins.

This vicinity seems to be attracting much more interest at present than any other in the copper region. And it is not strange that this should be so; for when one sees the great amount of native copper brought to light in the *Minesota* mine from following up these ancient works, and then travels on through the woods hour after hour as I have done, along the pits belonging to the same operations, he cannot but be strongly impressed with the vast amount of copper that must lie here near the surface, and must soon again give rise to explorations even more extensive than those of old.

The number of men employed at present in this vicinity is between one and two hundred; the greater number of whom are upon the *Minesota* tract. A small party will continue upon the *Adventure* during the winter. A regularly organized party of about twelve have just recommenced work on the tract of the *Ontanagon company*, under the direction of Mr. Charles Whittlesey; another of about the same number on the *Douglass Houghton* mine, under the direction of Mr. C. C. Douglass; and a third on the *Forest* mine, on the west side of the *Ontanagon*, under direction of Mr. Wm. H. Stevens.

H.

Iron Manufacturer's Convention.

The following is a condensed Report of the Proceedings of the Convention of those interested in the manufacture of iron, held at Pittsburgh on the 21st, 22d, and 23d of November. As will be seen on reading it, the members were unanimously in favor of memorializing Congress for an increased rate of protection to the Iron interest, and this by a change from the present system of ad valorem to that of specific duties. The only disagreement was as to whether it was advisable to name any precise rates of duties, until data should have been collected from all parts of the country, and the wishes of each section be fully represented. Notices of the Convention not having been generally published, the attendance from the Eastern States especially, was very small; but Pennsylvania, Ohio and Kentucky were largely represented. The delegates from New Jersey and New York opposed the specifying particular rates; but the resolution was carried on the last day without opposition, even by these delegates, expressing it to be the sense of the Convention, that a duty of \$10 per ton was required on pig iron, and \$20 per ton on common bar, and a corresponding increase on all other iron and manufactures of iron in proportion to the cost of make.

A committee was appointed to confer with the Congressional Committee at Washington, to whom this subject shall be referred, to prepare a written address to the people of the country setting forth the necessities of a modification of the tariff of 1816, and to draft petitions, etc., for circulation.

This convention assembled at Pittsburgh on the 21st ult., and organized by the choice of the following named gentlemen as officers, viz:

PRESIDENT.

Hon. James Rodgers, of Ohio.

VICE PRESIDENTS.

Hon. C. Myers, of Pennsylvania.

W. P. Robeson, of New Jersey.

Jesse Carothers, of Pittsburgh.

John Tasse, of Pittsburgh.

R. M. Biggs, of Kentucky.

John Culbertson, of Ohio.

W. H. Campbell, of Illinois.

James T. Hodge, of New York.
Edgar A. Wilson, of Clarion, Pa.

SECRETARIES.

George Means, of Clarion, Pa.

J. O. Willard, of Ohio.

J. F. Sterling, of Pittsburgh.

M. A. Bartolet.

On motion, the following fifteen gentlemen were appointed by the chair as a committee to prepare business to be laid before the meeting—

Edwin Post, New Jersey, chairman; M. Bartolet, Berks County, Pa.; John Campbell, Ohio; Wm. M. Patton, Ky.; Jacob Painter, Pittsburg; J. Carothers, Pittsburgh; John G. Peebles, Ohio; James T. Hodge, New York; George King, Cambria Co., Pa.; Wm. Wurtz, Ky.; Jesse Hurd, Ill.; Watson Carr, Va.; Charles Shippen, P.; A. Dempsey, O.; Fred. G. Creary, Pa.

The convention then adjourned until 3 o'clock.

AFTERNOON SESSION.

The proceedings of various meetings, held in different parts of the country, were then presented, many of them signed by a large number of operatives connected with the several establishments represented, all of which concurred as to the present depressed state of the Iron trade, and the necessity of additional protection to save it from entire ruin.

The meeting was then addressed by Mr. Clapp, of Clarion County, Pa., and Mr. Tasse, of Pittsburgh. At the conclusion of the latter gentleman's speech, the business committee appeared before the convention, and their chairman, Mr. Post, then read the following report which was unanimously adopted:

The two resolutions which followed the report were adopted by a very large majority, though he had, for reasons which he might afterwards give to the convention, opposed them. He thought that the resolutions should be given, one by one, to the convention, and he hoped that the gentlemen would express their opinions freely on the subject.

The committee on resolutions appointed at a convention of citizens of Virginia, Kentucky, Ohio, Illinois, New Jersey, New York and Pennsylvania, engaged principally in the manufacture of iron and pursuits of agriculture, consisting of the owners of furnaces, the operatives, mechanics and laborers thereat, the farmers and others in the vicinity thereof, whose interests are identified with the progress and success of these great sources of national prosperity and wealth, held at Pittsburgh on the 21st day of November, 1849, respectfully report—

That they find a most injurious depression of these interests in the several states which they represent, on account of the reduced prices of iron, which is one of the great staples of our states, and in the production of which so large a portion of the people are directly or indirectly engaged. That your committee believe that this depression does not arise from any over amount of competition at home, but from the fact of the recent revolutions and convulsions of Europe, having generally stopped their own internal improvements, and flooding us with their productions, taking advantage of our present low duties.

That at times of the greatest production of domestic iron, the supply from abroad was never adequate to the home demand. That the iron ore and materials for fuel exist in this country, extending throughout all the states in sufficient amount and abundance to supply home consumption, with a superabundance of labor for its conversion.

Your committee find that it is at times when this country is at its maximum of production, that a sudden fall of the article in Europe, causes a rush of it to this country for a market, which the political or monied convulsions at home had denied it, supplying the sources of demand which had maintained the iron establishments of these states, cutting them off from the market upon which they had depended, in the erection of the works then in oper-

ation, and compelling them to stop. That the injury from such results is less ruinous to the capitalist whose money has been thus employed, than it is to others, from the fact that capital has always capacities for the protection of itself.

That the stoppage of works, which must be ever consequent upon such foreign convulsions, acts directly upon labor, depriving it of employment at the works formerly in operation; and, indirectly, on agricultural products consumed by them, and other various classes of employment, growing out of these combined.

That one of these foreign convulsions is of recent date, and causes the present depression complained of.

That it is the duty of every good government to protect its own citizens and people, as far as possible, from all injurious foreign influences, from whatever cause arising.

That the influences of foreign trade on our own people are to be controlled and resisted by tariffs of duties, fixed and independent of any and all foreign causes from such convulsions and fluctuations.

That the tariff law of 1846, however protective of these interests it may have been at the time of its passage, or whatever may have been its general security, is inoperative as a protection now, and the principle upon which it is founded, your committee believe must even make it inoperative for protection to these interests—we mean the one of *ad valorem*. Your committee conceive that the true policy of this country is the very reverse of this—that instead of the duty being made to fall with the market rate where produced, it should be made to rise in proportion to such fall: thus keeping an equilibrium at home, and saving our own country and people from those injurious influences affecting other nations already alluded to. This could be secured in one of two ways—either by a sliding scale of duties, to rise with the fall or fall with the rise, of the foreign market, which we particularly prefer, or by a fixed specific duty to meet the lowest stage of these foreign fluctuations.

Believing that legislative action is necessary for the promotion of these important interests now become national from their magnitude and the large proportion of the people dependent upon them as a means of happiness in the support of themselves and families, we submit the following resolutions:

Resolved, That the tariff law of 1846, though sufficiently protective to the iron interest and labor of the country, at the time that law was passed, it is fitted only for the peculiar state of things then existing in the foreign market, and altogether unfitted for that existing now.

Resolved, That its system of *ad valorem* duties on iron gives protection only where protection is not required, and withholds it where it is.

Resolved, That every principle of sound policy points to a directly contrary course.

Resolved, That nearly all the value attached to iron is derivable from labor, and that this country is abundantly able to produce the largest amount its consumption may demand; and that while we do not desire to prohibit importations by heavy duties, we conceive it to be but just to the people, and a sound policy on the part of the government to lay such restrictions on the introduction of foreign labor as will protect our own from all ruinous and sudden fluctuations, from whatever causes in other countries.

Resolved, That a committee of correspondence, consisting of three persons, shall be appointed, with power too add to their numbers, whose duty it shall be to make a written address to the people of the country, setting forth the necessities of a modification of the tariff of 1846, and who shall collect such facts and statistics, to be submitted to the Congress of the United States, as may further the objects of this convention, and whose duty it shall be to cause petitions to be as extensively circulated and signed as possible, with a view to presenting them to Congress at as early a period as practicable after the opening of the session.

Resolved, That this convention highly approves of the following resolution of the State convention of New Jersey, held on the 14th inst., and adopts the spirit of the same:

Resolved, That it is the solemn and paramount duty of the members of Congress from this State to urge, as the united voice of this convention, such

modifications of the tariff as shall again put our machinery in motion, and afford full and profitable employment to the operatives who are now idle, and a home market for the surplus produce of the farmer.

On motion the above resolutions were carried.

Considerable discussion then ensued on the adoption of the two resolutions which had been adopted by the committee, though not unanimously, and after several propositions, a motion was made to lay them on the table for the present, which prevailed.

On motion of Mr. Hodge, the following resolution was unanimously adopted and added to the above:

Resolved, That the tendency of the present *ad valorem* duty is injurious to the interests of the country, by keeping out the higher priced, and consequently the best irons; and flooding the country with the lowest priced and poorest qualities.

On the second day, one of the resolutions laid over from yesterday was further considered. This resolution, read by the Secretary, was as follows:

Resolved, That we consider it necessary to the proper protection of the iron interest, that a duty of \$20 per ton to be levied on all bar or common merchantable iron.

With regard to pig iron, the committee suggest that all pig iron imported from other countries shall, upon its arrival in this country, be deemed and taken to be worth \$15 per ton, without regard to its cost or value abroad, and that a duty of nine dollars per ton be levied thereon, and that upon proper and satisfactory evidence being made out to our custom house officers, that pig iron has increased in value above fifteen dollars per ton in the country where the same was made—that in that case, for every rise amounting to one dollar per ton, the duty in this country shall be reduced one dollar.

This plan, it is thought, will in all ordinary times prevent an entire prohibition of the foreign pig iron, and keep the competition of this and other countries nearly equal at all times, and guard against extraordinary fluctuations of the value of pig iron, in this and other countries. The committee believe that no better plan or policy can be pursued.

Mr. King then offered the following resolution, as a substitute, the blanks to be filled up by the committee:

Resolved, That this convention recommend an assessment of duties on iron imported into the country, as follows, to wit:—On pig metal costing at the point of shipment (fifteen dollars) per ton, a duty of (eight dollars), and on the common bar iron costing at the same points (\$30) per ton, a duty of (16), and when the prices may rise above or fall below these prices, the duty shall rise or fall to an equal amount but that the duty shall be at no time less than (\$1) nor more than (\$12) on pig metal, or less than (\$10) nor more than (\$20) on bar iron, and that a corresponding increase of duty be levied on all the descriptions of iron manufactures.

The presenting of these resolutions gave rise to long discussions and the proposition of several amendments and substitutes, among which was the following by Mr. King, of Mercer county, Pennsylvania.

Resolved, That we recommend to Congress the adoption of such rates of duties as will prevent the introduction of foreign iron at less than the following rates, duty included, to wit:

Pig iron	.....	\$24 per ton
Bar iron 1½ and ¾ to largest size	.....	60 "
Railroad iron	.....	90 "
Round and Square ¾ to 1	.....	90 "
Round and Square ¾ to 1	.....	75 "
Hoop iron ¾ to 1 in	.....	90 "
do ¾ to 1½	.....	80 "

Mr. Robeson, of New Jersey, observed that to show he was willing to meet the gentlemen of the convention, he most cordially seconded the resolution.

This resolution however was not adopted, and the subject was again laid over till the third day.

In the meantime Col. Paxton, of Bloomsburg Pennsylvania, asked for a re-consideration of the first resolution passed, on the first day.

The resolution had been passed without a dissenting voice, and on consideration he was of opinion that the sober second thought of the convention would find sufficient reason to alter or discard it. He alluded to that part of the resolution which admitted that the tariff of 1846 was sufficiently protective at the time. What he would suggest in the place of that resolution was this:

Resolved, That however patriotic—however pure the motives which may have led to the adoption of the tariff of 1846, time had proved that the worst apprehensions of its opponents have been verified, and it is proved to be wholly insufficient to sustain the great interests of the country.

Colonel Long seconded this motion, which was unanimously carried.

Mr. Post, of New Jersey, offered a resolution to suspend other business, that the committee of correspondence be appointed, any member proposing the name he pleased. This being put and carried, the name of Col. Paxton, of Pennsylvania, was suggested by Mr. Post. Col. Paxton, however, declined the appointment, as did afterwards Mr. Post, Judge Myers, Mr. Hodge and others. Finally it was accepted by Mr. Hodge, and the names of Mr. A. S. Hewitt, of New Jersey, and Mr. J. W. Campbell, of Ohio, were added.

Subsequently, other names were added to this committee, many of which were of persons not present, and who consequently could not be consulted. These were Stephen Colwell, Esq., of Philadelphia; Daniel Hillman, Esq., of Tenn.; Gen. Wm. Larimer, Jr., of Pittsburg; C. C. Alger, Esq., of Stockbridge, Massachusetts; J. R. Anderson, Esq., of Va.; Wm. H. Cambell, Esq., of Illinois; Wm. L. Poque, Esq., of Ky.; C. E. Deimold, Esq., of Md.; Prof. R. W. Gibbes, of S. C.; Hon. Mark A. Cooper, of Ga.; Patrick Kerr, Esq., Clarion county, Pa.

Mr. Clapp then offered the following resolution:

Resolved, That this Convention heartily approves of the proposed Great Pacific Railroad, and when built, that it be constructed of American Iron.

Gen. Wm. Larimer then offered the following resolutions, which were accepted as amendments, and adopted:

Resolved, That the great national highway, denominated the "Pacific Railroad," is properly a subject that interests all classes in the United States.

Resolved, That this Convention, representing the great iron interests of our country, would respectfully urge upon Congress the importance of this great work, destined to be the great chain of improvements that will command half the commerce of the world; and when constructed, to be permanent, should be made of American Iron.

Mr. Hodge then offered the following resolution.

Resolved, That, whereas, the census of the United States has heretofore been very imperfect, particularly as regards the manufacture of iron, we express our opinion of the same, and the importance of this matter being more particularly attended to in the forthcoming census.

The finance committee were proceeding to report, when Gen. Larimer said, that although not authorized by the City authorities to do so, he would undertake the responsibility of saving the finance committee from all trouble. The members of the Convention had, at great labor and expense, come to this city, which was sometimes denominated the Birmingham of America, and its citizens could not do less than defray the expenses of the Convention while here.

He would also beg them not to forget to attend the supper, at the St. Charles Hotel, in the evening.

On motion the following resolution was adopted,

Resolved, That the thanks of this Convention be presented to Gen. Wm. Larimer, jr., for his very magnificent and generous offer to defray the expenses of the Convention.

The Hon. Andrew Stewart then offered the following resolution, which was, on motion, unanimously adopted:

Resolved, That while this Convention have assembled to obtain adequate protection to the great Iron interests of the Nation, they are ready and willing to give their aid and co-operation, in obtaining ample protection by specific duties, to all the other industrial interests of our Commonwealth.

In the evening of the second day, the convention attended an elegant supper, to which they had been invited by the Board of Trade of Pittsburgh, and were entertained by and took part in several extemporary addresses and sentiments.

On the third day the only unfinished business of consequence lying over were the two original resolutions, the one affixing a specific sum as a desirable rate of duty on pig iron, and the other the same on bar iron, which two had subsequently been comprised in one. Mr. King moved that the following resolution, laid over for further consideration yesterday, be taken up and disposed of.

Resolved, That we ask Congress to establish specific duties on iron generally, and that said duties to be collected shall be \$10 per ton on pig metal, \$20 per ton on common bar iron, and on all other smaller descriptions of iron, a corresponding rate of protection, in respect to the cost of manufacture, or such other specific protection as shall be adequate for the protection of American industry.

After some explanations between Messrs. Post & King, regarding the resolution referred to, Mr. K. then showed the cost of making pig metal, proving the much greater price which labor obtained in America, as compared with that of Europe, and setting forth the necessity of protection. He proved that British iron might be brought to Pittsburgh at a less cost than it could be brought from our own furnaces, to this city. There was an actual difference of nine dollars and fifty cents per ton, in favor of the European manufacturer in the item of wages alone; the difference was equally as great in proportion, in reference to bar iron. Now, he hoped every gentleman would give his opinion freely, and that the convention would come to some definite decision.

These remarks and others not reported, intimating a doubt whether the delegation from the east were in favor of a suitable rate of duty for protection, Mr. Hodge stated that the expenses of manufacturing pig iron were greater at the East than at the West. Taking for instance some of the furnaces supplied with ore from the Salisbury ore bed in Connecticut, and hauling this several miles to the furnaces. The cost of this ore being \$1 25 per ton in the bed, and \$1 to mine, the expense of two and one-third tons, sufficient to make a ton of iron, delivered at the furnace was in several instances \$11 08. Furnaces making cold blast iron consumed not less than 200 bushels of charcoal to the ton, the cost of which would average about \$7 per hundred bushels. To these items should be added \$2 50 for furnace labor, about 40 cents for flux and \$2 50 for the three items of repairs, interest and superintendence. This was a fair allowance for most furnaces, and brought up the cost of cold blast iron at several of the furnaces of New England to more than \$30 per ton, without including the transportation to market, which was from two to four dollars more. He regretted that the gentlemen from the east should have been so misunderstood. Their object was the same with that of the members from the west. They differed only as to the best means

of attaining it. He thought it injudicious to seem to dictate any particular rates to Congress.

Mr. Post said he had opposed the insertion of any particular rates, for this reason, that their interests were various, and differently affected by any particular rates of duty. Now, if the community engaged in this manufacture could all be brought to agree, this might all do very well. But there were those gentlemen engaged in the manufacture of the smaller kinds of iron, and were gentlemen engaged in this business going to sit quietly by while specific duties were recommended on two or three kinds of iron, and others were left without any specified duty at all. He suggested that the rates of duty should not be decided by this convention, but that this matter should be left entirely to the discretion of the committee of one from each State already chosen to bring this question before Congress. It was not to be supposed that Congress was going to legislate for any particular branch of the trade, to the exclusion of another, but the committee would represent each particular branch, and such a rate of duties would doubtless be prepared as would protect every branch to the extent of its requirements. If the Convention, however, were determined to fix the rate of duty that should be asked for, well and good—he would not dissent, but if they were to attempt to argue this question in all its bearings, they would not get through it in many days, for it involved many more questions than appeared on its surface. Whatever conclusion the Convention might come to—if he could not agree to it, he certainly would offer no obstacle to that conclusion being effectually carried out.

Mr. Kerr thought it was highly desirable that the convention should decide what description of duty they would ask for, before they fixed upon any price.

Mr. Clapp after some observation on the idea which had been expressed about the seeming dictation to Congress, remarked that he was entirely opposed to a sliding scale. On the floor of Congress, men would entertain different opinions. Some might advocate a sliding scale—some, a specific duty, and others, no duty at all. One great objection he had to a sliding scale, was, that it would of necessity open the door to continued frauds. For example, suppose a man brought a ship load of iron to New York for sale, it was his interest to represent that his iron was of the best quality, and ought to command the best price. His object in this was clear, for the higher the price of the article, the lower the amount of duty to be paid. True, the man might go the next day and sell his iron at a less price than the invoiced value; but it had already passed the custom house, and the remedy was gone. He would then propose a specific duty on each kind of iron.—On this there might be a difference of opinion, but it certainly was desirable that they should come to some determinate rate of duty. On pig iron, it was generally conceded that 10 dollars per ton would be no more perhaps than an adequate protection to this branch of iron manufacture in the United States. Some might ask more, others less; but he believed it well settled, that this was a reasonable rate. On bar iron, taking into consideration the improvements in machinery, twenty dollars per ton would be equal now to what twenty five dollars would have been a few years ago. He hoped they would fix upon something in a spirit of concession to each other's differences. He hoped they would progress in a spirit of harmony, and adopt something that would be expressive, fixed, definite, and in the same time make more fully known their wants to Congress.

The address of Mr. Clapp was received with warm applause.

Finally for the sake of expediting business and to take the sense of the convention on the question, whether any specific rates should be considered at all, Mr. Post proposed the following resolution:

Resolved, That this convention is not in favor of affixing rates of duty on particular articles of the manufacture of iron, but are disposed to leave these rates to the committee of correspondence and Congress, it being, however, clearly understood that an increased duty is asked for, sufficient to protect the great industrial interests of the country.

This was negatived by a large majority, and the following resolution was soon after passed:

Resolved, That it is the sense of this convention at the present state of the foreign market, that it will require a duty of 10 dollars per ton on pig iron, 20 dollars per ton on common bar, and a corresponding increase on all other iron and manufactures, in proportion to the cost of make, to protect the American market.

The two following resolutions were passed with others of less importance, and the convention adjourned sine die:

Resolved, That the several delegates of this convention, on their return home, be requested to call public meetings, circulate memorials to Congress, and collect all the statistical information on the subject of the manufacture of iron, which their respective localities may furnish, and forward them to our committee in Washington, that they may be presented to Congress at the earliest period possible.

Resolved, That all newspapers friendly to the protection of American industry, be requested to publish the proceedings of this convention, or as much thereof as may be convenient.

We have omitted particular mention of several interesting addresses made in the course of the proceedings by Judge Shaler of Pittsburg, Hon. Andrew Stewart of Fayette county, Penn. and others; the present account already filling a large space.

We merely add to this a circular prepared by the Committee of Correspondence, to be forwarded to the Iron Masters throughout the country with a request that they would cause the table accompanying it to be filled and directed to the Chairman of the Committee, James T. Hodge, Esq., Washington, D. C., that the proper evidence of the aid necessary to be extended to the iron interest may be laid before Congress.

CIRCULAR.

To _____
Sir,—At a Convention of the Iron Manufacturers and those interested in the manufacture of Iron in its various branches, held at Pittsburg the 21st, 22d, 23d, of November 1849, a Committee of Correspondence was appointed to gather statistics relative to the several branches of this manufacture, that a proper address and Memorial might be therefrom prepared, asking of the Congress of the United States such a modification of the present tariff of duties as these statistics should show to be essential to relieve the large iron interests of our country from the depression under which they now suffer.

In pursuance of the resolutions of this Convention, the Committee, above named, beg leave to address you on this subject, with the request that you would provide them with such data as your own works or neighborhood furnish; and to simplify as much as possible the matter, they have prepared the following tables, which, when filled out, will present in the smallest compass the desired information. Farther data than would be comprised in the limits of the tables would be also acceptable.

Owners of foundries and of other establishments connected with the manufacture or working of iron, not specially designated in the tables, will confer a

Wabash Canal.

We learn authentically that 60 miles of the Wabash Canal, from Terre Haute south, will be ready for navigation in the spring. Of the remainder of the canal, twenty-five miles are completed, all but thirty miles are under contract and will be finished by next fall. Much of the heavy excavation on this work is progressing with a rapidity equal to our most sanguine expectations. When finished the canal from Toledo to Evansville will be the longest in the United States, being a little more than 460 miles in length.

The connection which we will have in the spring with Terre Haute, and the country for sixty miles south, as well as the large and fertile portions of Illinois, which is tributary to Terre Haute, will furnish a very large addition to our business next year; and when the work spoken of is completed to Evansville there will not be any route, as we are prepared to demonstrate, that can compete with this for the transportation of the entire Wabash Valley to the eastern markets, or that of the return of articles of merchandise from the eastern seaboard.

Great credit is due to the board of trustees for their energy and efficient action in pressing forward this work.—*Toledo Republican.*

AMERICAN RAILROAD JOURNAL.

Saturday, December 1, 1849.

The Great Central Railway of the United States.

We have frequently referred to the great line of railway which is soon to connect St. Louis with all the leading Atlantic cities; all the links of which, save that through Illinois, are now in process of construction, and will be completed simultaneously. It will prove the grandest line of railway ever yet constructed, and the grandest ever projected, with the exception, perhaps of the railroad from the Mississippi to the Pacific. The construction of this line will not only present to the world one of the noblest of spectacles as a work of art, but the still more interesting one of millions of people, strangers to each other, scattered over a line of fifteen hundred miles in extent, citizens of different states and operating under different charters, yet all unite in the same objects, and having mutual interests; each community engaged in the construction of such portions of the road, as runs through its particular locality, and each deriving as much benefit from the labor of other sections as from their own, and all laboring with a mutual confidence that all the sections will construct the several parts assigned to each.

It is a remarkable fact that the roads running west from the great Atlantic cities of Boston, New York, Philadelphia and Baltimore, all converge to a common point in central Ohio, and from thence proceed over one great trunk line to the Mississippi. The link of this great line from Bellefontaine to the Indiana line, has not heretofore attracted so much of the public attention as some others, and we are happy in being able to give a statement of the progress making here from a person interested in its construction.

At a meeting of the stockholders of the Bellefontaine and Indiana railroad company, held in Logan county on the 21st inst., James H. Godman, Nathan Peters, George H. Busby, William L. Kendrick, of Marion; Isaac S. Gardner, of Bellefontaine; John Mills and Wilson V. Cowen, of Sidney, were elected directors for the ensuing year.

At a subsequent meeting of the board, James H. Godman, Esq., of Marion, was elected president, and Wm. L. Kendrick, Esq., of Marion, secretary and treasurer. The board, as now constituted, is a working, energetic body—having the best interests of the company at heart and determined to spare no efforts in pressing on the work.

This road is, you are aware, the third link in the great Philadelphia and St. Louis road: the Pennsylvania Central road being the first, the Ohio and Pennsylvania the second, and this, the Bellefontaine and Indiana, the third—commencing at or near the town of Mansfield, in Richland county, Ohio, and terminating on the Ohio line, there forming a connection with Mr. Smith's Indiana road, terminating at Indianapolis, and which forms the fourth link in the chain. The fifth link is the Indianapolis and Terre Haute road. These two last roads on our west are rapidly progressing, as well as the two first on our east. This, the Bellefontaine and Indiana, is of more recent organization, but our prospects are now bright. The present board of directors are determined to spare no efforts to place the whole road under contract during the coming year.

The examination and location of the line is now nearly completed, under the charge of W. Milner Roberts, Esq., as chief engineer, and Mr. Autes Snyder, as principal assistant. By January next the board expect to lay before the public an ample report from these gentlemen, showing a line with which but few if any of equal length can compare.

Should the board of directors succeed, as they now confidently anticipate, there will be, almost simultaneously with the completion of the Pennsylvania Central road, a continuous line of road opened to the east line of Illinois.

Mr. EASTIN, a delegate from Henderson County, to the Memphis Convention, has made a report of the proceedings of that body to the Henderson Kentuckian, in which he says:

"The Convention met at the appointed time, and in organizing, it was apparent that there was no union of interests—but jealousy of the South against the North and West. The Louisiana and Texas delegations were for a route across the Isthmus first, and then for a route through New Mexico by the river Gali, which they advocated strongly: while Alabama, South Carolina, part of Mississippi, and one or two members of Louisiana, were for strict State right, South Carolina principles."

He proceeds to give the different resolutions proposed and voted on by that body, and says:

"I again repeat that the only hope of the citizens, Kentucky is to sustain the great eastern lines of Railroad from Boston, to New York, Philadelphia, Baltimore, and Richmond, in the east, all pointing to the table lands of Ohio and the lakes, centering at Indianapolis, branching so as to connect Cincinnati and Louisville by the main line by Vincennes at St. Louis, and the southern lines of railroad from Alabama, Georgia, South Carolina, Mississippi, and Tennessee, all converging at Nashville, and from thence by the line through the thickly settled portion of the Green River country by this place connecting with the line from Evansville, north with the lakes, and crossing the great northern and eastern main Atlantic and Pacific railroad at some point on the east side of the Wabash, and with it by the city of St. Louis to the Pacific. This line from Nashville to Henderson nearly divides the great coal fields in southern Kentucky into two equal parts; and through Indiana again it is in the coal lands; it also nearly divides the coal fields of Illinois into two equal parts. When it is recollected that the north and east are united on this subject with a capital of more than \$100,000,000 now invested in their railroads I think, with me, you will all say, let us tap this trunk on the main line in Indiana and invite our southern friends to join us with all their strength."

Maine:

Opening of the Androscoggin and Kennebec Railroad to Waterville.—The consummation of this most important railroad line was celebrated yesterday at Waterville, in a style of eminent liberality and spirit. Some twelve to fourteen hundred stockholders assembled there, including a numerous delegation from this city. As the train of cars entered Waterville, consisting of twelve or thirteen in number, a salute of guns, and a cheering multitude already assembled, bore testimony of the general joy and welcome which the occasion excited. The day was propitious in every particular. The ceremonies after entering the hall, where a truly sumptuous, thanksgiving collation in most excellent style, was prepared, were opened by a spirited and appropriate speech in behalf of the corporation by S. P. Benson, seconded by an appropriate invocation of Divine blessing by Rev. Mr. Chapin.

Mr. Benson rapidly recapitulated the incipient and progressive history of the road, and distributed the proper meed of praise to the several parties who had been engaged in it. Hon. Timothy Boutelle, the indefatigable and worthy president of the corporation, presided on the interesting occasion, and successively introduced to the assembled multitude, after the stomach's repast was over, Wm. P. Preble, of Portland, Mr. Kidder, of Shovhagan, Mr. Moore, of Bangor, late Attorney General, J. S. Little, F.O. J. Smith, J. A. Poor, Mr. Cahoon, Mayor of Portland, Lot Morrell, of Augusta, Mr. Paine, United Marshall, and others, who made short addresses of congratulation on the occasion. The very best feeling of harmony prevailed, and all concurred in the assurance that in two years more, a like occasion of exultation would occur on an extension of the road, in Bangor! The road, from its point of junction with the Atlantic and St. Lawrence, is fifty-five miles, of the broad gauge, corresponding to that of the latter road, which has forty-five miles opened, making an aggregate of one hundred miles of the broad gauge in use. The Buckfield branch will shortly add nearly fourteen miles more.

We may well congratulate our State on such rapid progress of railroad system, and rejoice, too, that the prospects of a still more rapid extension of it are bright and full of promise. The spirit that has animated and directed the managers of the Androscoggin road, would compass the State with a railroad, if once bent upon it. It is worthy of all praise and all recompense.—*Portland Empire.*

Virginia.

Blue Ridge Tunnel.—This great work has been contracted for by Messrs. John Butler & Co of this city, and is soon to be commenced. We copy the following interesting facts in relation to it from the Southern Planter:

"This important undertaking, by which the Blue Ridge is to be tunneled at Rockfish Gap for a railroad, was recently let to Messrs John Rutter & Co, of New York, who expect to complete it in three years. As part of the history of public improvements in Virginia, we give a few of the details and dimensions. The length of the main tunnel will be 4,260 feet, height 20 feet, and breadth 16 feet. The grade will be 65 feet per mile, ascending from the east. The minor tunnel will be 700 feet long, with nearly the same proportions.

"It is known to all travellers who have crossed the Blue Ridge at Rockfish Gap, that the surface of the country is much higher above tide water level at the western base, than it is at the eastern base.—A horizontal line from the eastern side would pass beneath the bed of South river, in Augusta, on the

west. The railroad, therefore, from its point of connection with the Louisa road, will wind around the side of the mountain, gradually ascending till it reaches the entrance of the main tunnel. From this point to the western outlet, there is an ascending gradient at the rate of 66 feet to the mile. The water, (which, after all, may prove to be a greater obstacle than hard rock or spongy earth,) will be drained off by ditches on either side of the track. Passing under a distance of 700 feet below the summit of the mountain, it is supposed that the method usually resorted to for operating in the central portions of tunnels, which is to sink shafts, through which the excavated earth is drawn cannot be adopted. On the eastern side there will be a smaller tunnel of 700 feet in length, and the experience acquired in making this will be of value in constructing the main tunnel. This minor tunnel was adopted in order to avoid a considerable meander, with a sharp curve and much cutting and filling. If we may judge by the profiles and drawings, the cutting and filling on the mountain side are nearly equal."

The Pacific Railroad
ST. LOUIS CONVENTION.

We find in the St. Louis papers the address of the committee appointed by this convention to draw up a memorial to the people of the United States. The most material parts of it we give below. It is characterized by great enthusiasm, and is written in a style of lofty hyperbole, though with much force.—The West is a great country, and her orators have a right to use language adapted to its vast extent.

The great and leading idea to which the convention gave its cordial and unanimous assent was, that a central national railroad from the Mississippi river to the waters of the Pacific is of eminent and overruling necessity—a necessity arising from recent events, correlative with our duty to sustain our country in its mission of freedom and civilization, and in its material progress, and of preserving our union of States, whose extension from ocean to ocean is practicable only through the achievements of modern science, which assures us of easy intercourse with all its parts, however remote.

But the convention did not undertake to dictate to the country the plan or the route to be adopted. Nor did they enter into the questions of constitutional power, or attempt to demonstrate the prospects of through freight and travel, or the probable value and increase of way patronage, or affect to know more than is already in possession of the government in regard to the great coal fields and other mineral deposits of the western plains and of the mountains, or of the other qualities of the central region, as they relate to the question of economy and practicability in the construction of the road. Satisfied that practicable routes exist—practicable for construction and operation, referring to the adaptations of the surface as well as to the accessibility of fuel and water, and practicable in respect to the patronage which will support a railway, especially as connected with the interest of the government as a land proprietor, and with the political, military and social reasons which justify it—all doubts and questions were waived in the expression of the emphatic opinion, that it is the "DUTY of the government" to construct the road.

And the convention, not fearing physical difficulties so much as those which might be interposed by political and sectional feelings—looking to the fact that a northern route from the lakes to Oregon, and a southern route through Texas to San Diego, were each strongly urged upon the public consideration, and well knowing the fatal dangers of the delay which the threatened disputes would be sure to involve—indicated a central route between these two extremes for the main stem, with branches to the northern, to the middle, and to the southern states. This offer to propitiate the claims of nationality will, it is hoped, be as satisfactory to the extreme sections, as it seemed to be to their respective representatives in the convention. It is that fraternal spirit of concession and compromise in which our

government itself was founded, and has been safely conducted through many portentous storms, which the convention consulted, and to which the country must look for a speedy solution of all the difficulties which sectional selfishness will interpose against the construction of the road. Sectional jealousy without patriotism, like avarice without benevolence, sinks to a vice that, "to be hated, needs but to be seen;" and in relation to this great measure, whose influence and whose benefits will be co-extensive with the Union, cannot be tolerated, and we trust will not be seen.

Georgia.

Western and Atlantic Railroad.—The opening of the great tunnel on this road, which has been the obstacle to its completion to the Tennessee river, was celebrated on the spot on the 1st inst. with great ceremony, a minute account of which is given in the Augusta Chronicle. We have room for the following statement of the dimensions of the tunnel, and the geological character of the obstructions which had to be overcome in the work, will give some idea of the difficulties which surrounded the undertaking:

"The length of the tunnel is 1477 feet, the width at the grade line is 12 feet. The side walls are 4 feet thick at the bottom and 2½ at the top. At an elevation of 11 feet the arch rests upon these walls which are here separate 13 10-12 feet. The arch is a semi-circle with a radius of 6 11-12 feet. It is built of brick and is 22 inches in thickness. The face edge is 12 feet thick at the base and 2 feet at the top. It is 28 feet high from the grade line. From base to apex the tunnel measures 18 feet, commencing at the west end and extending about 470 feet. The earth was soft clay intermixed with limestone boulders; then came a solid limestone ledge extending 80 feet, next came 50 feet stiff clay intermixed with flint gravel. Those commencing at the east end found stiff clay with flint gravel extending inward 400 feet, and the same intermingled with sandstone for the remaining distance 417 feet. At the west end of the work was commenced July 15th, 1848, and at the east end August 25th, 1848.

The average number of hands employed daily, was 220. The quantity of powder used in blasting exceeded a thousand pounds. The ends were united October 31, 1849.

So accurate had been the survey, that the parts at the junction were only an inch at variance. The engineer, Mr. B. C. Morse, from whom the above particulars were derived, is deserving of the highest praise, for the skillful manner in which he has conducted an undertaking comparatively new to him—without a pattern and without experience.

The tunnel will be entirely finished in about two months, although it is expected to transport the mails and passengers over the whole road by the first of December. The road and the tunnel are an honor to the State which has conceived and prosecuted them with such manifest success."

Railroad Business of Great Britain.

Some further startling railway disclosures are in course of presentation to the public. The Caledonian line, with a capital of £4,306,000, is about to be placed under investigation, and if the allegations which have induced the shareholders to demand a committee, shall prove to be well founded, another tale, as grievous as any that has yet been furnished, will shortly make its appearance.

Mismanagement and reckless folly are the chief charges against the directors; while regarding their personal honor and intentions, there seems to be a favorable feeling. At the half-yearly meeting of the company, held at Edinburgh, on Thursday, not only was the fact announced, that not a shilling of dividend could be paid, but it was also asserted, apparently without contradiction, that the line was so inextricably involved, that no dividend could be paid for several years.

Among the specific points into which the committee will have to inquire are, the statement of one of the auditors, that in June last dividends on preferred shares were paid out of the capital, to the extent of £17,255; the working of the line, at a cost of 60 per cent; and the concealments and misrepresentations which led the shareholders to sanction the

three leases which have been adopted—"one," it was observed, "at eight per cent. which had turned out worth three per cent.; another at seven per cent. not worth more than three per cent.; and a third, at six per cent., which paid, with the utmost regularity, a dividend of no pounds, no shillings, and no pence."—*English paper.*

Jefferson Copper Mine, Missouri.

Mr. J. M. Magehan informs us that the Jefferson county copper mine, which is owned by himself, in connection with the Messrs. Valle, employs seven hands, at about five dollars a day for their wages. These hands raise to the surface daily from three to five tons of copper ore—(sulphuret of copper.)—The ore can be sold at the pit's mouth for \$90 a ton and yield daily between three and five hundred dollars, upon an outlay of about five dollars.

The vein worked is stated to be five feet thick. It forms a kind of wall running easterly and westerly, and is known to extend perpendicularly in height from the point where a breach has been made in it, 45 feet. Its extent downwards and east and west has not been ascertained. Those interested calculate that they can see their way to at least 100,000 tons. This amount, upon Mr. Magehan's statement, would fetch at the surface nine millions of dollars. We trust this statement is not exaggerated; although after deducting seventy-five per cent. from it, enough is left to show how immense is the treasure, which, though locked in the earth, is easily accessible, at the very doors of our city.—*Peoples Organ*

Interesting Trial of Rope.

A test trial of Manila and Kyanized American Rope was had on Saturday last, at Griffith's Foundry, which resulted most favorably to the American manufacture. The parties met at about three o'clock, P. M., and immediately proceeded to the trial. A small Manila rope of the best quality of Boston make, was first tried, and was broken, after sustaining a weight of 1520 lbs. The Kyanized rope, invented and manufactured by J. T. Cook & Co. of Maysville, was then put to the same test, and sustained a weight of 2200 pounds before parting. A second trial was then had of the same size of Manila rope, which sustained a weight of 2200 pounds. A second trial was then had of the Kyanized rope, and sustained a pressure of 2410 pounds. Two trials were then had with a larger size of the Manila rope, manufactured by Bonte, which parted first at 2840 lbs, and on the second trial at 2795 pounds. One trial was then made with the Kyanized rope, which sustained the weight of 3220 pounds before parting. The average difference in favor of the Kyanized unrotted hemp rope being in the first trials 500 pounds, and in the last trial 400 pounds. This shows that the Manila rope, which has always been considered the best that was ever used, is far inferior to the American unrotted hemp rope. The Kyanized rope is manufactured from the unrotted hemp, and is not only the strongest rope made, but by the chemical process of Kyanizing, is by far the most durable.—*Cincinnati Commercial.*

Georgia Gold Coinage.

The amount of gold received at the Branch Mint in Dahlouga during the month of October was \$35,600, of which about \$600 was California, and the remainder Georgia. The amount coined during the same time was—

1,114 half Eagles.....	\$25,570 00
1,557 quarter do.....	3,892 50
3,957 gold dollars.....	3,957 00

Total for the month of October.....\$33,430 50

The California gold contains about 11½ per cent. alloy, while the Georgia has only about 5 per cent.

Southern Progress.

Many gratifying evidences have lately been given that the south has entered into the manufacture of a part of its own most valuable staple. We learn from our exchange papers that Georgia has already forty five cotton factories, South Carolina forty-five, Virginia forty, North Carolina thirty-five, Alabama twenty, and Mississippi a considerable number. The south has also entered into the railroad system. These events are of much national importance, as they not only secure the advance in wealth and prosperity of the south, but beget a common interest, in equalizing both sections of the Union, so as eventually to do away with all prejudice and jealousy.—*Natl. Int.*

DUNLAP'S HOTEL,

On the European Plan,
NO. 135 FULTON STREET,
 Between Broadway and Nassau St.,
 NEW YORK.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has constantly for sale Steam Engines, Boilers, Lathes, Chucks, Drills, Planers, Force and Suction Pumps; Tenoning, Morticing and Boring Machines, Shingle Machines, Bolt and Nut Machines, Belting, Oil, Iron and Lead Pipe; Rubber, Percha and Leather Hose, &c., &c.

S. C. H.'s arrangements with several machine shops are such that he can supply, at very short notice, large quantities of machinery.

November 23, 1849.

**JOHNSON, CAMMELL & Co's
Celebrated Cast Steel,**

AND
ENGINEERING AND MACHINE FILES,
 which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,
 100 William St., New York.

November 23, 1849.

**To Proprietors of
IRON FOUNDRIES.**

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust for facing very nice work, always on hand and for sale by
 G. O. ROBERTSON,
 303 West 17th St.,

or 4 Liberty Place, between Liberty st. and
 Maiden Lane, New York. 1m

November 3, 1849.

To Railroad Companies, etc.

The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to
 C. LIEBRICH,
 46 South 8th St., Philadelphia. 6m*

November 3, 1849.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection on or after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

BY FERDINAND E. WHITE.
 STORE NO. 22 LONG WHARF.

**Valuable Real Estate in South
Boston.**

On WEDNESDAY, December 19, at 12 o'clock, M. on the premises.

ALL the Property of the MASSACHUSETTS IRON COMPANY, consisting of their Two MILLS, situated on Boston Harbor, at South Boston. Each Mill is 214 feet by 174, including Sheds. The two contain 15 double Puddling Furnaces, and nine Heating Furnaces.

There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with it, and will be sold at the same time, about 417,000 feet of upland, on which are erected, besides the mills, four blocks, containing each four brick Dwelling Houses for workmen; a wooden Counting Room, with Dwelling adjoining; a horse stable, and a coal shed 210 feet long by 70 feet wide, now containing 3100 chaldrons Pictou Coal, and 923 tons of Pig Iron.

The terms of sale will be made liberal. For further information apply to B. T. REED, Esq., or to the Auctioneer.

December 1, 1849.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Ferns Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,
 from the best Welch quarries, and of all sizes. Also,
 COAL,

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
 275 Pearl and 43 Gold Sts., New York.

November 23, 1849.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
 President Buckfield Branch Railroad,
 Portland, Maine. 3t45

November 10, 1849.

**Patent India Rubber Steam
Packing.**

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse. JOHN GREACHEN, JR.,
 98 Broadway, opposite Trinity Church.

New York, October, 1849.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
 54 Pine St., New York. 3m

October 27, 1849,

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
 Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

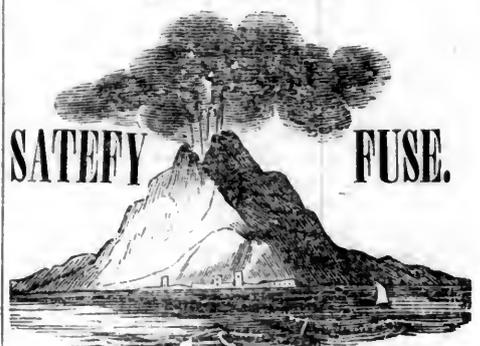
**Engine and Car Works,
PORTLAND, MAINE.**

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
 Superintendent.

JAMES C. CHURCHILL,
 General Agent and Clerk.

ETNA

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of
 REYNOLDS & BROTHER,
 Sole Manufacturers, No. 85 Liberty St.

NEW YORK.

And in the principal cities and towns in the U. States. The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849. 1y

C. W. Bentley & Co,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's now oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY.

CORNER SCHUYLKILL 2D AND HAMILTON STS.,
 SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 13 by 28 feet.
- 1 Wood dwelling house, 21 by 23 feet.
- 1 Brick block, six tenements, two stories.

A number of building lots. Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, Trustees
WALTER LESTER.

October 24, 1849.

CHRONOMETERS.

MERCHANTS, Ship Owners, Captains and others, are invited to examine the advantages offered in the purchase of Chronometers, by HEWITT & SOX, Makers, 92 Wall Street, (up stairs,) in their superior quality and great reduction of price.

H. & S. have for many years been engaged in the manufacture of Chronometers, for the first houses in the trade; and also, for the Navy of most Nations, and have received numerous rewards for their superior performance. Their Chronometers may be obtained from the Observatory at Liverpool, by order from II. & S., and at City Road, London. They are warranted to give satisfaction; but if not approved of, will be exchanged in New York, London, or Liverpool.

Rating, Cleaning and Repairs, at low charges. The Trade supplied on the most liberal terms. November 17, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip. New York, May 19, 1849.

RAILROAD

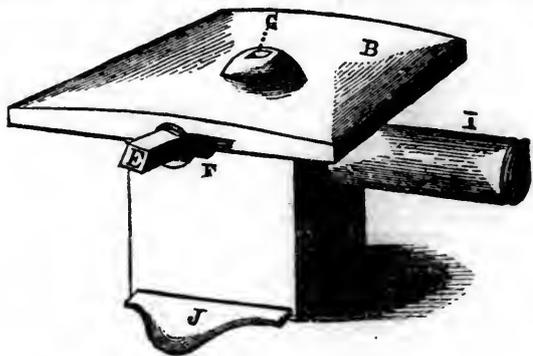
India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

May 24, 1849.

E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them, as they recommend themselves.

- Western Railroad Shop, Springfield, Mass.
- " " " " Pittsfield, " "
- Connecticut val. " " " " Springfield, " "
- " " " " " " N. Hampton, " "
- Hartford " " " " Hartford, Conn.
- New Haven " " " " New Haven, " "
- Norwich and Worcester, Norwich, " "
- N. York and N. Haven, New Haven, " "
- Saratoga and Whitehall, Saratoga, N. Y.
- Vermont Central, " " " " " " "
- Hudson and Berkshire, Hudson, " "
- L. Kingsley, Canton, Mass.

- Hadley Falls Co. Ireland, W. Springfield, Mass.
- Sidney Patch, Boston, " "
- Ames Manuf. Cor., Chicopee, " "
- American Machine w'ks, Springfield, " "
- Dean, Packard & Mills, " " "
- G. Frank Bradley, N. Haven, Conn.
- Andrew Baird, " " "
- Collis & Lawrence, " " "
- Slate & Brown, Windsor Locks, " "
- Gage, Nashua, N. H.
- Machine shop, Manchester, " "
- Louis F. Lanney, Baltimore, Md.
- J. H. Baerdid, 179 Chambers st. N. Y.
- J. Fanning, Rochester, " "
- G. W. Hunt, 41 Gold st. " "
- Chamberlain & Waldo, " " "
- P. S. Burges, carriage maker, " " "
- Samuel Miller, " " "
- J. Leggett, Stevenson falls, " "
- J. E. Harris, Hillsdale, " "
- John L. Graham, Albany, " "
- David Dalsell, South Egremont, Mass.
- Roys & Wilcock, Berlin, Conn.

Agents for the sale of Tuyeres: B. B. Stevens in New York and Connecticut. W. S. Seymour in Massachusetts and R. Island. A. J. Van Allen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee, Springfield, Mass.

November 23, 1849.

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, to work for himself, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL.

A General Newspaper and Weekly Review; To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence*; being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment*; combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors*; both at home and abroad, each one of whom will have a separate department under his charge.

IV. *Freedom from Deceit*; by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression*. While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. BEN: PERLEY POORE.

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,

142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES. Published by WM. MINIFIE & CO., 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands*. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted en-



tirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest, Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
20tf

May 19, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.
G. A. NICOLLS,
Reading, Pa.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " " Baltimore to Richmond, 7 00
" " " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore.
STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.
Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by
E. S. NORRIS.

April 11, 1849.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,
Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuykill Navigation, Schuykill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roebling, John A.,
Trenton, N. J.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac K.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Manufacture of Patent Wire ROPE AND CABLES,
For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tilters, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

**Railroad Car Manufacturer's
Furnishing Store.**
F. S. & S. A. MARTINE,
IMPORTERS AND MANUFACTURERS OF
**RAIL ROAD CAR &
CARRIAGE LININGS,**
PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Bunting

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.
opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

J. A. Burdett,
BLACKSMITH,
No. 176 Chambers street,
(Between Greenwich and Washington.)
NEW YORK.

Quarry Sledges and Hammers, constantly on hand
and made to order, & warranted. Forger of all kinds
of Ship, Steamboat and Bridge Work. Also, Forging to
Draft or Pattern.

Screw Bolts, Dock Bolts and Spikes. 1m45

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. mak-
ers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
A Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. Burr Hewson, Civil Engineer, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.

Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works,
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.

500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by

COLLINS, VOSE & CO.,
153 South St.
New York, November 17, 1849. 1m46

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.

COLLINS, VOSE & CO.,
153 South St.
New York, November 17, 1849.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
580 " " 53 " "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Oct. 13, 1849.

Railroad Iron.

THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.

They offer also to import and contract to deliver
ahead—on favorable terms.

DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the
planes of the Portage railroad in Pennsylvania, on the
Public Slips, on Ferries, and in Mines. The first rope
put upon Plane No. 3, Portage railroad, has now run
four seasons, and is still in good condition.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.

They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.

ILLIUS & MAKIN,
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at retail prices, of
Erastus Corning & Co. Albany; Merritt & Co., New
York; E. Pratt & B. Co. Eastport Md

**LAP—WELDED
WROUGHT IRON TUBES**

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.

THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Iron Store.

THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Trindolphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shaiting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Bol-
ter rivets; Copper; Pig Iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants.
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. J. F. WINSLOW, President

Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggotted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " "
 50 " Catoctin " "
 250 " Chilkiswalungo " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x 1/2 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 New York. 64 South street

**American Pig, Bloom and
 Boiler Iron.**

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast* Charcoal Pig Iron made at
 the Catoctin (Maryland), and Taylor (Virginia), Fur-
 naces; *Cold Blast* Charcoal Pig Iron from the *Clover-*
dale and *Catauba*, Va., Furnaces, suitable for *Wheels*
 or *Machinery* requiring extra strength; also *Boiler*
 and *Flue* Iron from the mills of Edge & Hilles in Del-
 aware, and best quality *Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
 American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. Agents
 for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/2 to 15 inches diame-
 ter, and any length not exceeding 17 feet—manu-
 factured by the Caledonian Tube Company, Glasgow, and
 for sale by
IRVING VAN WART,
 12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 October 30, 1848. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pud-
 dling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared
 to execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crand do do.
 100 " No. 1 Pompton Charcol do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggotting Iron, for shafts
 Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
 Do do Rounds and Squares, 1/2 to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
 Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
 Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
 Nail Plates. Railroad Spikes.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

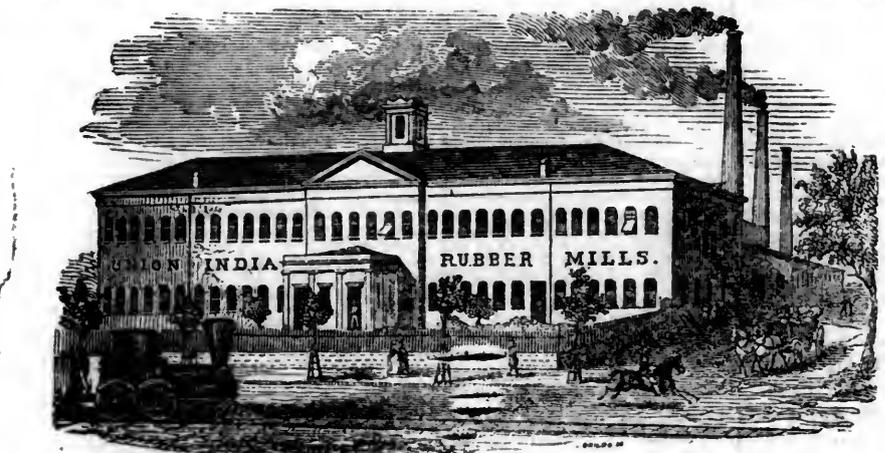
The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1 1/2 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address **J. F. WINSLOW, Agent,**
 Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Ameri-
 can iron, at their works at Jersey City, N.J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

- | | | | | |
|-----------|---------------|------------------|------------------------|---------------------|
| Beds, | Overcoats, | Life Preservers, | Mail Bags, | Camp Blankets, |
| Pillows, | Leggins, | Boat Floats, | Breast Pumps, | Travelling Bags, |
| Cushions, | Syringes, | Souwesters, | Saddle Bags, | Wading Boots, |
| Caps, | Canteens, | Gun Cases, | Clothing of all kinds, | Horse Covers, |
| Tents, | Buoys, | Portable Boats, | Carriage Cloth, assor. | Piano Forte Covers, |
| Bottles, | Maps, | Horse Fenders, | Hospital Sheeting, | Railroad Gum, |
| Tubs, | Sheet Gum, | Water Tanks, | Mattress Covers, | Hose, all kinds, |
| Caps, | Tarpaulins, | Army Goods, | Bathing Caps, | Show Baths, |
| Pants, | Life Jackets, | Navy Goods, | Baptismal Pants, | Chest Expanders. |

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine
 Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
 will be sold to the Trade at Factory prices.

* * * All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
 ings.
 October 20, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

Utica N. Y. Sep. 1849.

DEAN, PACKARD & MILLS,
MANUFACTURERS OF ALL KINDS OF
RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished
at short notice; also, STEEL SPRINGS
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

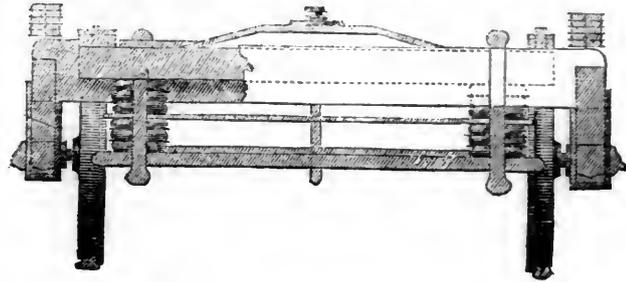
REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, } 1748

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL
superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.
May 12, 1849. lml9

**FULLER'S PATENT
INDIA RUBBER CAR SPRINGS.**



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alledged he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue further to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorized to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York,

General Agent for the U. S.; and

JAS. LEE & Co., 18 India Wharf, Boston.

JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND,
Albany, August 18, 1849.

LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

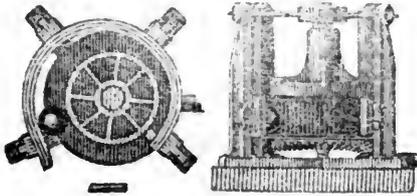
The New York Iron Bridge Co.
LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, No. 74 Broadway, New York.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

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Willow St., below 13th,
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CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

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March 12, 1848. }

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HAVING ASSOCIATED WITH THEM

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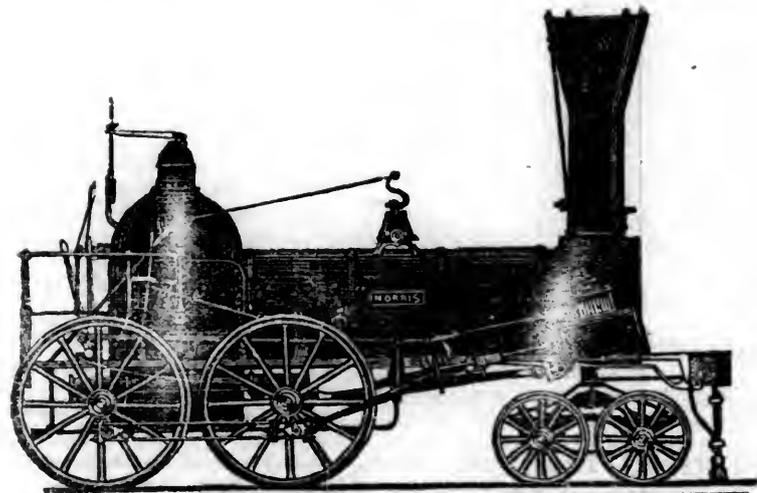
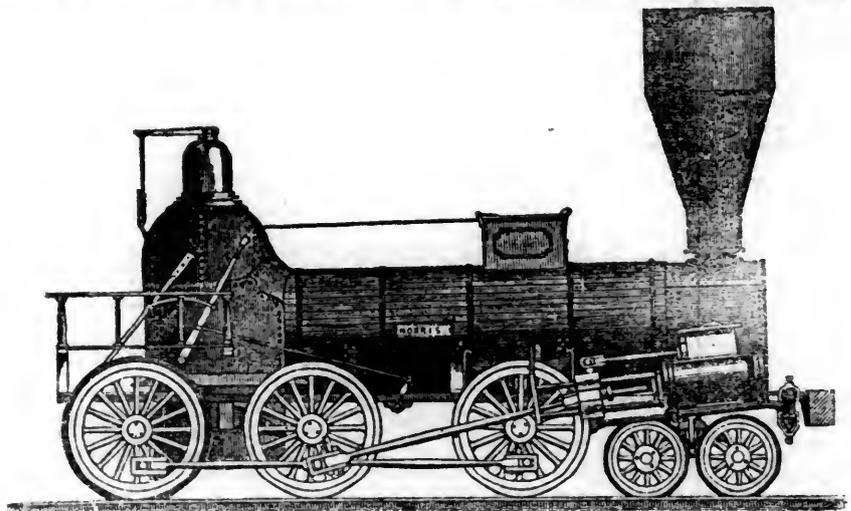
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Cambridgeport, Mass., February 16th, 1849.

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NORRIS, BROTHERS

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, December 8, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 673.

MARYLAND.

The iron manufacture of this State is dependent upon a variety of ores, which are found in different districts. The greatest number of furnaces are situated near the Chesapeake Bay, and draw their supplies of ore from the formation of tertiary clays and sands in their immediate neighborhood. This ore is a carbonate, occurring in two varieties.—Some of these furnaces are supplied also in part or wholly with hematite ores, from the talcose slate and limestone district, which lies a few miles back

* We commence with this number of the Journal the articles upon the manufacture of iron in Maryland, leaving those of New Jersey and Pennsylvania, which should properly have the precedence in order, until more complete data are procured, particularly of the latter State.

from the coast; and a considerable amount of the same ore is brought from the more distant mines of Lancaster county, Pennsylvania.

On the eastern shore of the bay one furnace, called the *Snow-hill*, is supplied with bog ores, found there in the pine wood district, from which an inferior quality of iron is made at little cost. Prince George county, on the western shore, furnishes also some of the same ore.

At the western extremity of the State, in the bituminous coal field, the *Mount Savage Iron Works* and the *Loaconing*, and some others on the border of the same coal field, make use of the ores of the coal formation, or of those found in the strata a little below it.

The smelting of iron ores in this State commenced at an early period, and has been successfully and extensively carried on for many years in the vicinity of Baltimore. From the researches of J. H. Alexander, Esq., who gives, in his Report to the State Legislature, on the Manufacture of Iron, an interesting history of this branch of business, it appears that the first operations were in the year 1715, and in 1717 iron was exported. In 1756 there were eight furnaces and nine forges engaged in the business. A list of nine furnaces is given, which were built, went into operation, and excepting two were discontinued before the commencement of the present century. These two, the *Catoctin* and *An-tietam* works, situated in the interior, are still in operation.

Ores of the Tertiary Formation.—The belt of country bordering the road from Havre de Grace to Baltimore, and thence nearly on to Washington, is composed of highly ferruginous clays and sands. The formation in Baltimore county reaches the waters of the Chesapeake on one side, and the granite and gneiss or serpentine rocks on the other; and as these generally approach near to the head of the numerous bays and indentations along the coast, there is little left for the tertiary strata beside irregularly shaped points of land which lie between the bays and creeks. South of Baltimore county, in Ann Arundel and Prince Georges, the belt of strata containing these ores lies more inland, along the line of the Baltimore and Washington railroad, a strip of flat sandy country in Ann Arundel county intervening between the ores and the coast. In this tertiary formation the most important stratum is a tough clay in which lies the iron ore. This clay is generally of a bluish color, and is then most

favorable for the existence of the ore; when it assumes a white or red shade it is not considered so auspicious. It lies in horizontal layers, commencing at or near the surface and extending to depths varying from six to fifty feet. Between its layers lies the iron ore in small lumps, balls and kidney-shaped masses, precisely as the clay iron stones occur in the shales of the coal formation. The clay itself also is much like the shales in its composition as well as in its slaty structure, and one cannot but be led to extend the causes that produced the one formation with its superincumbent layers of sand and gravel and interspersed lignite, to the production of the more ancient shales with their accompanying sandstones and carbonaceous strata. The lumps of ore are of various sizes; some are so large as to require blasting to be removed. They tend to a horizontal arrangement among the layers of clay, but assume in their position no great regularity. Associated with them are trunks of ancient trees converted into lignite, their original form well preserved until on exposure they crumble to pieces. They stand upright in the clay, or lie horizontally between its strata. At Whittaker's bed, three miles south of Baltimore, a large stem was found in a horizontal position about fifty feet below the surface, three to four feet diameter and sixty to eighty feet long.

The ores are carbonates more or less mixed with siliceous and argillaceous matters. The purest and most esteemed is of a light yellowish or whitish color, very close and compact in its texture, and not so hard but that it is easily scratched with a knife. From its resemblance to the fine grain of a hone, this is called "*hone-ore*." Its face freshly fractured gradually becomes darker by exposure, and in time a crust is formed of a reddish brown color. This crust slowly increases, extending farther and farther in, enveloping the closer grained kernel in its shelly layers. Occasionally the surface of the fine ore is coated with a layer of minute crystals of spathic iron, which give to it a delicate shade like velvet of a black or yellow color. The crevices and hollow spaces sometimes found in the lumps are lined with these fine crystals.

Besides the compact *hone-ore*, there is another variety sometimes found with it in the same bed, called "*brown-ores*." These are more abundant north of Baltimore, the *hone ores* to the south of the city. They resemble some varieties of hematites so much, that hard specimens of them would

pass for this ore; but I believe they are only the purer carbonates which have oxidized and acquired the same composition as the crust these soon obtain by exposure. They do not appear, however, to be so highly esteemed as the fine grained ores, and analyses are wanting to specify the difference between them. The composition of the latter is evidently like that I have given of the similar ore found in the mine of brown hematite at West Stockbridge, Mass.—being about 36 per cent. of carbonic acid, and 41 of iron combined both with the carbonic acid and with 13 parts of oxygen to form a carbonate of the protoxide of iron. By roasting the ore the carbonic acid is mostly expelled, leaving the proportion of iron in the remainder proportionally greater. These mixed ores work easily in the furnace, and with charcoal make iron of excellent quality, whether it be intended for forge or foundry purposes; the hone-ore alone is found to cut the furnace, so that either the brown ores or hematites seem to be required for its most successful and economical treatment. The iron is almost entirely of Nos. 2 and 3, making bar iron, which is inclined to be red-short, and which is consequently in demand at the north to mix with the cheaper cold short iron of New Jersey and New York.

The great clay bed containing the ore is a broken stratum among the layers of sand and other beds of clay, which make up the surface of this belt of country. It is intruded upon and cut off by the sand and gravel and by an occasional stratum of sand stone. There is therefore considerable uncertainty as to the extent horizontally of any of the ore beds, as well as to their depth. Still there is a probability of the clay with its ores being found in any piece of land on its range that comes up to the level it occupies in the neighborhood. To determine its presence and productiveness in ore in any particular locality, small experimental shafts of from 10 to 20 feet depth must be sunk in places around, and the strata thus proved. The first shaft may penetrate a valuable bed of ore or all may fail of finding one. The indications upon the surface can be depended upon to some extent, particularly loose pieces of ore, that have been washed or ploughed out. New discoveries are frequently made, and will be for a long time. No systematic investigations appear to have been prosecuted, and attention is principally directed to those beds already known or incidentally discovered. These are valued at high rates and are principally held by the companies engaged in the smelting business. From the unequal distribution of the ore much uncertainty attends the mining of them, an area of a few rods square sometimes turning out thousands of tons of ore, and acres around proving to be comparatively unproductive. The ore beds being generally near the surface and unprotected by any rock roof, the mining is conducted like railroad excavations—all open to the day and unprotected from the weather. The face of the bank is undermined and broken down, and the ore is picked out by hand from the clay, which is carted back. So the expense of mining depends on the proportion of balls of ore to the clay that is removed and to the facilities of working the banks without trouble from water. This is not often a serious obstruction. On the sea shore near the light house at the Lazaretto, an excavation covering several acres has been carried down even below the level of tide, the sea being kept out by a high bank of the refuse clay, etc., piled around the edge of the workings. The rain water and the little leakage is easily pumped out.

These deposits are seldom worked to their full

depth. They go only so deep as will pay. Beyond there may be more ore covered up than has been taken out. Half a ton of ore to a man a day is considered good work, when wages are 87 1-2 cts. This would make the mining cost \$1 75 per ton, to which is to be added transportation to the furnace. The 'ore-leave,' too, is another item which is sometimes avoided by the furnace company owning the land. It varies from 25 to 50 cents according to the character and abundance of the ore, and its convenience to the furnaces. As the actual cost of the ore is made up of these uncertain items, it cannot be given with precision. It is to some of the works as low as \$2 50 for a part at least of the ore they use; and others pay as high as \$4 50 for a portion of theirs. Three dollars and five-eighths per ton will not be far from the average cost of the ore at the furnaces; and of this ore it takes from two and a half to three tons to make a ton of iron.

From the nature of these ore beds they cannot be considered permanent. They are occasionally worked out in one neighborhood, and supplies have then to be looked for elsewhere. By supplying the furnace from different beds and using different mixtures, the quality of the iron is made to vary, and some poor cheap ores may in this way be worked to advantage with the higher priced hone-ores.

H.

Indiana and her Improvements.

The State of Indiana is so little known at the east, and so seldom spoken of in the eastern journals, that the inhabitants say, and with great propriety, that when any person, other than a resident of the State, speaks or writes of the improvements and resources of the west, they make but one stride from Ohio to Illinois or Missouri, and step entirely over the State of Indiana.

Why this should be the case is more than I can understand, for Indiana is at least worthy of notice, even did she not possess within herself resources rapidly developing, that will ere long place her among the first of the internal improvement and manufacturing States.

She is making long and rapid strides in manufactures and agriculture, independent of her railroads and canals; and these are advancing with a rapidity that will, I think, astonish even the "go ahead" people of the east. In a short visit recently made to Indianapolis, I was so much surprised at the progress her railroads are making, that I was lead to make some enquiries, and I forward you the results of them, which, should you consider worthy of notice, you will please give a place in your Journal.

The Madison and Indianapolis railroad comes first, as it was the pioneer. The great success of this road has done much towards bringing about the results which we now witness. This road, running from Madison, on the Ohio river, to Indianapolis, the capital of the State, a distance of 86 miles, has been in operation for many years. It was originally laid with a strap rail, which is now giving place to a heavy H rail of 60 lbs. to the yard. 56 miles of the entire distance are already relaid, and the remainder is fast being completed, and the road is one of the best paying roads in the Union.

2d. The Shelbyville road, running from Edinburg on the Madison road, to Shelbyville a distance of 16 miles, is also completed with a strap rail 2 1-2 x 7-8, and is in successful operation.

3d. The Rushville road, branching from the Shelbyville road at the latter place and running to Rushville, a distance of 21 miles is entirely graded and is fast receiving its superstructure and iron, the

latter being a strap rail 2 -12x7-8.

4th. The Knightstown road, also branching from the Shelbyville road at Shelbyville, and running to Knightstown, 25 miles, is far advanced towards completion, and is likewise receiving its iron, a strap rail 2 1-2x7-8.

5th. The Columbus and Bloomington road, which branches from the Madison road at Columbus, and is designed to run to Bloomington, 37 miles west, where it enters the great coal basin of Indiana. A charter for this road is obtained and a sufficient amount subscribed and guaranteed to insure its completion.

6th. The Jeffersonville road commencing at Jeffersonville, on the Ohio river, opposite Louisville, and running north 66 miles to Columbus, where it intersects the Madison road, is far advanced towards completion, and the company are now receiving their iron, a heavy H rail weighing fifty pounds per yard.

7th. The Franklin and Martinsville road, running from the Madison road at the former place, 27 miles west to the latter, is located, and one half is to be let to contractors next month.

8th. The Laurenceburg and Greensburg road, running from the Ohio river at Lawrenceburg northerly to Greensburg, a distance of 42 miles, is at present under construction. This road will ultimately be extended about 30 miles from the latter place to intersect the Madison and Indianapolis road between Franklin and Edinburg.

9th. The New Albany road runs from New Albany, on the Ohio river, 4 miles below Jeffersonville and nearly opposite Louisville, to Salem, 35 miles, thence to Bedford, Bloomington, Gosport and Crawfordsville, 120 miles further, where it will intersect the Lafayette and Crawfordsville road. The New Albany road is located and under construction to Bedford, 65 miles, and iron delivered at present to lay 18 miles. This road will be in operation to Salem next spring, and to Bedford next fall or winter.

10th. The Lafayette and Crawfordsville, running from the terminus of the New Albany road at the latter place to the Wabash river at the former place, a distance of 28 miles, is nearly graded and will probably be finished next season.

11th. The Evansville road, commencing at Evansville on the Ohio river, and running to Princeton, 28 miles, is now being located. From Princeton it will probably be extended 28 miles to Vincennes, and from the latter place it will either run to Terre Haute, 65 miles, or direct across to Indianapolis, about 110 miles, and will in all probability as the country becomes settled, diverge at Vincennes and run to both places.

12th. The Terre Haute and Richmond railroad, commencing at Terre Haute on the state line of Illinois, runs from thence to Indianapolis, 72 miles, and from there 73 miles to Richmond on the Ohio state line. The first division of this road from Terre Haute to Indianapolis is entirely located and under construction, and is to be laid with a heavy rail of 60 lbs. to the yard. The second division from Indianapolis to Richmond, will probably be abandoned and the road diverted from Indianapolis direct to Rushville, and thence across to Cincinnati, via Hamilton, 110 miles, or from Indianapolis to Greensburg, and thence Laurenceburg and Cincinnati, the distance in either case being about the same.

13th. The Indianapolis and Lafayette road, running from the former to the latter place on the Ohio and Erie Canal and the Wabash river, a distance

of 69 miles, is now being constructed, and will be in operation some time next year. It is to be laid with a heavy rail. Upon its completion to Lafayette, it will be extended north to Michigan City, a distance of 90 miles, there to connect with the New Buffalo and Chicago road.

14th. The Indianapolis and Peru road running from the former city to the Ohio and Erie Canal at the latter place, a distance of 76 miles to be laid with a strap rail 2 1-2x7-8 is now building, and some portion of it will be in operation next year.

15th. The Indianapolis and Bellefontaine road, passing through Pendleton, Anderson, Muncie and Winchester, to the Ohio State line, a distance of 83 miles, is now constructing, to be laid with a heavy rail.

At the State line it will connect with the road of the Bellefontaine and Indiana company, and thence by their road to, and crossing the Cincinnati and Sandusky city road at Bellefontaine, will extend to Gallion, Ohio, where it will intersect the Cleveland and Columbus road, and connect with the Pennsylvania and Ohio road to Pittsburgh.

16th. The Michigan and Ohio road to run from Logansport on the Ohio and Erie canal to Anderson on the Indianapolis and Bellefontaine road; and thence to Newcastle and Knightstown, a distance of about 95 miles, is now about being surveyed—a sufficient amount being subscribed to justify its commencement. At Knightstown it will connect with the Knightstown and Shelbyville road; and thence by that and the Shelbyville road will connect with the Madison road at Edinburg—thus giving another connection between the Wabash valley and the Ohio river. This road will also probably be extended from Knightstown direct to Cincinnati.

17th. A road to run from Fort Wayne on the Ohio and Erie canal, to Muncie on the Indianapolis and Bellefontaine road, about 70 miles, is also under consideration. A charter has been obtained, and, I understand, that the preliminary steps are about being taken to urge it forward.

18th. The Michigan Southern railroad. It is proposed to change the original line of this road, after reaching Cold Water in Michigan, by making a detour south from this point, and running through the northern counties of Indiana to the south shore of the Lake. The length of this line in this State cannot be less than one hundred miles. The route has been surveyed, and there is every prospect that the work will be soon commenced. When constructed it will form the most direct line of railway between the south shore of Lake Erie and Chicago.

In addition to her railways, Indiana has also a long line of canal navigation, to wit:

The "Ohio and Erie canal," 100 miles longer than the great Erie canal in New York, and the "White water canal." The former runs from Toledo on Lake Erie, to Evansville on the Ohio river traversing the entire length of the State. It is already in operation from Toledo to Terre Haute on the Wabash, and is under construction, to be completed in two years from the last named place to Evansville. This canal traverses for a long distance the fertile valley of the Wabash; and cannot fail, from the character of the country through which it passes, to be one of the best paying canals in the Union.

The "White Water canal," running from Hagarstown in Indiana, through Cambridge, Connorsville, Brookville and Harrison to Cincinnati, with a branch to Lawrenceburg, is already in successful operation—comprising, with its branch, a distance

of about 86 miles. This improvement will probably soon be extended, by means of a railroad, to some point on the Ohio and Erie canal, at or near Fort Wayne, a distance of about 85 miles.

Truly the State of Indiana is getting on rapidly. Her present prosperity is a wholesome one, and I do not fear a repetition of the financial disasters that some few years since overtook her. The enormous amount of railways at present in course of construction and completed—comprising an extent of over 1300 miles—may well astonish a person not familiar with the resources of the State.

But when we consider that Indiana was admitted into the Union as late as 1816, and that she now contains a population of one million, we may cease to wonder.

Her immense coal and iron deposits are also just coming into notice, and are rapidly building up a trade, which will in a short time rival that of almost any other State.

Cotton manufactories are also springing up in various quarters, upon a large scale—caused by the cheapness and abundance of fuel, and the proximity of this fuel to the cotton plantations of the south. The people of the west and south—planters, capitalists and consumers—have at length discovered that it is cheaper to carry the cotton to the coal and provisions, where they are in such close proximity, and with cheap and ready means of communication, than it is to carry both cotton and provisions to an eastern water power, or an English coal field, and then to bring it back again, as manufactured articles, to be sold on the very ground upon which it was raised.

The capital of Indiana, now a flourishing city of some 8000 inhabitants, and increasing 25 per cent. per annum, in 1821 was a wilderness. This might also be said of the whole State. The forests are disappearing rapidly before the axe of the eastern emigrant; and in their places spring up, as if by magic, fields of grain, that need but be seen to convince the most sceptical that the soil of Indiana is one of the best for agricultural purposes that we have in the Union.

The hardy and energetic population of this State have in them that indomitable perseverance and enterprise of a down-east Yankee that overcomes all obstacles; and the next thing with them, after the timber is cut from the ground, is a railroad to carry the production of this ground to a market, for they appear to be fully impressed with the idea that a market will not come to them.

One great secret of the construction of so large an amount of railway in a new State, is the cheapness with which they can be built. I have been surprised to learn the light cost of roads in this State, and I think I may with safety state that all the new roads now being constructed will not cost on the average \$2,000 per mile to grade and bridge them. Some of them cost as low as \$1,300 per mile, for their entire length.

The nature of the country, also, is such, with its long and gentle undulating swells, that easy grades and curvatures can be adopted, and they can consequently be worked very cheaply. The great abundance and cheapness of timber for the superstructure and repairs of the track, and of fuel for the engines is also of great assistance towards the cheap working of the roads.

The grading of the roads is, much of it, done by the people, through whose land it runs, and pay taken in stock. The timber is furnished by farmers along the line, and pay taken in stock, in fact everything, except the machinery and iron, is made

or done in the State; and we may ere long expect to see even the machinery and iron manufactured by her own citizens and in their own State.

Is not Indiana a splendid specimen of the enterprise of the American people? In 1820 a wilderness! In 1850 with 1,000,000 inhabitants, 1300 miles of railway and 500 miles of canals.

Thirty years only to accomplish all this! What may we not expect of her in the next 30 years?

Ere three years have passed away, Indiana will make herself known to the world, if by no other means, by the whistle of her locomotives. R.

Exports of Great Britain.

We find the following in a letter written from London to the National Intelligencer, dated October 18th:

"A lately published Parliamentary document presents the following facts. The total declared value of British and Irish produce and manufactures exported from the United Kingdom to various countries, was, in 1847, £58,812,277; in 1848, £52,849,448.

	1847.	1848.
The British colonies took.....	£14,588,397	£12,654,183
The United States took.....	10,974,161	9,584,909
The Hanseatic towns.....	6,007,365	4,669,250
Holland.....	3,017,423	2,828,288
France.....	2,554,283	1,024,521
Russia.....	1,844,543	1,622,226
Turkey.....	2,576,989	2,858,179
China, Hong Kong..	1,503,369	1,445,059
Brazil.....	2,568,804	2,067,302
Mexico, and Central and South America (except Brazil)....	2,505,855	3,761,743
Foreign West Indies..	1,410,221	1,018,138
All other countries...	9,290,360	9,024,789
	£58,842,377	£52,849,448

One striking fact developed by this statement is, that next to her own colonies, the United States is the best customer Great Britain has; taking more than one-sixth of her whole amount of exports, and more than any one of her next best customers!"

From the same document we have the following statement of the exports of Pig Iron from Great Britain to foreign countries, during the year 1848:

To the United States.....	91,704 tons.
To other countries.....	82,946 "

The total exports of Bar Iron during the same period, were:

To the United States.....	162,057 tons.
To other countries.....	159,077 "

From which it appears that Great Britain ships more iron to the United States than she does to all the rest of the world put together!

In this connection, we copy from Bicknell's Reporter the following statement of the amount of bread stuffs sent from this country to England, for the years 1848-9:

The aggregate exportation of breadstuffs from the United States to Great Britain and Ireland, up to the latest dates this year, compared with the corresponding period last year has been as annexed—

	1848.	1849.	Dec'r 1849.
Flour bbls.....	320,513	83,491	237,027
Corn meal, bbls.	18,778	960	17,818
Wheat, bushels.	479,501	163,588	315,913
Indian corn, bu.	2,918,454	422,077	2,496,377

The following is the value of the grain exported to Great Britain according to the statement from Bicknell's Reporter, to the latest period in 1849:

83,491 bbls. Flour at \$5.....	\$417,455
960 bbls. Corn Meal, \$3 50.....	3,360
163,588 bush. Wheat, \$1 05.....	171,767
422,017 bush. Corn, 60c.....	253,246

Value of produce exported to England and Ireland.....\$845,828

The New York Journal of Commerce gives the following statement of iron imported into the port

of New York alone, for the 6 months ending Sept. 1, 1849, from Great Britain:

Fm. Eng. Toas.		
Common bar iron,.....	10,644	aver cost £5,16 11
Pig iron.....	39,972	" 2 11 6
R.R. iron.....	33,878	" 5 16 0
Refined iron in bars.....	15,080	" 7 2 6
Hoop, band, and sheet.	6,396	" 7 17 6

Cost of English iron in New York \$3,678,094 58
Tons.

Sweeds iron....	5,105	aver cost, \$74 75
Russia iron....	152	" 85 00
Norway iron....	839	" 98 70

Cost in New York..... 477,886 00
Total value in New York..... \$4,155,480 58

Cheap Railways.

The prices paid for land and the expenses of Parliamentary campaigns, have also told materially against railways in existence. Land, on the average, sells to railway companies for about triple its value. Landowners, therefore, not only benefit largely by the construction of railways, by having a better means of communication, but they exact enormous sums for their land. In America, landowners, instead of being paid for their land, are compelled to make compensation to the companies, in cases where it is ascertained railways have benefited their property. This is, in reality, but an equitable procedure, and contrasts strongly with the treatment which the railway companies of this country receive at the hands of landowners. The expense of passing a bill for a railway through Parliament is equally monstrous. But the legitimate expense of a bill is not so much; it is but trifling, compared with that generally incurred. Opposition is the great cause of expense. There probably never was a bill passed without having to encounter great opposition, because there probably never was a bill for a railway prosecuted in quiet ordinary times. There must be, it would seem, a mania to bring forth railways; and then all the world comes out with railway schemes. It is opposition which engenders expense; and a mania is the hotbed for the raising of opposition. One of our railway companies had to fight so hard for their bill, that they found, when at length they reached the last stage, namely, that of receiving the royal assent, that their Parliamentary expenses had mounted up to half a million of money. Half a million of money spent in barely acquiring from Parliament the right of making a line of railway which is to confer a benefit on the nation! Such is the fact. Without opposition, the same bill would have been passed into an act at a cost not worth naming by the side of that enormous sum spent. It would appear, then, that if local parties, landowners, and others, would unite to form a railway, bringing their knowledge of the features of the country to bear, claiming only a reasonable price for their land, and fostering no opposition in Parliament, that such a work might be constructed much more cheaply than under the present system, since the principal causes of extravagant expenditure would be avoided. They would, by this means, most materially cheapen a railway formed of the levels of a line of the present day and worked by locomotives. But, suppose we use cheaper materials. Suppose we substitute horse power for locomotive, and have cheaper rails, and less expensive carriages, &c.—Suppose we do not care to obtain such perfect gradients, or wish to waste talent and money in such beautiful ornamental structure as our great lines of railway can boast possessing. Suppose landowners unite to form a branch railway from their towns and villages, serving their farms and houses, which shall be worked by horse power or light locomotives—not attempting those fearfully heavy works of making long tunnels, levelling mountains, and raising valleys, turning the course of waters, and changing the face of nature, indulging not in buildings which for luxuriance of style rival the Royal Exchange or our new House of Parliament; suppose they do this, is it not possible to make railways to villages, to places where otherwise there can be none; railways which shall give as much accom-

modation as the traffic needs, and which, giving this accommodation, shall pay a good dividend on the capital expended in their construction?—*Herald's Journal.*

From the London Artizan.

ROYAL COBNWALL POLYTECHNIC SOCIETY.

An Essay on the Comparative Merits of Iron and Wood for Ship-building. By Edwin O. Tregelles, C. E.

The subject of building iron vessels is one that may well claim the attention of all who are interested in the prosperity of Great Britain. Success in this branch of our industry may be regarded as one of the means by which we may avert the consequences of the alterations in our navigation laws, dreaded by many as calamitous, and by which we may maintain that pre-eminence in the commercial world that has been so long enjoyed. It is probable that Great Britain cannot compete with many other portions of the globe in the construction of low priced wooden vessels, and that, ere long, our shipwrights' yards will be merely places for repairing damaged vessels rather than for building new ones; whereas, if we bend our energies to the successful application of iron for the purposes of ship-building, it is probable that we should command the market in ship building, and possess a commercial fleet of the highest order.

Let us assume that there are no prejudices to overcome, and no objections, real or imaginary, to be removed, and coolly consider the relative benefits that accrue from the employment of the respective materials. We will consider the advantages to the state of using the one or the other.

In the building of a first class oak ship of 500 tons, we shall require about 700 of timber in the rough; that timber occupied about 12 acres of land on an average 75 years, and is worth more than £1,200 as it stands growing, before any labor of an artizan has been bestowed on it; or in other words £1,200 is the value of the raw material before it is manufactured, and the hull, when finished for launching, will be worth £6,000, the value of the raw material being one-fifth, or £1,200, and of labor and profits four-fifths, or £4,800. The value of the raw material for an iron ship of the same size would be about £50, being the royalty paid to the owner of the soil for the liberty to work the iron ore, limestone and coal; the labor and profit would be nearly £6,000, say £5,950, and we shall then have an iron ship costing £6,000, of which the raw material cost less than a half per cent. Some persons may estimate the value of iron and oak vessels at less or at more than the foregoing figures, which may not be the exact value of the respective classes, but they are sufficiently near the truth to exemplify the real facts.

We have, then a vessel of 500 tons costing £6,000, whether of wood or iron, but the oak vessel would not last, on the average, more than 15 years, and would require to be repaired in that time probably five times, at an expense of say £300 each time, or a total of £1,500. This may be regarded as a very moderate computation, but it would increase the cost of the oak ship to £7,500, which, if sold for old timber, at the end would fetch £250—leaving £7,250 to be divided over 15 years, and we shall have £475 as the annual cost of the oak ship of 500 tons, exclusive of interest or capital. We will compare this with the iron vessel of the same size, costing £6,000, which, on the average, may be fairly estimated to last 20 years, and may require in that time to be repaired 10 times, at an expense of £100 each time, making the first cost and repairs £7,000. The value of the old iron ship at the end of 20 years may be estimated at £600, giving us £6,400 to be divided by 20 years, and we shall have £320 as the annual cost of an iron vessel of 500 tons, exclusive of interest or capital.—Therefore we see that the cost to this country of using oak vessels may be expressed by the figure 475, and the cost of using iron vessels by the figure 320; or, if we allow for errors in the attempt to form an accurate approximation, we have still a great advantage in favor of iron if we place that figure at 3, and express the oak vessel by 4.

But an iron vessel of 500 tons register would carry 100 tons more than the oak vessel with the same displacement. Nor is this all; the speed of the iron vessel should be much greater, and will run 6

miles while the oak goes 5, or doing as much in 11 months as the oak does in 12, or earning £12 while the oak vessel earns £11. Again, in the time occupied in repairs, the iron ship would not be detained two weeks in the year on the average; whereas one month in each year must be allowed for the aggregate repairs of an oak ship, or 15 months out of the whole time, the money value of which is about £600, while the loss of time by the iron vessel would be only 40 weeks or 10 months, the loss of time being equal to £266. We have an advantage then, of one-sixth as to stowage, and one-twelfth as to speed, making a saving of one-fourth on 30s., or reducing the cost of carrying by an iron vessel to 22s. 6d. (irrespective, of course, of the wages and vitualling, which would be alike in each case,) compared with 40s., the cost of carrying by an oak vessel. Besides this, we must estimate the saving in time for repairs, which we see is as £266 for iron, compared with £600 as the value of the time consumed in delay while repairing the oak vessel.—Then if we can carry for 22s. 6d. what has heretofore cost us 40s., would not the adoption of iron vessels keep for us the advantageous position in commerce which we have long enjoyed?

But it may be argued that the premises are unsound, and therefore the conclusions are false; that an iron vessel cannot be as safe as an oak one, and therefore never can succeed; in fact, after all, "there is nothing like oak." Well, let us examine the subject in all the bearings within our reach, and perhaps we shall conclude that, after all, "there is nothing like iron!" We shall find some practical remarks on the subject, in a work by John Grant-ham, a Liverpool Ship-builder. He says—"What are the objects most desired by the merchant in the choice of a ship? These I consider are—

- " 1st. Strength combined with lightness.
- " 2nd. Great capacity for storage.
- " 3rd. Safety.
- " 4th. Speed.
- " 5th. Durability.
- " 6th. Economy in repairs.
- " 7th. Cost.
- " 8th. Draught of water.

" I trust I shall be enabled to prove that iron vessels possess advantages under all these heads in so eminent a degree as to render them superior to wooden vessels, and address myself to each point in its respective order.

" First, strength combined with lightness. This subject involves two considerations, the strength of the materials, and the mode of uniting them. The great strength of malleable iron to resist strains in every direction is well known, but to those who are not conversant with the subject, the extent to which this advantage may be carried is not at first apparent, nor how the material may from comparatively small pieces be so combined in large masses as to form the ponderous body of a ship; and they are thus too apt to prescribe a limit to its use. An opinion indeed is now very generally entertained, that iron may be suitable for small craft, but is inadequate for the construction of vessels of heavy burthen; this however, is a supposition so erroneous, that the reverse would be much more correct, for large vessels will afford the best practical demonstration of the superiority of iron for ship-building.

In the application of timber, obstructions increase in a ratio proportioned to the increased size of the vessel to be built. How often has the ship-builder the greatest difficulty in obtaining timber to suit the varied curves of our finest ships? How often is the country despoiled of its noblest ornaments, by the tempting prices he is compelled to offer for its most magnificent oaks, the largest of which are frequently insufficient for his purpose! How are his brains racked, and his patience tired, in seeking for crooked timber necessary to frame a sharp floor, or a square bilge! How often is he obliged, though he knows it to be injurious, to scarf the frames for which no timber can be found sufficiently large to enable him to avoid such defects! And is this not one cause amongst others, why our building yards are empty, while our ports are filled with ships from other nations in which timber is more plentiful, and the choice more extensive? But how stands the case when we turn to iron? Where is the frame even of the most intricate form, that our smiths cannot mould? Where the frame or beam so large, that iron cannot be found of which to fashion it, and that too, if need be, without a scarf? Here there

are no knots, no sap, no cutting across the grain; here there is no useless timber, placed merely to fill in, or cross butts. Here every inch of material is of service, and every scrap applied to some useful end. Iron has also to a high degree, the power of resisting compression—timber, it is admitted, has great power to resist tension in the direction of the grain—but it is very deficient in strength across the grain and its power to resist compression is also very limited, especially when exposed to any moisture. Again: timber after being some time in use, becomes brittle, and is but little disposed to bend. Good malleable iron, on the contrary, may be bent double even when cold, and does not become brittle with age, except when converted into an oxid. The ease with which iron beams and frames can be wrought, and the facility of obtaining them of any dimensions in one piece, overcomes one of the greatest difficulties in shipbuilding. I have before stated that the power to increase the stiffness of the hull when built of iron, is unlimited; and provided the shell has originally been made sufficiently thick additional strength may at any time be given to the frame. The objections arising from the use of fastenings, of a material so totally different from that of which the hull is composed, are entirely removed in iron vessels. In the first place, the outer shell of the vessel is so composed of a series of plates, so rivetted together that its strength is nearly equal to what it would be were it possible to form the whole of one plate. This shell is independent of all indirect means for preserving its completeness. It forms one grand whole of the same material throughout, and that of the strongest kind. This shell is stiffened as before described, by ribs crossing the joints of the plates at short distances apart, and giving an additional security. Beams, knees, bulkheads, all are brought together in one firm mass, and united by numberless, short, unyielding rivets. I may venture, indeed, to say that more real serviceable fastening is often employed in the space of a few inches in an iron vessel than is in most instances brought to bear on one entire beam of a timber-built ship." The *Royal George*, one of the iron steamers running between Liverpool and Glasgow—a vessel of unusual length in proportion to her beam—when loaded with about 150 tons of dead weight, besides her engines and coals, got on a rock near Greenock, at high water, and was left there during a tide without sustaining any injury. She rested nearly on her centre, and all who saw her were of opinion that no timber vessel could have remained in that position without breaking her back. Captain Chaplin, who has had upwards of twenty years' experience in steam navigation, and who was for some time manager of Woodside Ferry, in the course of some remarks on the strength of iron vessels, says, "I may give you a case in point. The *Cleveland*, built by you, got ashore amongst the rocks in the ebb tide, where she was left high and dry for seven hours, hanging entirely by heel and forefoot, without sustaining injury either in the hull or engine."

To be continued.

From the New Orleans Delta.

THE CAUSE OF THE EXPLOSION OF THE LOUISIANA.

We devoted a good part of yesterday to an investigation into the causes of the late disastrous explosion of the boilers of the Louisiana. We were induced to make this investigation by an apprehension of the dilatory and uncertain character of any legal investigations, and by the deep interest and anxiety which pervade our community on this subject. A very intelligent, scientific and experienced engineer, who has been engaged in the profession for twenty-three years, Mr. W. F. Mix, kindly volunteered to aid us in our investigations. We proceeded to the corner of Canal and Front streets to examine the fragments of boilers lying there. Mr. Mix explained the position of the boilers, and showed that when there was no water in them, or not sufficient water, the lead around the checks would melt. These checks are the connecting links between the boilers, they are within the furnace, on the forward end of the boilers, and the lead by which they are joined, lies close to the exterior surface of the boilers, which, when filled with water, never acquires sufficient heat to melt the lead. Mr. Mix then showed that the lead of the checks now lying on the levee, was melted, and

consequently that the boilers did not contain sufficient water. The origin of the catastrophe was thus simply and satisfactorily explained. But Mr. Mix went further, and explained to us the probable cause of the deficiency of water. The boat lay touching the bottom of the river, a fact admitted by Captain Cannon. The pumps being set to work, probably heaved mud instead of water, and the engineer did not possess skill or experience enough to discover or correct his error. Mr. Mix introduced us to Mr. William Smith, engineer of the Silas Wright, who informed us that on the next day after the explosion of the Louisiana, he went aboard the General Jessup, lying near the site of the Louisiana, when the engineer of the Jessup just as he was getting up steam, discovered that his doctor was out of order, and that the pumps heaved mud instead of water. The engineer, as soon as he perceived the difficulty, immediately put out his fires and cleaned out his pump valves, and thereby avoided the catastrophe which the ignorance or negligence of the engineer of the Louisiana brought upon that ill-fated boat.

These facts, this simple explanation, afford a full solution of the origin of this awful calamity.—The second engineer of the Louisiana, who was on duty in the absence on leave of the first engineer was ignorant of his duties, or grossly neglectful of them. We learn further that the doctor of the Louisiana had been out of order, and they had been working at it all the day. The case is one of gross palpable and inexcusable ignorance, the consequences of which must attach to all who are implicated in employing so incompetent a person in so responsible a trust.

On the other hand, we were yesterday waited on by Mr. Robert Robinson, a young man who has been employed as an assistant engineer. He is the person referred to by us yesterday, as having remarked, "it was coming," and then left the boat. Mr. Robinson says he was aboard of the Louisiana three minutes before the explosion; he went aboard to see Clinton Smith, the second engineer, who was a friend of his. Whilst in the engine room, he saw Smith raise the mud valve and blow it, and that at the request of Smith, he (Robinson) tried the upper gauge cock of the starboard boiler, and perceived that there was water in it; Smith tried the others, and said they would do. He also noticed, from the leads, that there were forty pounds less steam than he has frequently seen the boilers bear.—While he was standing in the engine room with Clinton Smith, he says the Captain's brother came up and told Smith to get her hot. At this time, the boat was listed to the starboard side about three inches. Robinson then left, and was standing on the board, conversing with Mr. Alfred Watson, the pilot of the Louisiana, when he heard Smith ring his ready-bell at the starboard engine. Whilst conversing with the pilot, the explosion took place, and half of the boiler head struck Mr. Watson, within a few steps of him (Robinson) and killed him instantly. Mr. Robinson says there were three successive reports, as of different explosion. The boiler, the fragment of which was thrown to the corner of Canal and Front streets, was that next to the larboard, and had been taken out of the old Memphis.

Our readers will determine for themselves what weight should be attached to these conflicting statements. We are satisfied that there are not sufficient water in the boiler, and that the disaster occurred from the gross ignorance or negligence of Clinton Smith, the engineer. There are persons who believe that Smith escaped, but slightly hurt; but we have as yet been unable to discover any facts which would change our first impression that he perished in the explosion, one of the first victims of his own neglect and incompetency.

Alabama.

The prospect of the speedy completion of the Georgia South Western road to the Chattahoochee, has aroused the attention of the people of South and Eastern Alabama to the extension of this line to Pensacola or Mobile. We see by the Alabama papers that the preliminary steps for the accomplishment of this object are now being made, and when we take into consideration the importance of this link, not only to those living on its line, but to the

railroads of Georgia and South Carolina, and the commerce of the whole country, we cannot doubt its early completion. We dwell upon this subject somewhat at length in our paper of the 17th ult.

The Mobile planter gives the following notice of the steps now being taken in reference to this object:

GIRARD AND MOBILE RAILROAD.

A meeting of the citizens of Macon county was held at Enou on the 14th inst., to adopt measures for building a railroad from Girard to Mobile Bay. Among other resolutions, one was adopted proposing to hold a mass railroad meeting at the Chunnemungee Camp ground on the 13th December; and also for the appointment of a committee to solicit subscriptions and correspond with gentlemen in the several cities interested in the construction of said road.

Another meeting for the same object was held at Eufaula on the 16th inst. Resolutions were adopted for the appointment of four delegates to Mill-Edgeville to memorialize the Legislature of Georgia on the subject of the southwestern railroad, and to procure, if possible, the construction of a branch to the town of Eufaula; also 20 delegates were directed to attend the railroad convention to be held at Montgomery on the 4th of Dec. and authorising said delegates to memorialize the legislature on the subject of connecting Eufaula by railroad with the Gulf of Mexico at Mobile or Pensacola, and to petition that body for a charter.

We have the following letter on this interesting subject:

Columbus, Ga., Nov. 16, 1849.

Dear Sirs—I beg to call your attention as lovers of useful enterprise, to an article in the last "Times" on the Girard and Mobile railroad project. I assure you that the picture there drawn of the spirit of the movement here and along the line is not over-colored. It takes like wildfire, and I have strong hopes of being able to report authentically, in a short time, that 60 miles of grading, and a part of the superstructure, have been engaged to be done by individuals for stock. Mark the fruits of the enterprise. It puts you less than four and N. Orleans four and a half days from New York.

New Orleans to Mobile,	18 hours.
Mobile to Columbus	12 "
Columbus to Macon	4 "
Macon to Savannah	11 "
Savannah to N. York	60 "
	105

The following is the article alluded to above:

Mobile and Girard Railroad.—The work goes bravely on—the spirit of this great enterprise, which has for years past been struggling into shape, appears at last to have leaped forth at a single bound, a full grown and matured project. We have never known any enterprise to be taken hold of with so much spirit, and so to take like wildfire along the whole route of its promulgation. The route is now being traversed by an enterprising gentleman of Russell county, with a view to spread the flame along the whole line, and interest the people living on it in its behalf. So far as heard from, every body appears eager to lend a helping hand. We refer to the proceedings of the railroad meeting below.

A mass railroad convention is proposed to be held at Chunnemungee, which will be no doubt well attended, and productive of good results. We invoke the aid of our brethren in New Orleans and Mobile to awaken a proper enthusiasm at the other end of the line. The prize is a splendid one.—It is a project to put New York and New Orleans four days and a half travel from each other.

MINNESOTA.

We copy the following interesting particulars relative to this hitherto unknown territory from the St. Louis Republican.

Minnesota Territory is bounded on the north by the 49th degree of latitude which divides it from the British Possessions, on the east by Lake Superior and Wisconsin, on the South by the State of Iowa, and on the west by the Missouri river and the Ore-

gon territory, from which it is divided by the Chipewewa mountains. The river St. Croix, already famous for its rapids, its pine forests and lumber business, is the boundary from Wisconsin on the South east.

Minnesota is the aboriginal name for the St. Peter's river, and means the Turbid waters; Minne being water in the language of the N'Decotahs and Soto, turbid or muddy.

The Territory contains an area of 166,000 square miles, with as large an amount of arable land, fit for immediate cultivation, as in most of the States, in proportion to its extent. Four or five large States may yet be carved out of this immense territory.—In the south-eastern section are immense pine forests, and directly in their midst the most abundant water power for the manufacture of lumber, or in future, every article of human comfort. Commencing about twenty five miles above the mouth of the St. Peters, is a vast forest of hard wood timber extending more than a 100 miles along the river, and from twenty five to forty five miles wide.—And judging from the history of all our new States on the Mississippi, as the country becomes explored and settled, a much larger proportion of timber will be found to exist than is at first supposed.

In the organic law of the Territory, provision was made for a Legislative Assembly, to consist of a Council and House of Representatives. The Council at present consists of nine members, elected for two years, and the House of Representatives of eighteen members, elected annually. The number of each may be increased by the Territorial Legislature, as population increases, but not to exceed fifteen Councilors and thirty nine Representatives.

By proclamation of the Governor, our election for members of the Legislature and Delegates to Congress was on the 1st of August, and the first Legislature of the Territory commenced its session in a house provided for the purpose in the town of St. Paul, corner of St. Anthony and Minnesota streets, on the first Monday in September. It continued in session nearly two months.

The Honorable H. H. Sibley is the Delegate to Congress.

Public Debt of Pennsylvania.

The following is an exhibit of the debt of this State, and of the several acts by which they were created:

Loan per act of	Month	Year	Amount	
April	2	1821	\$26,951 89	
"	April	1	1826	205,461 15
"	April	9	1827	999,311 15
"	March	24	1828	1,998,407 09
"	Decem	18	1828	798,474 64
"	April	22	1829	2,197,849 55
"	Decem.	7	1829	50,000 00
"	March	13	1830	2,993,305 47
"	March	21	1831	2,481,711 83
"	March	30	1831	209,096 49
"	March	30	1832	2,348,777 64
"	April	15	1832	300,000 00
"	Feb.	16	1833	2,540,010 56
"	March	1	1833	200,000 00
"	March	27	1833	525,922 74
"	April	9	1833	120,000 00
"	April	5	1834	2,265,069 75
"	April	13	1835	959,540 79
"	Jan.	26	1839	1,195,928 92
"	Feb.	9	1839	1,278,375 99
"	March	16	1839	100,000 00
"	March	27	1839	460,679 23
"	June	7	1839	49,998 25
"	June	27	1839	1,134,332 70
"	July	19	1839	2,053,933 42
"	Jan.	23	1840	860,073 13
"	April	3	1840	860,380 89
"	June	11	1840	1,039,683 65
"	Jan.	16	1841	800,500 00
"	March	4	1841	22,035 06
"	May	4	1841	752,664 00
Loan (relief)	May	5	1841	565,875 95
Stock loan	May	6	1841	903,048 20
Int. certificates	July	27	1842	44,681 60
"	March	7	1843	83,496 54
Stock loan	April	29	1844	59,551 46
Int. certificates	May	31	1844	82,611 38
Stock loan	April	16	1845	4,489,463 79
"	Jan.	22	1847	62,600 00
"	April	11	1848	135,214 00

South Carolina.

Public Debt.—The following detailed statement of the debt of this State we copy from the late message of the Governor:

Rate interest and date of loan.	Am't now owing.	When payable.	Where payable.
6 pr ct. R.R. loan, '39	\$176,328 71	1850	Chas'ton
6 " " " "	176,328 71	1852	Chas'ton
5 " Fire loan, '39	486,666 67	1858	London.
6 " " " "	482,722 20	1860	Chas'ton
5 " " " "	488,888 88	1868	London
6 " " " "	325,808 90	1870	Chas'ton
6 " Randolph Stock,	10,000 00	1850	Chas'ton
5 " Railroad B. Cap.	46,714 34	1859	Chas'ton
3 " Revolutionary.	117,438 40	at pleas.	"

\$2,310,896 81

* Valued at \$72,810 60.

The resources of the bank, applicable to the payment of this debt, amount to \$3,888,368 60, which is an excess of available assets over the liabilities of the State of \$1,532,843 99, or over two and a half millions, if the sum of \$1,051,000, received from the Federal Government on deposit, be included.

Governor Seabrook recommends an immediate winding up of the affairs of the Bank. The part of the message having reference to this we give as follows:

In 1833, it was deemed "expedient and beneficial both to its citizens and the State, to re-charter the bank." It now becomes the solemn duty of the Legislature to inquire whether its existence shall be prolonged beyond the year '56, to which by law it is limited. On this subject a great diversity of opinion has been for many years entertained. The public mind seems at length to have been brought to the conclusion, that the bank has not accomplished the high purposes for which it was created, that it is a dangerous institution; anti-republican in its character and tendency; and that the evils inevitably arising from the connection between a monied corporation and the State, increase and ramify the longer the rights and privileges of the former are extended. The resolutions of your last session, adopted by very decided majorities, and the apparent acquiescence of the people in the decision of their rulers, would seem to have definitely settled the question of a re-charter, and that necessarily all minor and collateral issues have been absorbed by it.

The political history of South Carolina has too long presented the anomalous spectacle of its constituted authorities pertinaciously upholding a State corporation, while it denounced any union between a bank and the Federal Government. To me it is obvious that, except the unconstitutionality of a United States Bank, and its possession of a wider field of operations, every argument which might be wielded against it, would fall with equal, if not greater force against a State Bank. From Experience moreover we learn, that the establishment of such an institution, possessing the right of substituting a fictitious currency for determining the value of the products of labor, is not easily divested of its established authority. By the influence it insensibly acquires, it measurably perpetuates its own existence. The fatal blow to the Federal Bank was given by the Executive in the exercise of an unwarrantable power. I invoke the legislature, then, to profit by the admonitions which the past has written on the legislative history of our country. I also desire, in this place, to express my settled conviction, that the Bank of the State was founded on a false and pernicious principle; that to grant to the members of a community almost exclusively devoted to rural pursuits, unusual facilities for commanding money, is to inflict upon them and their posterity an unmitigated evil; that the more numerous and difficult the obstacles in the way of receiving bank accommodations by that class, the greater their contentment, and the more certain the success of their vocation. Whenever the agriculturist substitutes speculation for the results of industry, his prospects may seem brilliant for a season, but the day of darkness and disaster will inevitably follow.

In submitting a plan for winding up the bank, I scarcely need assure you, that the subject has received my most attentive examination, and that in suggesting the necessity of your action upon it, I have been influenced solely by a high sense of official duty.

It is proper that I should inform you, that Messrs. Baring, Brothers and Co. of London, have addressed to me a communication substantially protesting against closing the Bank, on the ground that that institution was voluntarily offered by the State as one of the securities for the loan negotiated by them. I will only here remark, that it is not proposed to destroy the Bank, but to deprive it of its banking powers. It will continue as a corporation until 1860, four years beyond the period to which its duration extends by the existing law. At that time only \$488,888 88, of the foreign, and \$398,619 50 of the domestic debt will be due, while the assets of the bank will amount to about two and a half millions. But in truth, the foreign debt will then have been paid, if the plan of hypothecating securities, or emitting new bonds, should the ordinary means fail, be resorted to. In order to secure that result the directors should be invested with full powers. By this expedient, the argument of violated faith will have no ground on which to rest. The state will have discharged its obligations in full, and that too before the period specified in the contracts. In the meanwhile let the assets of the banks, not required for the redemption of the liabilities of that institution be solemnly set apart for the liquidation of the public debt.

In conclusion allow me to add that, as far as my personal knowledge extends, the bank from its organization to the present day has been ably and faithfully conducted. My objections are not to its administration, but to the policy in which the institution itself originated. The accompanying letters from the president and cashire were written in reply to certain interrogatories propounded by me.

Reservoir on Beacon Hill, Boston.

This magnificent work is now nearly finished. The water was let in for the first time on Monday last, and is now let in over night, and drained off in the morning. It rises into the basin, through two pipes 24 inches in diameter, one at the south-east and the other at the south-west corner. There is a gate at the south-west corner, by which means the reservoir may be emptied and cleansed; and just under the coping is a waste-weir, to let off the surplus water. The water is to rise to the coping, within 18 inches of the top. The basin is surrounded by a double wall, twelve feet thick. The bottom is laid with a mixture of cement and gravel, called concrete, which becomes as hard as a rock, and over this is a pavement of brick.

The structure is about 200 feet on each side, and covers about an acre. The basin measures on the inside about 160 feet square. It is 16 feet deep, and will hold 3,000,000 gallons.—The floor is supported by 14 massive walls, turned with arches running parallel with Derne street, except the short arches at right angles with that direction on the Derne st. side.—The appearance of the immense pile from Derne and Hancock streets, is grand and imposing; and the view from the top [the ascent to which is by a flight of stairs] is very fine. You stand above the tops of the houses, except a few on the top of the hill, and take in at one view East Boston, Chelsea, Charlestown, and East Cambridge, and look down upon the city of Boston below.

This huge fabric contains about 700,000 cubic feet of masonry, weighing not less than 70,000 tons. For six months, 250 tons have been raised per day. It has swallowed up 15,000 cubic yards of granite, and 9,000 of concrete. It does great credit to the architect, and to the enterprising contractors, and will be, for ages to come, to Boston, what those immense hydraulic works, now in ruins, have been to the great cities of the East.

Under this pile are immense rooms for storage which, we sincerely hope, may never be desecrated for storing alcoholic liquors.

The contractors by whom this great work has been constructed, are Messrs. Conder, Case & Co., gentlemen of extensive enterprise and skill, the senior partner being engaged in the construction of various public works, now in progress in Maryland and Pennsylvania. The manner in which their great contract has been performed, reflects the high-

est credit upon their capacity for such undertakings. The difficult work has been accomplished with remarkable quietness and good order, and without the annoyance to citizens which generally attend such works. The contractors have left behind them a good name, and have secured themselves many friends, by their uniform courtesy and gentlemanly bearing.—*Boston Atlas.*

Railroad Winter Arrangements.

BUFFALO AND ALBANY.

We learn from the Syracuse Journal of the 28th ult., that a meeting of the Superintendents of the several railroad companies between Albany and Buffalo, was held in that city on Monday last, for the purpose of making the usual arrangements for the winter. After consultation, the following schedule was fully agreed upon. The new arrangement takes effect on the 17th of December. The passenger trains going west will leave Albany as follows:

	Express.	Mail.	Night.
Leave Albany	7 A.M.	10 A.M.	7 P.M.
Schenectady	7 45 "	11 "	8 "
Utica	11 25 "	3,30 P.M.	12 "
Syracuse	2 P.M.	7 "	2,30 A.M.
Auburn	3,15 "	8,45 "	4,30 "
Rochester	6,30 "	2 A.M.	9 "
Arrive at Buffalo	10 "	6 "	1 P.M.

FOR THE EAST AS FOLLOWS—

Leave Buffalo	7 A.M.	10 A.M.	7 P.M.
Rochester	10 "	2,30 P.M.	11,15 "
Auburn	1,30 P.M.	7,45 "	4,30 A.M.
Syracuse	3,15 "	9,45 "	7 "
Utica	5,45 "	1 A.M.	10 "
Schenectady	9 "	5 "	1,45 P.M.
Arrive at Albany	9,45 "	8 "	2,30 "

FREIGHT TRAINS.—The freight trains will leave east and west as follows:

Leave Albany	2 P.M.	7 A.M.
Schenectady	2,30 "	8 "
Utica	11 "	1,30 P.M.
Syracuse	7 A.M.	6,30 "
Auburn	9,30 "	
Rochester	4,30 P.M.	
Arrive at Buffalo	10 "	
Leave Buffalo	1 "	
Rochester	6 "	
Auburn	1 A.M.	
Syracuse	3,30 "	6 A.M.
Utica	9 "	10,30 "
Schenectady	3 P.M.	5 P.M.
Arrive at Albany	4 "	6 "

Georgia.

The Savannah and Augusta Railroad.—The following gentlemen constitute the directorship of this road:

Alex. R. Lawton, President, James P. Scriven, Chas. F. Mills, John Stoddard, Wm. Duncan, of Savannah; John C. Poythress and John Dowse, of Burke.

We copy the following complimentary remarks in relation to these gentlemen from the Savannah Republican;

We feel bound to congratulate the subscribers to this Road on the excellent choice of their Directors. We are not acquainted with the Directors from Burke co., but they are spoken of in the highest terms, and there is no doubt that their services will be of great value. Of the Directors belonging to the city of Savannah we can speak to the point and those who know will concede that it would be difficult to organize a better board. Among us certainly, it would not be possible to name five men of better judgment, of sounder discretion—whether in the management of their own business or of any trusts confided to them. Some of them are men of wealth and influence, and others are merchants of deservedly long standing. All are men whose word is as good as their bond, and whose character are the best guaranty of their future course.

The choice of Mr. Lawton for President, is, in

our opinion, a peculiarly happy one, and satisfactory, we are sure, to all concerned. His intelligence, his unconquerable perseverance and energy, his amenity of manners, and his uncompromising integrity, are qualities which render his appointment eminently judicious.

Lake Champlain and St. Lawrence Railroad.—An attempt is about to be made to extend this railroad which now leads from La Prairie, opposite to the city of Montreal, to St. Johns, along the St. Johns river to Rouse's Point, where it will unite with the Ogdensburg railroad, near the point where it will cross the outlet of Lake Champlain. The length of the proposed extension is 21 miles.

Public Debt of Canada.

The provincial debt is \$20,832,561, which is higher than the liabilities of any State of this Union, Pennsylvania and New York excepted. The public works, which have cost \$18,000,000, will only bring a revenue this year of \$200,000, or a little over one per cent.

Enormous Increase of the Iron Business in Wales.—The increase of the iron business is, probably unexampled in the history of the world. The population during the 40 years, from 1801 to 1841, increased in Newport from 1,423 to 13,766 in Trevechin, from 1,742 to 14,942; Aberystwith, from 805 to 41,272; Bedwelty, from 619 to 22,413. This is the progress in Monmouth; in Glamorgan the increase has been, if not in the same enormous proportion, still enormous in itself. Thus, during the same period, the increase at Merthyr has been from 7,705 to 31,977; at Cardiff from 1,870 to 10,077; at Swansea, from 6,831 to 16,787. The progress in the actual trade is shown by the returns to be equally astonishing; in 1820 the iron sent from the worker for shipment to Newport, was 45,462 tons; in 1847, 240,637. The quantity at Cardiff, in 1820, was 50,157 tons; in 1847, it was 220,953; and this is exclusive of a quantity of iron shipped from smaller ports, which owe their existence to the last 20 years. We scarcely believe that any other country could show a similar result in one branch of business. The quantity of coal sent in 1846 from the four ports of Cardiff, Swansea, Llanelly, and Newport, amounted to 1,847,318 tons. The value of the shipments of iron alone from the counties of Monmouth, Glamorgan, and Carmarthen, was estimated, in 1847, at four millions sterling.—*Church of England Quarterly Review.*

FORWARDING CATTLE BY RAILROAD.

We copy from a Western paper the following interesting letter relative to the facilities offered by railroad for sending cattle to market over the old way of driving.

Sir:—In your remarks respecting my enterprise of shipping cattle from Lafayette. The Toledo Republican has misunderstood my verbal remarks and the errors in both papers will discourage rather than stimulate farmers to carry cattle. When last at the east I made it a great object to ascertain facts at Boston and New York and also from freighters on the lakes and canals. The prices of freight on cattle will be about half of what you have stated.

My estimates are these: Thirty-five head of cattle weighing 1000 lbs., and one hundred hogs will make a full freight from Lafayette to Toledo.

Cost for Cattle by Canal, say \$2 00
Across the Lake \$2 25
To New York via Erie Railroad when finished \$6 00

Should New York State take off the canal tolls which the Buffalo and Erie railroad have to pay, cattle can go to Albany for less than the cost from Dunkirk, to New York; and to Boston for something more. To allow for contingencies, I estimate the cost of taking an ox of 1000 lbs from Lafayette to Boston from \$12 to 15.

The loss on oxen by driving is great say an average of a 150 lbs., equal to \$10 00
Injury to remainder of carcass, compared with oxen not driven say as much more, \$10 00

It takes from 80 to 90 days to drive cattle from

Wabash to New York. They can be taken from Lafayette to Toledo in five days; to Dunkirk or Buffalo in 2 days and New York or Boston in 2 days; making in all only 9 days.

I intend soon to address the citizens on this and some kindred subjects, deeply interesting to the inhabitants of this valley.

H. L. ELLSWORTH.

Growth of Buffalo.

The population of this city at different periods since the year 1810 has been as follows:

In 1810	1,508
In 1820	2,095
In 1830	8,653
In 1840	18,213
In 1845	29,773
In 1848	40,521

The census in January, 1848, was taken by order of the Common Council, by school Districts, to ascertain the number of children; but as it was but slight additional trouble to make the census complete, the whole population of the Districts was enumerated. It was taken when navigation was suspended and most outdoor operations necessarily interrupted, causing a considerable diminution of our population as compared with the spring, summer and fall months. The loss from these causes could not be estimated at less than 1500 to 2000.

The census to be taken during the ensuing year will probably show our population to be about fifty thousand, and rank as the tenth city of the union in point of numbers. If our importance were rated in proportion to our commerce we should probably rank sixth—New York, Philadelphia, New Orleans, Boston, and Baltimore only exceeding us. Before many years, however, we shall leave Baltimore in the rear, and there probably stop, as it is scarcely presunable we can exceed the commerce of New York, Philadelphia, New Orleans, or Boston.

Pennsylvania.

Rails for the York and Cumberland Railroad.—We mentioned last week that several vessels had arrived at Baltimore laden with railroad iron for the York and Cumberland road. Part of it has arrived in York, and we are indebted to a gentleman connected with the engineer corps of the road for the following description of the rails, from which it would appear that they are a very superior article:

"They are of the Ω pattern, but different from any other of that pattern in this country, being 1-4 inch wider in the head than sides, which at first sight would appear impossible to roll. They are 3 1-2 inches high, 4 1-2 inches width of base, in lengths of 15 and 20 feet, and weighs 62 pounds to the yard. The great advantage of this form of Ω rail over any other in use, is that the flanges of the wheels cannot rub the sides."

We are informed that in breaking a rail for an experiment last week, it took sixty-six strokes with a fifteen pound sledge, after cutting an eighth of an inch deep all around the rail to produce the fracture. The quality of iron is of a clear gray color, and high metallic lustre, and competent judges have pronounced it to be very superior. The rails are from the manufactory of Bailey, Bros. & Co. of England.

An Experiment with Dauphin County Coal.—A very interesting and important experiment was here, on Saturday, in a locomotive on the railroad, with the semi-bituminous coal of the Dauphin and Susquehanna Company. The fire was regulated by Mr. Kirk Few, the able and experienced superintendent of the Harrisburgh and Mount Joy Railroad Company, accompanied by several gentlemen interested in the application of this fuel for steaming purposes.

Although the fire box was constructed for the use wood, the combustion of the coal was so rapid, and the flame so intense, that steam was generated to an excess that required to be blown off frequently—The whole trial was completely successful, and Mr. Few expressed his entire satisfaction that it would accomplish all that could be desired for driving locomotives—that it was indeed

the perfection of fuel for this purpose. Even while going up grade, and both pumps supplying water to the boiler, the steam was in such excess as to be required to be blown off. It is gratifying for us to state that the railroad to the mines will be finished in a few weeks, and that an inexhaustible supply awaits the industry of the miner to bring it to market here, which being the centre from which canals and railroads radiate in all directions, will supply a want already felt in the scarcity and dearness of wood.

AMERICAN RAILROAD JOURNAL.

Saturday, December 8, 1849.

Is Protection Monopoly?

There are few exchanges which we read with more satisfaction than the *Mobile Planter*. It always brings to us a large amount of useful real information, and as a general rule takes a broad liberal view of the subject it discusses. The view it takes of the question of protection, however, is an exception to the general good sense displayed in its columns. In the efforts now making at the north to secure additional protection to the great manufacturing interests of the country, it sees nothing but a scheme got up to enrich the few at the expense of the many, and gives us the following as illustrative of the operation of a protective tariff:

"Some people tell us that a protective tariff is good for every one and every species of industry which the country produces. This is an error, and is just as reasonable as the old saying that two Yankees, if placed on a rock in the sea, could each make a fortune by 'swapping jackets.' The thing may be illustrated. If the legislature of this state should pass a law saying that every newspaper beyond the limits of Mobile must pay a duty of one dollar on each number before it could be sold in the city, why of course few would be sold. All the papers here would enhance their prices just up to the point where the citizens would prefer to pay for a *Mobile paper* instead of a distant one. This, perhaps, would raise our subscriptions to forty or fifty dollars a year.—The reader will see that this would be placing a great burden on the people, and some three offices would reap the benefits of it, to the disadvantage of the whole population. Suppose a similar condition in regard to shoes, which are essential to every one. A man can do without a newspaper, but not without shoes. The result would be the same. The local makers of shoes would enhance their prices three or four times, or just up to a point where a man would rather pay for the home made article than give five hundred per cent. on the cost of that made in New England, or elsewhere beyond the limits of the city. Shoemakers in town would undoubtedly flourish under this system; but the increased cost of their wares, added to the high cost of house rent, would go nigh to make some people do without shoes, or live in the air beneath the canopy of heaven, where there is no tax.

"This manner of argumentation illustrates the value of a tariff, and shows how impossible it is to make it general in its protective fruits. It must necessarily give bounties to a small class, to the detriment of a great majority; or it must be general, and thus be pernicious to every one. It cannot from the nature of industry be the former, and thus it is everywhere confined to filching from the great industrial masses the dollars which go to fill the pockets of the few."

Let us examine these illustrations and see whether they sustain the conclusions of the editor of the *Planter*. Well, then, in consequence of a prohibition of foreign newspapers, the *Mobile papers* advance their subscription price from three to fifty dollars! This extravagant advance is instantly telegraphed to all the surrounding cities, and excites as much commotion among the *fraternity*, as the numerous stories from California do among the restless and adventurous Yankees. In two hours' time, a half a dozen or more printing establishments would be packed up, and on their way to this won-

derful city, where newspapers sell for a dollar a piece; and the next morning after this advance had taken place, would witness the issue of we know not how many *Peoples Friends*, *Anti-monopolists*, *large-sale-and-small-profit papers*, with a subscription list at \$40. The next day the same competition would bring the list down to \$30, the next to \$20, and before a week had elapsed, all would come down to the old regular price of \$3 and go on at this rate as if nothing had happened. Precisely so with the other illustration. Shoemakers from all parts of the country would flock to the place where they could get \$10 for a pair of shoes, and would soon so glut the market, that they could not get for their shoes half their real worth. We ask the *Planter* whether, if the city of Mobile should prohibit the sale of foreign newspapers and shoes, the subscription price of her newspapers would long remain at \$40 or the price of shoes at \$10, or whether competition attracted by high prices would not bring down the price of these articles to a fair value, so that labor employed in that city in their production, would be no better than labor employed in other departments of industry? If the answer is affirmative, then his illustrations become precisely the ones used by the protectionist, to show that though a protection may cause a temporary rise of prices, competition, which the augmented prices invites, brings down the price of the article protected to as low a point as it can be afforded with a fair profit.

Monopoly we understand to mean, the conferring of certain privileges upon an individual or a class, to the exclusion of other individuals or classes. We never heard of a tariff in this country that did not give the same privileges to all. The exclusion of the foreign article gives the manufacturer of a similar one in this country no monopoly, though it may increase the price of the article for a time, as every other person may go into the same business, if he chooses, as many assuredly will, just so long as the article remains above a fair remunerative price.—Capital is abundant in all parts of the country; and it as naturally follows in the directions where it will yield the greatest return, as water seeks its own level. If manufacturing becomes more profitable than agriculture, capital is diverted from the latter to the former employment. If the reverse is true, capital leaves manufacturing and engages in agriculture. It needs no Solomon to tell us this, or the cause of it. It is a universal experience that men pursue what is, or is believed to be, their highest interests. So certain and unerring is this law, that if, for example, foreign iron was entirely excluded from this country, the iron manufacturer would be in no more favorable condition in a short time than the farmer or cotton planter, as they would turn their attention to the manufacture of iron, if more profitable than their own pursuits, and competition, therefore, would bring down the price of iron, and the withdrawal of labor from farming and cotton growing, would increase the price of agricultural products and cotton. An equilibrium would soon be restored, and just those portions of the community would be engaged in those several branches of industry, so as to secure to all an equal return for their labor. A tariff amounting to exclusion could not operate as a monopoly for the most obvious reasons.

The great manufacturing interests of this country are those of iron, cotton and woolen goods, for the production of which it is as well adapted as any country from which we import these articles. The State of Alabama has water power and coal enough to drive all the machinery in the United States, and iron enough to supply the world. So has Virginia,

Pennsylvania, Ohio, Indiana, Illinois and many other States. A tariff protecting these articles is not local in its effects, and if useful, is just as much for the interest of Alabama and Pennsylvania, as both have precisely the same interest to be promoted.

If protection, therefore, gives the privilege of filching to one it does to all, and if it makes it profitable for one to filch it does for all. Will the *Planter* tell us how long the *whole* community can prey upon the *remainder*, and make money by it? We await an answer.

No paper has more commendable state pride than the *Planter*, and none insists more strongly upon the importance of Alabama developing her resources, which lie in her vast fields of coal and iron ore. Now suppose that these mines are wrought, and that 200,000 tons of coal and 100,000 tons of ore are raised annually. From the abundance of iron and coal in this State, these cannot be considered as worth more than 25 cents per ton; and consequently would realize to the State only the paltry sum of \$75,000, too small a sum certainly to occupy the attention of a great State like Alabama; a sum not greater than the income of many individuals among us. But suppose that the ore raised is converted by the coal into iron, and that the product is 50,000 tons of bar iron, worth \$60 per ton. By the process of manufacture, this \$75,000 worth of raw material has reached a value of \$6,000,000. How is this additional value made up? One-half of it probably of agricultural products to sustain the labor employed—products which would have been comparatively useless but for the market this opened for them. The remaining value is chiefly made up of labor, which otherwise might have remained comparatively unemployed. When we therefore speak of the vast mineral resources of a State, we scarcely take into consideration the market value of the raw material, but consider them merely a means by which other resources, vastly more extensive, are made valuable. Take for instance England. The market value of the ore and coal in her mines is a mere bagatelle compared with the enormous value of the products which grow out of them.

A water power may be worth but a few hundred dollars, yet when improved it will form a nucleus, around which millions of property will gather.—The great end, therefore in the "development of our resources," is to create a demand for labor and the products of the soil.

Now, protection we have shown does not place the manufacturer in any better position than any other member of a community. It is the farmer that is chiefly benefited, because it creates a market where none existed before. If he pays more for his iron with protection, this gives him better means of payment, because he can procure it by an exchange of articles which have no marketable value abroad. From this new market he certainly receives benefit. The only question is whether it costs him more than it is worth. In answer it may be said, he certainly pays only what the article costs. If it can be profitably manufactured without protection, a high tariff does not add to its price.—All that a tariff can do is to give a manufacturer a fair remuneration for his labor, which he could not obtain without it. It may compel us to pay a higher price for articles protected; but a greater part of this increased value goes to the farmer, who contributes more largely than any one else to the elements of value.

In what we have said, we have merely stated the negative side of the argument. We think we have

shown that the objections urged by the Planter exist only in its imagination, and that its illustration is fatal to its argument. We reserve the affirmative for another number of our paper.

India Rubber Springs.

India rubber springs for railway cars are rapidly gaining in favor, or we may rather say that their superiority over all others is now fully admitted, and their use is becoming almost universal. Of the general adaptation of this article to this purpose, most people were willing to admit. The great fear was, that the extremes of heat and cold to which our country is subject, would affect the action of the spring. A trial of two or three years on different roads, and under all circumstances, has fully demonstrated that a spring properly cured is entirely unaffected by any extreme known to our climate. Its durability and its freedom from accidents are additional arguments in its favor; and its use for springs will soon become as common as is the use of iron for the axles of cars and locomotive.

Portland, Nov. 27, 1849.

OPENING OF THE ANDROSCOGGIN AND KENNEBEC RAILROAD.

The opening of the line of railway from Portland to Waterville, this day, was celebrated in a manner befitting the occasion. The accomplishment of so large a work, in the comparatively short time in which it has been in progress, through the exertions and with the means of the people of the state, almost exclusively, has excited the admiration of all. Very few, if there is in fact more than a single enterprise in the whole country, involving an equal amount of expense, that has been achieved in the same length of time. At any rate, considering the comparative means of the people who have carried this work through, with those of others in different portions of New England, it is an achievement of which Maine may well be proud.

The work was commenced in July, 1847, and 55 1-2 miles of expensive railway finished in November, 1849, or a little more than two years time.

The line of this railway branches from the Atlantic and St. Lawrence railroad at Danville, 27 miles from Portland, and passing through the towns of Auburn, Lewiston, Greene, Leeds, Monmouth, Winthrop, Readfield & Belgrade, reaches the Kennebec river at Waterville, 83 miles from Portland. It is an expensive line, involving an amount somewhat beyond the original estimates, from the superior character of the work. It has the same width of track (5 1-2 feet) as the Atlantic and St. Lawrence railroad, and a rail of the same (bridge) pattern, and of the same weight, requiring 100 tons to the mile. The bridges, wood crossings, etc., are principally built with a view to a double track, and all its works are of a permanent substantial character.

The road has been built without the assistance of Boston capital, and almost entirely from the means furnished at Portland, and on the line of the road. The influence of Boston capital has favored the Kennebec and Portland railroad, which is upon the narrow gauge, and is to extend from Portland to Augusta.

The rivalry between these two lines, has called into the railway service many of the ablest minds of the State, and awakened somewhat suddenly, throughout Maine, a spirit of enterprise heretofore unknown, and little dreamed of out of its own borders. Far from depreciating this state of things, I regard it as the most favorable agency for the future growth and prosperity of Maine, and a guar-

antee that she will in a few years rival the most proud portions of New England in successful enterprises, and as far surpass in population and wealth any other New England State, as she now does in the extent of her territory, her material advantages and resources.

This morning at 7 o'clock, the train consisting of 7 cars, left the Portland depot for Waterville, with several hundred stockholders and invited guests. The number increased at every station, and before reaching Winthrop every spot upon the platform the mail car and the engine was occupied. The new and splendid engine "Boutelle," named in honor of the President of the railroad company, took the train from the Danville junction to Readfield. Here it met the ponderous engine "Ticonic," (both built by the Portland Company) with some 500 passengers, from Waterville and the intermediate stations.

The "Ticonic" was then turned again towards Waterville, and at a few minutes past 12 o'clock, the train, now numbering some 1,500 people in all, approached the Waterville station through a cut 40 feet in depth and the tenth of a mile in length through a ridge which rises gradually towards the east, and falls off abruptly towards the village of Waterville. An immense concourse of people lined both sides of this long cut, and pieces of artillery were planted on the summit, which announced the arrival of the train from Portland. The bells of the town answered back, and the shouts and huzzas of the multitude rent the air with prolonged and enthusiastic cheering. The day was bright and cheerful, the men, women and children of all the region round about had come to witness the long looked for coming of the cars, and all gave forth the earnest expression of their satisfaction. To many who passed over the road, the aspect of everything was new. The scenery along the whole line is beautiful and romantic. The crossing of the Androscoggin at the head of the Great Falls at Lewiston, the ride along the shores of the Winthrop Ponds, the lake at Belgrade, and the approach to Waterville, are points of rare attraction, with many others that might be named, the whole ride presenting a variety of scenery surpassing anything I have found on any other New England railway.

Every circumstance seemed to contribute to the pleasure of the occasion, and nothing occurred to mar or to interrupt the enjoyment of the day.

On reaching Waterville, the company was conducted by a committee of the citizens to the spacious freight depot, 250 feet in length, where tables were bountifully spread, and the Hon. S. P. Benson Treasurer of the company, on behalf of the people of Waterville bade them all a hearty welcome. In a few brief, pertinent and elegant remarks, he recounted the history of the enterprise, and acknowledged the good fortune which had crowned their efforts with success. Rev. Dr. Sheldon, President of Waterville College, invoked the Divine blessing. About 2500 partook of the dinner, most bountifully spread by the public spirited people of Waterville, over which the Hon. Mr. Boutelle presided. After dinner he called in succession for Judge Preble of Portland, Hon. W. B. S. Moor of Bangor, Hon. David Kidder of Showhegan, Lot W. Morrell Esq. of Augusta, Josiah S. Little, Esq., President of the Atlantic and St. Lawrence railroad company, Hon. F. O. J. Smith, President of the York and Cumberland railroad company, J. B. Cahoon, Esq., Mayor of Portland, John A. Poor, Esq., of Portland, and William Paine, Esq. of Bangor, Marshall of Maine—who severally responded in appropriate terms.

The train left for Portland at 2 1-2 o'clock, and arrived at the depot at 8, without encountering accident or delay. At Waterville, the festivities of the dinner table gave way to a tea party in the same spacious building, and a ball held on far into the morning of the morrow.

Gentlemen from Bangor gave notice of their intention to invite the company to a similar repast on the shores of the Penobscot at an early day.

Our limits do not permit us to give the remarks of the speakers on the occasion, or to enumerate the distinguished men present from various parts of the State, who took part in the celebration, and who were prevented from speaking for want of time.

That this great trunk line will be rapidly pushed eastward to Bangor, to St. John City, and even to the Province of Nova Scotia, there can be no reasonable doubt. The feeling in Maine, in favor of railway improvements, to which we alluded last week, received an impulse from this celebration beyond that exerted on any former occasion.

Maryland.

Baltimore and Susquehanna Railroad.

We have received the annual report of the Directors of this company for the year ending September 30th ult., which presents the following statement of the financial condition of that company at that time, viz:

RECEIPTS.	
From capital stock	\$450,000 00
Loans, state of Maryland	814,045 29
City of Baltimore	850,000 00
Net transportation between Baltimore and Columbia	561,623 31
Fines in private switches	300 00
Sales of old iron	6,303 50
lots in York	485 00
	\$3,752,757 10

EXPENDITURES.	
For construction of road from Baltimore to York	\$2,611,012 90
Depots, water stations, and Real Estate	73,489 69
Interest to State, city, & discount	363,140 79
Stock of Wrightsville, York and Gettysburg railroad co.	121,205 37
Locomotives, Passenger and burden cars	305,788 40
Patent rights	6,528 22
Calvert Station	23,932 47
Old Claims	1,726 67
	\$3,506,824 71

Showing a balance of \$245,932 39
Of this amount, \$171,064 80 is a debt due from the Wrightsville, York and Gettysburg railroad company. The income from the road the past year has been as follows:

Revenue between Baltimore and York.	
Passengers, No. 119,212	\$68,729 85
Merchandise, 372,011,951 lbs.	163,640 28
United States Mail	5,833 33
	\$238,203 46
Revenue between York and Columbia.	
Passengers, No. 23,940	11,385 93
Merchandise, 162,198,885 lbs.	24,137 21
United States Mail	1,166 67
	36,689 81

\$274,893 27
Expenditures on account of the road for the same time, and for tolls to W. Y. and G. railroad, and

the Columbia Bridge, for the same time, have been..... 185,580 07
 Leaving a balance of.....\$89,313 20
 In addition to this sum have been received the following, viz:
 Interest from the Wrightsville, York and Gettysburg railroad..... 9,713 27
 From same company for tracks to river at Wrightsville..... 7,494 67
 From other sources..... 725 08

And have paid away
 To the State of Maryland \$73,000 00
 Legal expenses and costs..... 1,244 81
 Calvert Station..... 22,048 16
 Improvement of shops, depots, &c..... 7,051 10
 Old Claims..... 1,726 87

Leaving..... \$2,175 28
 Amount of funds available and unavailable 30th of September, 1848.....\$243,757 11
 Amount of funds available and unavailable 30th of September, 1849..... 245,932 39 \$2,175 28

There has been an increase in the gross revenues of the company of \$34,026 98 as compared with the preceding year, being an increase of \$6,629 12 from passengers, and \$27,397 86 from tonnage.

The expenses of the transportation department exceed those of last year \$16,285 85. Of this sum \$8,029 34 was incurred in remodeling and rebuilding two old locomotives; and \$2,193 12 for new passenger cars. If these sums had been carried to a construction account, the excess in expenditures for transportation would have been only \$6,063 39, whilst the excess of receipts have been \$34,026 98.

In reference to the future prospects of the company, the President says:

It will be seen by reference to statements No. 4, the company has been able to pay the state during its fiscal year ending the 30th September, 1849, the handsome sum of \$73,000, (and within the States' fiscal year \$75,000) an increase on the amount paid last year of \$20,000. After paying for Calvert station (the cost of which is regularly met as the work progresses) and to provide the necessary power and cars, in expectation of a large increase of trade and travel to be thrown on the road by the completion of the extension railways, there can be no reasonable doubt of the ability of the company to remit a like sum next year. Without the least desire to create expectations which may not be realized, the opinion is confidently entertained, that with the completion of the connections, and the extension of the Pennsylvania railroads as far west as a junction with the state road at Hollidaysburg, this company will not only be able to resume the payment of its entire annual interest due the state, but maintain resumption and declare a dividend to its stockholders.

The connections alluded to are the York and Cumberland, the Harrisburg and Lancaster, the Pennsylvania, and the Ohio and Pennsylvania railroad companies, the former of which is a mutual extension of this line to Harrisburgh. When this is completed it will give to the Baltimore and Susquehanna all the benefit of the public works of Pennsylvania, and those connected with them.—Baltimore is nearer to Harrisburg than either Philadelphia or New York, and consequently nearer to the great West, the great source of trade, to secure which is the object of the vast public works of each. How far her favorable position in regard to distance, in addition to her fine harbor and climate will constitute this city a successful rival for this trade remains to be seen. At any rate, she will undoubtedly secure such a portion of it as will justify the completion of the works she has undertaken for this end.

We copy from the report the following

TABLE,
 Showing the Distances between Baltimore and various points, in miles and hours on the presumption of a continuous railway connection. The passenger fare, and the freight on flour and dry goods, at the rate charged on the Baltimore and Susquehanna Railroad.

	Miles.	Hours	Fare	1 barrel Flour	100 lbs Dry Goods
Baltimore to York...	57	3 1/2	\$ 50	\$ 18	\$ 11 1/2
Do. to Harrisburg...	84	5 1/2	2 10	0 27	0 17
Do. to Carlisle.....	102	6 1/2	2 60	0 32	0 27
Do. to Chambers'g....	134	8 1/2	3 40	0 42	0 72
Do. to Lewistown....	135	8 1/2	3 40	0 43	0 27
Do. to Hollidaysburg	238	15	6 00	0 65	0 47
Do. to Pittsburg....	334	21	8 40	\$ 1 05	0 67
Do. to Cleveland....	469	29	11 72	1 48	0 93
Do. to Detroit.....	587	37	14 70	1 85	1 17

Distances of Cleveland and Detroit from Baltimore and New York.

	Baltimore.	New York.
Cleveland.....	469 miles.....	645 miles.
Detroit.....	587 ".....	755 "

The time estimated is calculated on a speed of 16 miles per hour including stoppages.

ESTIMATES OF APPROPRIATIONS.

In pursuance of the joint resolution of January 7, 1846, which makes it the duty of the Secretary of the Treasury to cause the estimates of appropriations, which he is by law required to prepare and submit to Congress, to be printed, and copies of the same to be delivered to the Clerk of the House of Representatives in time for distribution at the commencement of each session, estimates of additional appropriations required for the service of the fiscal year ending June 30, 1850, and for the fiscal year ending June 30, 1851, were yesterday placed on the tables of the members of the House. From this volume we extract the summary of the additional appropriations required for 1850, and the appropriations asked for 1851.—Washington Republic.

TREASURY DEPARTMENT,
 November 16, 1849.

Sir: Agreeably to the joint resolution of Congress of the 7th January, 1846, I have the honor to transmit, for the information of the House of Representatives, printed estimates of additional appropriations proposed to be made for the service of the fiscal year ending the 30th June, 1850, amounting to.....\$1,696,851 47

All of which is on account of the civil list, foreign intercourse, and miscellaneous, including expenses of collecting revenue from customs and lands, from 1st January to 30th of June, 1850.

To the estimates is added a statement showing—

The indefinite appropriations for the service of the three last quarters of the fiscal year ending the 30th June, 1850, made by former acts of Congress, of a permanent character, amounting to..... 4,539,458 81

Viz:
 Civil list, foreign intercourse, and miscellaneous.....\$583,580 41
 Pensions..... 255,000 00
 Interest, etc., public debt and treasury notes.... 3,700,878 40

\$6,236,310 28

I am, very respectfully
 Your obt servant,
 W. M. MEREDITH,
 Secretary of the Treasury.

Hon. Speaker
 of the House of Representatives.

TREASURY DEPARTMENT,
 November 16, 1849.

Sir: Agreeably to the joint resolution of Congress of the 7th January, 1846, I have the honor to transmit, for the information of the House of Representatives, printed estimates of the appropriations proposed to be made for the fiscal year ending June 30, 1851, amounting to.....\$33,697,152 15

Viz:
 Civil list, foreign intercourse and miscellaneous, including payment to be made to Mexico, under the 12th article of the treaty, expenses of collecting the revenue from customs and lands, census of 1850, public buildings, and expenses of courts.....\$12,812,480 29
 Army proper, etc.... 5,866,137 00
 Military academy... 199,298 47
 Fortifications, & ordnance, etc..... 1,647,416 00
 Internal improvements, surveys & light houses..... 1,164,080 00
 Indian department.. 998,739 17
 Pensions..... 1,433,893 00
 Naval establishment 9,575,078 22

To the estimates are added statements showing—

1. The appropriations for the fiscal year, ending the 30th June, 1851, made by former acts of Congress of a permanent character amounting to..... 5,643,410 24

Viz:
 Civil list, foreign intercourse and miscellaneous..... 724,560 14
 Arming and equipping the militia..... 300,000 00
 Civilization of Indians 10,000 00
 Pensions..... 473,000 00
 Interest on public debt, 3,742,951 13
 Purchase of stock of the loan of 1847.... 492,898 97

2. The existing appropriations required to be expended in the fiscal year ending the 30th June, 1851, amounting to..... 5,656,530 34

Viz:
 Civil list, foreign intercourse and miscellaneous..... 472,519 21
 Army proper, etc.... 2,230,717 97
 Fortifications, ordnance etc..... 168,000 00
 Internal improvements surveys, etc..... 83,123 38
 Indian department... 903,971 36
 Pensions..... 20,117 00
 Naval establishment.. 1,778,051 42

\$44,997,092 73

3. There is also to be added to the estimates a statement of the several appropriations, which will be carried to the surplus fund, amounting to..... \$502,170 02

Accompanying the estimates are sundry papers furnished by the Treasury, War, Navy and Interior Departments, containing references to acts of Congress, etc., on which the estimates are founded.

I am, very respectfully,
 Your obedient servant,
 W. M. MEREDITH,
 Secretary of the Treasury.

Hon. Speaker
 of the House of Representatives.

Virginia.

James River and Kanawha Co.

We have read the report of the President of this company, Hon. John Y. Mason, with the accompanying documents, recently submitted to the stockholders.

This important work, as our readers are aware, is nearly completed to Buchanan, a distance from Richmond of 196 miles—the portion unfinished being between Lynchburg and Buchanan, which we

learn will be completed next season. To complete the work the further sum of \$110,600 beyond the present means of the company will be required.

The following is the statement submitted of the financial condition of the company:

The capital stock of the company, under its present organization is	5,000,000 00
Of this, individuals subscribed	841,500
Corporations,	1,158,500
The State,	3,000,000

The actual expenditure amounts to \$8,719,596 22

The company is now indebted:	
To the State, by bond 24th Feb. 1845,	268,645 33
" " 25th Mar. '42,	250,000 00
" " for state stock issued, & to be issued, under act 1st March, 1847,	1,236,000 00
To holders of Company's bonds, with the guarantee of the state, under act 23d March, 1839,	1,500,000 00
	3,254,645 33

And when the works are completed for the connections authorized by the acts of 9th and 12th March, 1849, it will owe on its bonds guaranteed by the state, for these objects, 500,000 00

\$3,754,654 33

In addition to this large amount, is the perpetual annuity to the Old James River company, of twenty one thousand dollars.

The net amt of revenue received from the canal the past year was	175,639 49
From dock at Richmond,	7,560 93
From other improvements,	3,877 76
	187,078 18

The annual liabilities of the company, when the works now in progress shall be completed, will be:

Annuity to the Old James River Co,	21,000 00
Interest on company's bond to the state, given in 1845,	16,118 72
Do. for loan 25th March, 1842,	15,000 00
Do. bonds, guaranteed by the state, interest on loan of state bonds for \$1,236,000, 1st Mfrch, 1847,	74,160 00
Interest on guaranteed bonds for connections,	30,000 00
The estimated annual expense of works To Lynchburg,	60,000 00
The estimated annual expense on canal, from Lynchburg to Buchanan,	25,000 00
	331,278 72

The resources of the company:	
From the 1st division, estimated receipts,	280,000
Estimated from dock, Rivanna, and other connections,	30,000
Net income western improvements	8,000
From 2d division, directly and incidentally,	120,000
	438,000 00

Estimated net income, \$106,721 28 on a capital stock of \$5,000,000.

Allowing the estimated receipts as within the mark, this would leave only about two per cent. for an annual dividend, and the President admits that the stockholders will find no compensating return from their stock, as a productive investment, and the large outlay made by the State will not prove a source of revenue, unless the improvement shall, in some form, reach the western terminus, which its projectors contemplated, and compete for the trade of the great valley of the Mississippi. He therefore recommends an application to the legislature for a loan of \$2,500,000, to extend the canal to Covington, and to render the Kanawha navigable to Ganley river.

To reach these points we presume that no greater difficulties will be encountered than those alrea-

dy overcome. And the President of the company does not hesitate as to the policy to be pursued till these points are reached. As Covington lies at the foot of the Alleghenies, and as there commence the great obstacles to the connecting of the Chesapeake and Ohio by a canal, the President speaks with less confidence in reference to pushing the canal beyond this point, and admits that it is a debatable question, whether the connection shall be continued in the shape of a canal or railroad, though he inclines to the former mode. In this opinion he is supported by the chief engineer, Mr. Gwynn. In reference to this point we copy the following from the report of the President:

Of the character of this connection it will be expected that I should say something. I am aware that it is a subject on which diversity of opinion exists among the stockholders, and the success of the company depends so largely on harmony, that I would be extremely unwilling to do anything to disturb it.

When the company did me the honor to elect me to the office which I now hold, I had formed no opinion on the question. It became my duty to examine the subject and inform myself in regard to it as far as I could. The solution of the question depends on facts which are controverted, and requires an exact knowledge of the topography of the country, and on scientific skill, which I do not possess.

But in the candor which I trust, will characterize my communications with the stockholders, so long as I bear any official relation to them, I will submit some suggestions, which appear to me worthy of consideration. The question is whether the connection shall be by a water line or canal, or by a railroad?

It must be remembered, that the James river and Kanawha improvement is essentially a thoroughfare for navigation, and as at both extremities it has been adapted to use as a water line, at so great a cost, and can only be used for the transit of boats, it is true policy to continue it as far as practicable, without transfer of freight from one mode of conveyance by water to another by land. Such shipments will add so largely to the cost of transportation as to destroy all the superiority of climate and position which the route now enjoys, and to give to other competitors for the western trade, with an uniform mode of transportation, such advantages as will seriously impair the value of the improvement. If it shall be determined to establish the connection by a railroad as the substitute for the water line, it appears to me that the mixed improvement will not and cannot remain as a continuous line of transportation. It can hardly be doubted, that the termini of the railroad across the mountains would not be stationary at the head of the company's water lines on either side of the mountain, but would be carried by new connections and extended works of the same kind to the Ohio in the west and tide water in the east; and although a portion of heavy freight, passing over the mountain might continue to use the canal, the trade could not be expected ever to realize the hopes, which may justly be entertained, if the connection can be so established as that the same boat can pass with its cargo undisturbed through the entire line. That there are difficulties attending the construction of the work, as a water line, cannot be questioned.— But from my view of the country, its rugged face and geological structure, it appeared to me, that there will also be found serious difficulties in constructing a railroad. Every facility ought to be given to travel to the mountains with their invaluable mineral springs. But the improvement of the great central highway across the State has cost too much, and the return for the outlay depends too largely on a full development of agricultural and mineral resources, and on giving to the rich and heavy productions of the mountains and valleys of the west an avenue to market, to change its character merely to accommodate travel, when that may be effected without interference with the purposes and utility of our improvement. My opinion is clear and decided, that the water communication is the best for the company, and the most certain means of commanding transportation and enhancing the revenues and the value of the entire line

of the works if it be practicable. And I would recommend that the decision of the question be postponed until the water line can be carried as high on both sides of the Alleghany, as is undoubtedly practicable. In the mean time a careful survey should be made by a board of engineers, that the question may be settled whether the water communication across the Alleghany can be established and maintained. In making this suggestion I do not wish to be understood as discrediting the opinions expressed of the practicability of the measure by eminent engineers, now or heretofore laid before the stockholders. But the apprehension of an insufficient supply of water on the summit level, entertained by many, and on which my own mind is not fully satisfied, ought, as far as possible, to be removed, or confirmed, before a work of so much importance, and involving so much cost, is commenced.

It is obvious, from the exhibit which has been presented of the liabilities of the company, that its works should be extended gradually; and justice as well as policy, requires that the improvement of the western portion of the line should progress with that on the eastern side of the mountain.

Arch St. Machine Shop.
BIRKENBINE, MARTIN & TROTTER
Makers of
STEAM ENGINES,
and
HYDRAULIC MACHINERY,
NO. 16 ARCH STREET,
PHILADELPHIA,
Will construct Steam Engines, Pumps, for Draining
Mines and Land; supplying Water to Towns,
Factories, Farms, etc;
Also, Street Stops, Fire Plugs, Water Tanks, and
Hydraulic Rams, with
(BIRKENBINE'S PATENT VALVES.)
B., M. & T. contract for Warming and Ventilating
Buildings by Steam or Warm Water.

J. E. Mitchell,
NO. 14 OLD YORK ROAD, PHILADELPHIA.
Importer and manufacturer of
New Castle }
Nova Scotia } Grindstones, of all sizes and grits.
Wickersly }
French Burr }
Cocahoe } Millstones, made to order, with all
Colognc } the recent improvements.
American and }
Patent compressed } Fire Bricks and Tiles of various
Garnkirk } sizes.
Burr Blocks, Bolting Cloths, Mill Irons, etc.
BY FERDINAND E. WHITE.
STORE NO. 22 LONG WHARF.

Valuable Real Estate in South Boston.

On WEDNESDAY, December 19, at 12 o'clock, M. on the premises.

ALL the Property of the MASSACHUSETTS IRON COMPANY, consisting of their Two MILLS, situated on Boston Harbor, at South Boston. Each Mill is 214 feet by 174, including Sheds. The two contain 15 double, Puddling Furnaces, and nine Heating Furnaces.

There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with it, and will be sold at the same time, about 417,000 feet of upland, on which are erected, besides the mills, four blocks, containing each four brick Dwelling Houses for workmen; a wooden Counting Room, with Dwelling adjoining; a horse stable, and a coal shed 210 feet long by 70 feet wide, now containing 3100 chaldrons Pictou Coal, and 923 tons of Pig Iron.

The terms of sale will be made liberal. For further information apply to B. T. REED, Esq., or to the Auctioneer.

December 1, 1849.

Cop Waste.
CLEAN COP WASTE, suitable for cleaning Rail-
road, Steam-boat and Stationary Engines, con-
stantly on hand and for sale by
KENNEDY & GELSTON,
5½ Pine St., New York.
October 27, 1849, 3m

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.
3145

November 10, 1949.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 23 feet.
- 1 Wood dwelling house, 21 by 23 feet.
- 1 Brick block, six tenements, two stories.

A number of building lots.
Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1949.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1949, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c., will be ready for inspection on and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sandstone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

NOTICE TO**Superintendents of Railroads.**

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE, }
Washington City, D.C., April 28th, 1946. }

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1946, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 341f

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,

Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.,

Southwestern Railroad, Macon, Ga.

Higgins, B.,

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roebling, John A.,

Trenton, N. J.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac H.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

DUNLAP'S HOTEL,

On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
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Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by JOHN A. ROEBLING, Civil Engineer, TRENTON, N. J.

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Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium,
May 26, 1949.

**Railroad Car Manufacturer's
Furnishing Store.**
F. S. & S. A. MARTINE,
IMPORTERS AND MANUFACTURERS OF
**RAILROAD CAR &
CARRIAGE LININGS,**
PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Bunting

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. mak-
ers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates,
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plane,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.
S. C. HILLS, No. 43 Fulton street, New York, has
constantly for sale Steam Engines, Boilers, Lathes,
Chucks, Drills, Planers, Force and Suction Pumps;
Tenoning, Morticing and Boring Machines, Shingle
Machines, Bolt and Nut Machines, Belting, Oil, Iron
and Lead Pipe; Rubber, Percha and Leather Hose,
&c., &c.
S. C. H.'s arrangements with several machine shops
are such that he can supply, at very short notice, large
quantities of machinery.
November 23, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.
500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849. 1m46

Railroad Iron.
THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849.

Railroad Iron.
1600 Tons, weighing 60 lbs. per yard.
185 " " 57 1/2 "
580 " " 53 "
of the latest and most approved patterns. For sale by
HOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.
They offer also to import and contract to deliver
ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the
planes of the Portage railroad in Pennsylvania, on the
Public Slips, on Ferries, and in Mines. The first rope
put upon Plane No. 3, Portage railroad, has now run
four seasons, and is still in good condition.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the deli-
very of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.
ILLIUS & MAKIN,
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Merritt & Co., New
York; E. Pratt & Brother, Es. 2mets Md

**LAP—WELDED
WROUGHT IRON TUBES**

TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets: Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.**FOR SALE,**

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catocin " " "
250 " Chikiswalungo " " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x 1/2 Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catocin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catanba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous *Andover iron*. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
October 30, 1848. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.
100 " No. 2 do. do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Faggoting Iron, for shafts
Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
Do do Rounds and Squares, 1/2 to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.

The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

JOHNSON, CAMELL & Co's Celebrated Cast Steel,

AND ENGINEERING AND MACHINE FILES, which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMELL & CO.,

100 William St., New York.

November 23, 1849.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 23, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

2 Wrought Iron Cranks, 60 inches from centre to centre.

1 Do. do. Connecting Rod Strap.

2 Do. do. Crank Pins.

1 Eccentric Strap.

1 Diagonal Link with Brasses.

1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,

No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffer's Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive *LOCOMOTIVE ENGINE* department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles,* and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woolen, or other Mills,* can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Text Book of Mechanical Drawing,

FOR the use of **SCHOOLS** and **SELF-INSTRUCTION**, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES.

Published by **WM. MINIFIE & CO.,**

114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.
Orders for the above will be received and promptly attended to at this office. 32 1y.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,**
Reading, Pa.

To Railroad Companies and Contractors.

FOR SALE—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Fire Brick.

The Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

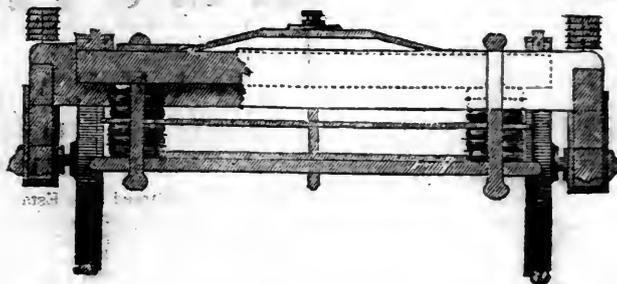
ROOFING SLATES,
from the best Welch quarries, and of all sizes. Also, **COAL,**

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.
November, 23, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of airtight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use of railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,
are **G. M. KNEVITT,** 33 Broadway, N. York,
General Agent for the U. S. : and
JAS. LEE & Co., 18 India Wharf, Boston.
JOHN THORNLEY, Chestnut st., Philad.

TO LOCOMOTIVE AND MARINE ENGINE

Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

The Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. **M. M. White, Agent,**
an7f No. 74 Broadway, New York.

Steam Boiler Explosions.

The Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, **JOSEPH P. PIRSSON,**
Civil Engineer, 5 Wall st.

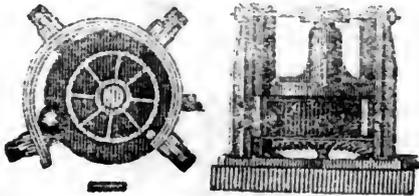
To the Proprietors of Rolling Mills and Iron Works.

The Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both chilled and dry-sand, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Salsus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.
Albany, August 18, 1849,

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



The Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

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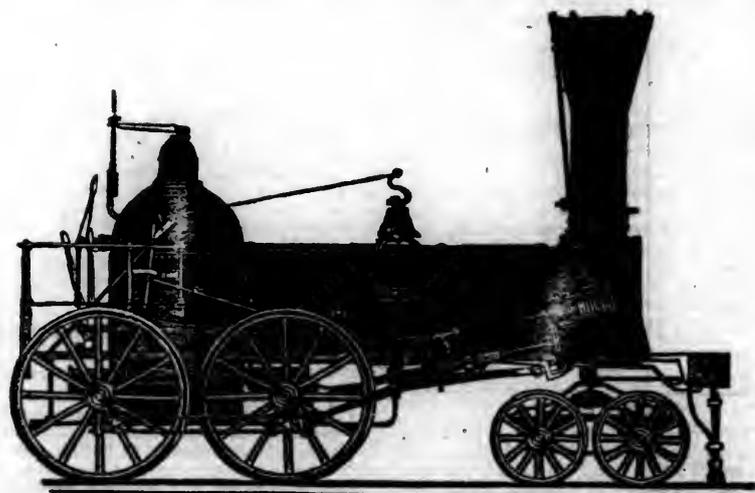
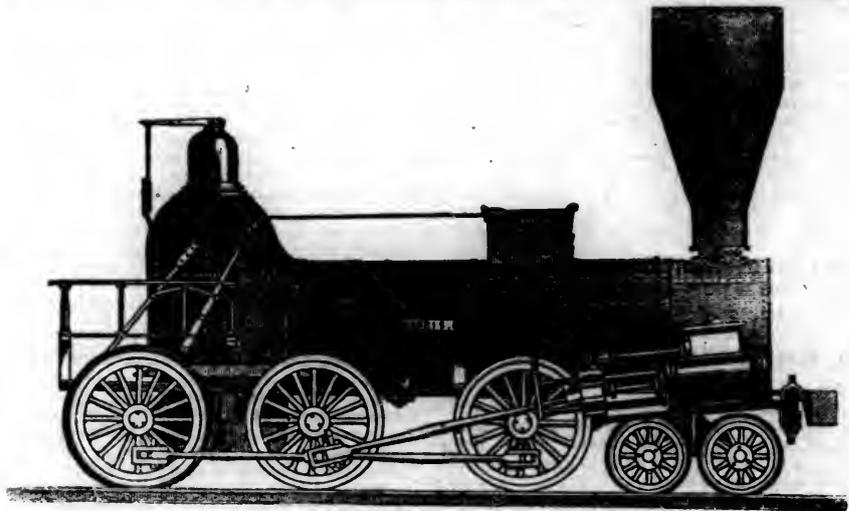
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AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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American Railroad Journal.

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Saturday, December 15, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 768.

MARYLAND.

Hematites.—As I have before mentioned, the next rock formation to the ferruginous sands and clays of the coast is that of the granite gneiss and serpentine, which occupies a belt parallel with the general outline of the coast, and in Baltimore county from six to eight miles in width. This belt of primary rocks, which farther north is productive in magnetic iron ores, is in this State nearly barren of them. Next beyond this is the range of metamorphic slates and limestones, which throughout their course from Canada to Alabama abound with hematite ores. Their first appearance towards the northeast is in Cecil county, near the corner of the State. Here they are worked to some extent for the *Principio furnace*. On the other side of the Susquehanna, in Harford county, they are found in the valley of Deer Creek, and supply the *Lagrange furnace* and the *Sarah furnace*.

Farther towards the southwest they have been wrought for the old *Hampton furnace*, now long out of blast, at several localities from eight to nine miles north of Baltimore. The principal bed is a mile northeast from Towsontown, and from three to four miles east from the Baltimore and Susquehanna railroad. The ore with its ochres and clays lies along the southern side of limestone ledges, which are seen dipping steeply towards the north. The old excavations were along the face of these ledges for some 40 rods in length, and more than as many feet in depth. Throughout these, over a very irregular width, the ore appears to have been found in considerable abundance principally close to the limestone strata, and where these were interrupted, working through and behind them, filling all the irregular spaces between the ledges. Around this long excavation are huge piles of the rubbish ochres and clays, and pools of water and mud cover its bottom. A little stream flows out from it at as low a level as it could well be carried. The difficulties attending deeper drainage seem to be the principal cause of the abandonment of mining operations here. To carry them farther steam power would be required to keep the workings dry. In some recent excavations for limestone nests of ore in the ochres are exposed to view, which enable one to judge of its quality, if the loose pieces and large heaps of good "wash ore" lying around were not sufficient. From these it is seen that it was the very best kind of hematite, of open honey-combed structure, of shelly layers, colored on the outside with yellow ochre, and within of chocolate and dark brown shades, with no intermixture of foreign matters. It is of a character that must work very freely in the furnace, and make the very best qualities either of forge pig or foundry iron; and such was the character of the metal made in the Hampton furnace. A portion of it was refined at the old forge near the mouth of the Great Gunpowder Falls, and the bar iron bore the highest character for softness and toughness. At that day the furnace, forge and mines, and laborers too, belonged to the Ridgeley estate, which comprised a territory of full a hundred thousand acres. The mines are still in possession of the heirs of this property.

From the 10th to the 18th mile posts along the line of the Baltimore and Susquehanna railroad, localities of hematite are of frequent occurrence near the road and for miles back towards the east

and west. It is seen on the east bank of *Gt. Gunpowder Falls* two miles north of the old Hampton furnace, and is met with in numerous localities between this furnace and Timonium. Here it has been opened at several places on each side of the road, but the ore has proved too siliceous for it to be an object of much importance: it is mixed with quartz, and is not yet found directly on the road, where it could be obtained in great abundance at small cost for mining. Still farther west up the valley of Jones' Falls, towards Green Spring, these localities continue of frequent occurrence, extending southward nearly to the serpentine rocks of the "Bare Hills." A northern range of the same ores is found crossing the railroad at Cockeyville, pursuing a westerly course up the valley of Beaver Dam Run. Between these on the railroad are the great limestone and marble quarries of Texas and Timonium; and back from the road on the east and west are extensive unproductive hills of talcose slate and quartz. The formations closely resemble those of Berkshire county, Mass. Here are found the "Stockbridge marble," the hematite ores, and the barren ridges of talcose and mica slates and quartz rock.

The most important of these localities yet proved is on one of the head branches of Beaver Dam Run, three miles from the railroad at Cockeyville. The deposit lies along the north side of a ridge which here ranges in an east and west direction. The ore shows itself for more than half a mile, and has been opened and extensively worked the last two years at several points. The main body of the ore is found under about fifteen feet of clays and ochres; from this depth it becomes more and more solid and less mixed with these matters so far as the workings extend, which was, when I saw the locality last winter, about forty feet from the surface. Here the hematite lies in masses, sometimes of several tons weight, closely packed together in the ochres and clays. Some of them are partially hollow, the cavities coated with mamillary, stalactical and botryoidal surfaces, and the structure generally shelly and fibrous. The large hollow lumps are formed within of the pure fibrous ore, the grain running transversely through from the inside outwards; but before reaching the outer surface this fine ore invariably gives place to a shell of poor siliceous hematite, of far inferior quality. The quality of the ore varies in different portions of the mine with the relative proportion of these two va-

rieties. The quantity is evidently very great; many thousand tons have been removed; but no indications are yet obtained what are the dimensions of the bed. Situated in the hill it is so far worked without trouble from water; and from the abundance of the ore, the expense of extracting it cannot exceed sixty cents per ton. It is owned by Messrs. Green & Fernandez, the proprietors of the *Oregon furnace*, built in 1848 on the bed, and by Messrs. Patterson, Small & Co., the proprietors of the *Ashland furnaces*, three miles from it on the railroad.

Other deposits of hematite are said to occur farther west on this range near Reisterstown: these I have not seen.

The general character of most of these ores is their large percentage of siliceous matters, which in the form of grains of white quartz occurs scattered through the ore. They resemble the poorer ores of North Adams, Mass., and of Kent, Conn. Alone they must work badly in the furnace, separating with difficulty and producing a thick pasty cinder. Mixed with ores that contain no silex and with a pure calcareous flux, they can be used to some extent; and none would seem to be better adapted for this mixture than the carbonates of the coast—and it is matter of surprise that so little attention has been given as yet to them in this connection. Care will be required in selecting the best qualities and in mixing them in proper proportions with other ores and suitable fluxes. Should it be found that good iron could be made even with a small portion of them to the charge, their value must be very great from the number and extent of the mines, the convenient situation of many of them on elevated ground, and the cheap rates at which the ores can be transported. Some of the beds opened in 1848 below Timonium furnish ores of so siliceous character, that they would discourage all further operations, unless it were found that different portions of the same locality of ores gave different varieties—and the indications are that such is the case.

As to the permanence of these beds I have seen no evidence yet of any one of them having been worked out, though the surface indications of many of them certainly appear to limit them to a narrow extent. Those which have been worked for the Hampton furnace and then abandoned were evidently left in consequence not of failure of ore, but of the increased expense of procuring it from the influx of water. In this State, therefore, as in New York and New England, no data have yet been obtained touching the depth to which these deposits extend. It is interesting to observe their connection with the limestone strata still prevailing, though not proved to be so universal in this region perhaps as at the north; it is, however, a remarkable feature at the greater number of the localities.

On the line of the Baltimore and Ohio railroad some deposits of hematite are found in the vicinity of Sykesville, 32 miles from Baltimore, which no doubt are on the continuation of the same range toward the southwest. They have been as yet but little explored, small quantities having been obtained for the furnace at Sykesville.

Over the greater part of Frederick county the same formations prevail, and are productive in these ores in the vicinity of the Catoctin mountain. The Catoctin furnace, 12 miles from Frederick, is supplied with them.

The beds near the Point of Rocks, which, though on the Virginia side of the Potomac, are of no small consequence to the State of Maryland, are on this Catoctin range. They furnish ores to the *Po-*

tomac furnace in Loudon county, Va., near the bed, and also to the furnace at Sykesville, and probably will to the two furnaces at Georgetown, D. C.

Beyond the South mountain the *Antietam furnaces*, in Washington county, make use of the same variety of ore, which is found of superior quality in their vicinity. Prof. Ducatel, in his Report for the year 1840, seems to consider these ores as nearly exhausted. One locality which supplies these works he says is two miles above Harper's Ferry, on the Maryland side of the Potomac, and another similar deposit is on the Virginia shore six miles above the Ferry. "The ore is of that variety usually termed *pipe-ore*, or sometimes *limestone ore*, from the circumstance of its usually occurring in this rock. It yields a metal of very good quality, well adapted to the manufacture of bar iron, and is said to be in great esteem at the U. S. armory, Harper's Ferry, from which the works are only at a short distance." Still farther west among the secondary strata, not far below the coal formation, hematite ores are found near Hancock, which have been smelted in the *Warren furnace* over, the line in Pennsylvania. The group of rocks containing these hematites is the olive slate formation, which underlies the old red sandstone. It contains in different portions of its range in Pennsylvania and Virginia occasional deposits of this ore of no great value either for its quality or quantity.

Specular and Magnetic Ores.—In the gneiss rocks, which are associated with the talcose and mica slates in Carroll county, from the Pennsylvania line to the west branch of the Patapsco, specular iron ore is of frequent occurrence. It is spoken of by Prof. Ducatel in his Annual State Geological Report as being found in large masses north of Westminster, and again north of Manchester. There are also beds of it of some extent on the Little Morgan Creek, north of Freedom, and others of great promise only one mile north of the Baltimore and Ohio railroad at Sykesville. The ore is here found on the property of George Patterson, Esq., in some hills of gneiss rock. The rock as seen exposed in this place in several mounds of considerable elevation is strongly impregnated with this ore, and some slight excavations have exposed veins of it near the surface. Of their dimensions I cannot speak with exactness, the holes being partially filled with dirt and rubbish, when I saw them in the winter of 1848-9, but from the large blocks of pure ore taken out from them, and from others scattered about over the surface, there is every reason to believe in the existence here of many veins of this ore of no small extent. From their position on elevated ground and the richness of the ore, and its proximity to the railroad, it must become an object of great value; and its importance is not a little increased by its convenience to the carbonates of Baltimore and the hematites of the Point of Rocks, all of which can be brought together to mix to their mutual advantage at little cost of transportation. In external appearance this ore much resembles that of the Iron Mountain, Missouri, and like this is no doubt well adapted for the manufacture of the best bar iron and steel; it gives a red powder, and appears to be only the peroxide of iron, but its particles are found to be magnetic, showing also a combination of the protoxide. Its structure is massive and finely granular; but much that has been taken for the furnace at Sykesville is nothing more than rock with interspersed grains of ore, some of it having the appearance of the micaceous specular oxide of iron. When the veins shall be explored, there will be no reason for using this lean

ore. At present the right of taking the ore from the different localities on this large property of Mr. Patterson is held by the proprietors of the furnace at Sykesville, who by the original contract were to pay one dollar for each ton mined and removed.

Ores of the Secondary Formation.—The iron ores of this formation in Maryland are principally those found in the shales accompanying the beds of bituminous coal. But at Cumberland in the red and variegated slates, which belong far below the coal group, similar ores are found to those which the same formation, called in New York the Clinton group, produces near Oneida Lake, New York, and Catawissa and Danville, Pa. One variety of them and the most abundant is a lean, sandy ore, occurring in continuous bands, similar to that at Danville, and another is the red fossiliferous ore like the Catawissa. Of the extent of the bed I am not provided with any details. Large quantities of the poor ore have been mined and sent to the Mt. Savage works; and a small stack called the *Lena furnace* at Cumberland has been supplied in part with these ores and in part with hematites from the Virginia side of the Potomac. These ores smelted with coke have yielded an iron better adapted for foundry than forge purposes, not unlike some of the Scotch pig. The remoteness of the locality from tide water, it being about 190 miles from Georgetown, D. C., by canal, will materially interfere with any interest that might be felt in an ore suitable only for foundry purposes, for supplying the market on the coast. If, however, on farther trial the fossiliferous ores and hematites together should be found to yield pig iron suitable for puddling, as they do in some parts of Pennsylvania, then the importance of the locality is much enhanced.

Ten miles beyond Cumberland to the west commences the great western coal field of Maryland, a country traversed in a north-north-east and south-south-west direction by long parallel mountain ridges. Between these ridges, which are not more than four or five miles apart, the country is extremely rough, cut by the streams which traverse them, into deep furrows, which go on increasing in depth and width as the streams descend to lower levels. The coal formation, the uppermost group of strata, lies between the ridges as in a basin. Beds of sandstone, shales, limestones, coal and fire clay, piled in succession one upon another, extend with great regularity from one extremity of these valleys to the other; they slope down the sides of the ridges on the east and the west, and in the centre attain a thickness estimated in one portion at no less than 1500 feet.* The deep cuts of the streams expose similar sections of strata upon each side. The same coal beds are traced without other break or dislocation, than those produced by surface denudation, through hills and across ravines over large portions of the coal field. Even in the different basins the order of succession is not so changed, but that many strata are recognised as belonging to them all. Beneath this group, called the coal formation, is usually found in Pennsylvania and Virginia a coarse white conglomerate rock, which occupying a similar position even in England, is there called the "millstone grit." Here if it is not wanting, the coal beds are repeated below it, and the base of the formation is the series of grey sandstones, which overlies the old red sandstone. These sandstones then come up to the sum

* Annual Report of the Geologist of Maryland, 1840, p. 19.

mits of the ridges and curve far beneath the valleys, where rest the coal measures.

In the western part of Maryland there are at least three of these basins crossing this narrow strip of the State from north to south. The most western is along the Virginia line, and is the valley of the Youghagany river. Another is between Negro mountain and Meadow mountain, and the most eastern, which is also the most important, is between the great Savage mountain on the west and Dan's mountain on the east. This basin being more convenient to tide water than either of the others, has received no little attention from foreign and eastern capitalists, both for the sake of its coal and iron ores. It is only in this portion of the coal field of Maryland, that works have been established for the reduction of these ores; it is the only portion, therefore, that will require particular notice in these papers. Its extent across the State is about twenty miles, its width between the ridges from four to five. George's creek, rising in its most elevated portion, only a few miles from the Pennsylvania line, flows southwardly through its centre, and empties into the north branch of the Potomac at Westernport. It is fed by numerous lateral mountain streams or runs, whose deep cuts give access to the strata they expose. On the north side of the elevated part of the valley Braddock's Run and Jennings Run flow in the other direction, and then turning to the east empty into Will's creek, which joins the Potomac at Cumberland.—It is at the heads of these streams about Frostburg, near the national road, that the coal formation attains its greatest thickness of 1500 feet above mentioned. Here are the mines of many of the companies, which have undertaken to supply the eastern markets with coal, and have already commenced or propose to smelt the iron ores. The only furnaces yet built are the three of the Mount Savage company near Frostburg. A few miles farther south in the basin, on a small branch of George's creek, is another at a place called Lonaconing, belonging to the George's Creek Coal and Iron Company. The ores which supply these furnaces are the argillaceous ores or clay iron stones of the coal formation. They are found in the beds of shale, lying either in continuous bands or in balls and kidney-shaped masses arranged in parallel layers in the shale, much like the carbonates in the clays around Baltimore. But unlike these they are worked, not open to the day, but by drifts and underground excavations, whose height from the roof to the floor seldom exceeds eight feet. The expense of the mining per ton consequently varies with the quantity of balls of ore found in this or a less thickness of shale. Where the layers are thick and near together they are profitably followed like beds of coal far in from the surface; but where a large proportion of shale must be removed for a few thin layers of ore, the expense of extraction often exceeds their value. It is very questionable whether under present prices of labor and transportation these ores exist throughout the basin in such abundance, as to render them an object of great importance; though at some few localities they may be profitably worked. In composition they are among the poorer varieties of iron ores, their yield in iron not exceeding 30 per cent.; and moreover the metal made from them is of inferior quality for forge iron, being like the Scotch pig, which is made from similar ores, better adapted for foundry purposes. They have the advantage of being in close proximity to extensive beds of excellent bituminous coal, which furnish either in the raw state

or as coke a cheaper fuel than wood, and one well adapted for their reduction. The limestones, sandstones and fire clay also, of the coal formation, furnish other materials required for their conversion into iron, evidently arranged in close proximity to each other with reference to this use. The country around, though broken and rough, has many fertile spots in its valleys and on its hill sides, where abundant supplies of grain and vegetables can be raised for the support of a mining and manufacturing population; and the rapid falls of its streams furnish abundant water power conveniently situated for manufacturing purposes. H.

From the London Artizan.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

An Essay on the Comparative Merits of Iron and Wood for Ship-building. By Edwin O. Tyegeles, C. E.

Continued from page 771.

Stowage.—The shell of a timber built vessel is so much thicker than that of an iron one, that with the same outside dimensions, the latter is frequently 18 inches wider and 12 inches deeper in the hold than the former; taking the most favorable part of a vessel, namely, in the centre of the length in a vessel of 200 tons, the proportion in favor of the iron vessel will be as 5 to 6, but in the ends which are drawn finely off the disparity is much increased, making the proportion of the whole contents about as five to four. Supposing, therefore, that a vessel built of timber could stow 200 tons she would if made of iron have room for 250 tons.

Safety.—In addition however to their extraordinary strength, iron vessels afford protection both to life and property, against the most awful accident that can befall a ship at sea; namely, against fire. I admit that it can signify little to unfortunate passengers, of what material the hull of a ship is made if her cargo, deck, cabins, and masts are consumed; and no one who might escape the conflagration, could then remain in her. But with ordinary precautions, it would be nearly impossible for a fire to take place or to gain head in the hold of an iron ship, provided the hatches were properly secured.

Speed.—The material being much lighter to attain the same strength and occupying less space, the model of the vessel may be made finer and better adapted for high speed, without a corresponding loss in the amount of stowage and carrying qualities; and iron vessels, as they have more buoyancy, are not so liable as timber-built vessels to pitch when in a heavy sea. These assertions are not the result of mere theoretical speculations, but are derived from a long course of observations, guided by the opinions of many practical men who have become converts to the adoption of iron, as a preferable material to wood, in the construction of vessels.

Durability.—It is, as yet, impossible to assign any period for the duration of iron vessels in salt water, inasmuch as they have not been tried for a sufficient time to enable us to ascertain this point with precision; the want of this proof must, however, be considered favorable, from the fact that were their decay as rapid as that of wooden vessels such a result would already have become manifest. The instance of the *Aaron Manby* will be in the recollection of many; she was launched in 1822, has been alternately employed in fresh and salt water, and is stated to be in good condition. The *Garryoven* has been about eight years in salt water, and is not yet perceptibly injured by decay;—but the iron vessels of the Clyde probably furnish us with more decided proofs than any others of the durability of the material in salt water. It is well known that some of the first built of those vessels were extremely slight, yet it is truly surprising, when the frequent rubbing on the banks to which they are exposed is considered, how little effect time seems to produce upon them; so slight indeed is the apparent decay when the vessel is in use and so much slower is its progress than is exhibited by iron when applied to other purposes in salt water, that many who have observed the fact, are led to suppose that some occult and preservative law is in operation, peculiar to iron so employed. A similar effect is said to be observable on the iron

rails of a railway; the corrosion of which appears to be much less rapid when they are acted upon by carriages passing along them, than when they are lying in detached bars on the road side. We now turn to the consideration of the durability of timber built ships—and where, I would ask, in the catalogue of objections, real or fancied, to iron ships, is there one to be found equal to that dreadful scourge to wooden vessels, the dry rot?—the effects of which are too well understood by ship-owners to require any lengthened remarks from me. I should not, however, do justice to my subject did I pass it over in silence. No age has been without its nostrums, its quackeries, and its infallible remedies for the dry rot; and no period has been so productive of them as that in which we live; but from all I can perceive, this plague is as prevalent as ever. How many stately vessels are now mouldering away under this destructive visitation, while their fine and graceful forms conceal the treacherous enemy within!

Repairs.—The usual calculation for a timber built steamer is, that the expense of repairs will, in ten or twelve years, have equalled the first cost. In a well built iron steamer, repairs will not, I believe, have become necessary within that period, provided the vessel has not been injured by accidents; and under any circumstances, I feel confident it will be more expensive to keep in repair the copper sheathing alone of a wooden vessel than to effect the whole repairs in the hull of an iron vessel.

Cost.—No one, it may also be remarked, can avoid observing and lamenting the low state in this country of what may be termed mercantile naval architecture, in which men of science meet with little or no encouragement to attempt improvements, and have become weary of a system which, for many years, has brought them no return. But let us hope for better things in iron ship building; let us trust that both owners and builders will see that their interest lies, the former in procuring good sound vessels, and the latter a price that will leave no excuse for imperfect work.

From a careful consideration of the question of cost, I have arrived at the following conclusions:

1st. That a good serviceable iron sailing vessel, not exceeding 300 tons burthen, will be equal in cost to an English-built twelve years' timber ship of the same external dimensions, without including the price of copper sheathing for the latter.

2d. That iron vessels of about 300 tons, have the advantage of being rather less expensive than wooden vessels.

3d. That for very large merchant vessels, iron will also be found to be much less expensive than wood.

4th. That iron sea-going steamers bear also about the same proportion, according to their different sizes.

5th. That iron vessels for rivers may be built at a light expense, but so built are unfit for sea service.

This estimate is to be considered to apply only generally, as the cost of either wood or iron vessels is raised by the cost of the materials and the style of finishing.

Draught of Water.—Iron sailing vessels may be built of any requisite depth and sharpness for holding on in a sea way; but where a light draft is essential for a peculiar service, it may be attained to a greater extent by the use of that metal than by timber. This advantage, of course, arises from the weight of iron necessary in the construction of a vessel, being much less than the weight of wood required for the same purpose.

In the foregoing remarks by John Grantham, allusion is made to bulkheads, which are an important provision in case of leakage from striking on rocks or other causes. The bulk-heads are watertight partitions, going completely across the hold of the ship, dividing it into four or five or more independent parts, so that if a leak occurs in one, the water only rises to a certain level in that division of the vessel without affecting the rest, and a vessel thus arranged may voyage a thousand miles in safety with a large leak, and without requiring pumping. We must not conceal from ourselves that a strong prejudice or alarm exists on account of the aberrations of the compass; but this difficul-

ty is considered to be completely overcome by proper measures for correcting the errors. We are indebted to Professor Airy for this onward and important step in the march of improvement. We have quoted largely from the work on iron ship building; we might give much more with profit, but prefer recommending the work to the perusal of those who are impressed with the importance of the subject as a national question, on which John Grantham, at page sixty-eight, writes as follows:—"There could not be a better period than the present, when the foundations of every commercial system seemed to be shaken, and men are looking around in dismay at the depression that weighs down every branch of trade; there could not be a better period for considering with deep attention a question such as this, and endeavoring to draw from it some assistance towards alleviating the general distress. As a national subject, it will be found to possess more claims to our attention than are at first apparent."

These observations were written in 1842, and appear equally applicable in 1849. If this question be rightly considered, and fairly tried during the ensuing seven years, it will not be needful to write elaborate treatises to prove that for ship-building "there is nothing like iron!"

The application of iron to form a nest, or series of boats, may be very valuable for passenger ships. Six such boats might lie on the deck of a steamer, one under another, occupying only the space of one, by having the thwarts made to unship and be ready at hand to be brought into action in a minute during an emergency. Six boats, each weighing about half a ton, would carry 180 to 200 persons, and a system of this kind is exceedingly important for all passenger ships, whether steamers or others.

It cannot be denied that the accident which befel that magnificent ship the *Great Britain*, in Dundrum Bay, did much check the progress of this improvement; but whilst it is admitted that this disaster checked the earnestness of our merchants to avail themselves of iron vessels, it may be pointed out as a triumph in the achievements of science, that costly as was that ship in iron, it would have been vastly more so if it had been built of wood, and it is probable that if it had run ashore as did the iron ship it would have gone to pieces in less than a week, instead of braving fearful storms for several months, and eventually floating off the beach, yielding to the judicious appliances of the talented engineer who had the charge of her construction. The few cases of failure in iron vessels are widely published, whilst some of the very remarkable instances of escape are scarcely recorded; in addition to the instances already quoted, may be mentioned the accident which befel the *Talbot*, a fine iron steamer that was built by the Neath Abbey Iron Company, to ply between Bristol and Port Talbot. One morning this vessel was leaving Bristol river with a cargo, and being caught aground, was left by the tide supported by the head and stern, lying completely across the river on her side, and was left so dry as for a boat to float under her; in this position she remained a whole tide until the water rose, when the engines resumed their duties, and conveyed her away uninjured to Port Talbot.

In considering the benefit obtained by using iron in preference to wood, we must not forget that the leakage of an iron vessel is scarcely appreciable; and if leaks occur, they are commonly very easily discovered and stopped, so that there is no bilge water—a consideration of great importance in carrying corn and other kinds of food.

It is true that there may yet exist strong prejudices to be overcome. So there were against steam vessels, as fraught with danger of many kinds—so there were also against the introduction of iron beams instead of wood for steam engines; there are engineers now living who remember this change, and the prejudices. How difficult it would be to avoid the snapping of the beam if the engine struck on the spring beams—how frightful would be the calamity of the cast iron beam of a pumping engine falling into the engine house, or of the other end tumbling down the shaft of the mine! Many such prognostications were made, and some realized; but does any engineer, any sound mechanic, contemplate the idea of reverting to the wooden beam with its cast iron caps, and wrought iron straps? An excellent engine beam, of enormous

strength, might be made of wrought iron plates; but the attempt would be almost vain to form a frame work of wood, however elaborate or well designed, that should be equal to the strength of the cast iron beams now used for the engines in Cornwall. If iron were not applicable for engine beams, the engines of Cornwall must of necessity be much smaller in their dimensions and power—the deep mines could not be drained, nor their wealth developed; and so it may be said of iron for the use of vessels; without it we shall remain stationary, or retrograde, amongst nations in the march of commerce; but if we avail ourselves of the advantages placed within our reach, we may again become proverbial for intelligence and prosperity.

To be Continued.

THE MANUFACTURE OF IRON IN ALL ITS BRANCHES: By Frederick Overman, Philadelphia.

We are pleased to welcome this addition to the metallurgic literature of our country. It is an octavo book of 490 pages by one who has had much experience in the manufacture of iron in Germany and other countries of Europe, and for the last five years in the bituminous and anthracite regions of Pennsylvania. The character of the work is decidedly practical; but while it shows an intimate knowledge in the author of the minutest details of the business, it also proves him to possess a profoundly scientific knowledge of the principles in the manufacturing processes. We recommend the work with pleasure to all whose interests lie in this department of business, and shall take occasion soon to furnish a more particular notice of it.

Deflection of Railway Bridges under the Passage of Heavy Bodies.

BY PROF. WILLIS, F.R.S.

In these, our notes of Prof. Willis' Birmingham lectures, we have endeavored to give as close a digest of his remarks and deductions as the nature of the subject, and the manner of its treatment would allow. It is to be premised that, some time ago, a commission was issued from government for the purpose of investigating the actual results of the application of cast iron to railways—as in bridges or beams. Professor Willis was a leading member of this commission; and the purpose of the address now under notice was to detail a portion of the results to which this inquiry had led, and the route by which the investigation had arrived at them.

It was found absolutely necessary to ascertain, practically, what were the effects of the passage of heavy loads over iron bridges—our information being confined to the knowledge of the effect caused by an engine and tender at rest on the bridge—when the train was in motion, no one knew whether the deflection was greater or less than before.

To determine this point, a temporary railway was erected in Portsmouth dock yard, having an inclined plane, arranged to give any required velocity to the experimental carriage. With this apparatus a long series of experiments were made, the weights of the loads being varied to extremes, and the final ascertained result was, that the statical deflection—or that arising from the weight of the carriages at rest at the centre of the supporting bars—was three or four times less than that caused by the same weight in motion. This result was well illustrated in a small model railway, on which a luggage waggon travelled. The great object being to eliminate all obstructing causes, it was found necessary to commence their experiments on a small scale, and to obtain some other material than cast iron—some material indeed, that from its delicacy of texture, would give closer results, and free from the objections of a practical "set." In the more recent experiments, therefore, cast steel bars were used; and to do away with any irregular pressure of the carriage—it having been found that more pressure was sometimes given to one bar than to the other—one bar only was used. The trial railway was about twenty-five feet long, formed of deal planking, and having at one end an inclined plane about twenty feet high, upon which was an adjustable catch, set to hold the carriage at any required height, and insure accuracy in the starting-point. The bridge occupied the centre of the beam,

and the level end was so made as to open outwards that springs fixed on both sides of the carriage might clasp the sides of the line, and retard the motion, to prevent running off the line altogether.

With the model, the lecturer went through a great number of experiments, with various speeds of movement, always giving the result of a triple deflection of the bar during the movement, compared with that arising from the mere stationary weight. Comparing the model with a full-sized bridge, a great difference is apparent; for, whilst the weight of the bridge is always much more than any passing weight, the weight of the bar in the model was much less. To strengthen the bar, an ingenious plan was resorted to, wherein the weight to be deflected with it was increased, and this showed that the increase in the weight of the bridge diminished the deflection. To take this as a general principle, would, however, involve serious errors, for cases occur where an increase in the weight of the bridge actually increased, instead of diminishing, the deflection. It is, however, to be remarked, that the objectionable facts connected with the deflection of railway bridges, do not exist in practice to anything near the extent hinted at in the theory; and, practically speaking, the actual deflection is so slight that it may be entirely disregarded. This fact the commission has established, by detailed experiments upon a bridge on a railway in Surrey.

Some experiments were also made at Portsmouth, as to the advantage to be gained by curving the bars upwards. By doing this, the centrifugal force was undoubtedly diminished, and the deflection was consequently lessened; but no practically useful fact has yet been elicited.—*Practical Mechanics' Journal*.

Pennsylvania.

The Progress of the Baltimore and Ohio Railroad is exciting much attention in the various sections of the country which propose forming connection with it; and we find in the western papers the proceedings of a convention held in Somerset county, Pa., on the 14th ult. The meeting was organized by appointing Hon. A. J. Ogle president, Isaac Huggins, John Hanna, and J. Row, Esqs., and Major John Knoble, vice presidents, and Col. John Weller, and Ross Forward, Esq., secretaries.

We copy the following resolutions, both as explanatory of the object of the meeting, and as presenting some interesting facts relative to the route proposed for the road.

Resolved, That, in the opinion of this meeting, it is settled that Pittsburgh is the point at which the trade and the railroads of the Western States and of the Lakes are to be concentrated, and must therefore become the thoroughfare ultimately of the Great Central railroad connecting with the Atlantic and Pacific oceans.

Resolved, That it is the true policy of Baltimore, Washington city, Alexandria, Georgetown and Cumberland to connect themselves with the Great Central line of communication at Pittsburgh.

Resolved, That according to the reports of the Baltimore and Ohio railroad company, Pittsburgh is 118 miles nearer to Cumberland, the equated distance, by the Youghiogheny route, than Wheeling by the Virginia route, and the distance from Pittsburgh to Wheeling by the Ohio river being only 100 miles, consequently, it is 18 miles nearer to go from Cumberland to Wheeling by way of Pittsburgh than by the selected route through Virginia.

Resolved, That by the Youghiogheny river route from the point of divergence, following the river, without one foot of ascent, there is no grade exceeding 26 feet per mile, equivalent to a level, while the Baltimore and Ohio railroad, by the Virginia route, crosses at right angles three or four rivers, and as many intervening mountains; encountering long and steep ascents and descents, numerous and long tunnels and bridges, and was therefore properly pronounced by Mr. M'Lane, the late president of the company, to be a route of 'tunnels and bridges,' and to be in every proper sense of the word 'impracticable.'

Resolved, That the Youghiogheny route to Pittsburgh is not only by 50 per cent. the nearest, best, and cheapest route, but it terminates at the only

point where there is a certainty of meeting the western railroads, and drawing to Maryland and the District of Columbia any considerable portion of the trade of the lakes and the western States, 'the Ohio river,' as Mr. M'Lane observes, 'furnishing a precarious and limited feeder for a railroad, being for a considerable portion of the year either dry or frozen up.'

Resolved, That to maintain a successful competition for the northern and western trade, Baltimore and the district cities must connect themselves with the Atlantic and Pacific railroad, at the nearest, cheapest, quickest, and most practicable point, and the point furnishing the greatest amount of commerce and business; that the Youghiogheny route to Pittsburg can be made for less than one half the expense, in less than half the distance, and on which freight can be carried for less than one-half the expense that will be required on the Virginia route to its connection with the Great Central railroad aforesaid; that this statement is more than sustained by all the surveys and estimates made by the Baltimore and Ohio railroad company and others.

Resolved, That it is the most obvious dictate of common sense, that the only practicable plan of connecting the Atlantic and Western States by a railroad, is to follow an eastern river to its highest source on the one side, and the nearest western river from its highest source to its confluence with the Ohio—that the idea of crossing rivers and mountains at right angles is an absurdity and will be found, in the language of President M'Lane, 'impracticable,'—that even if made, travel and transportation will adopt the cheaper, quicker, and safer roads following nature's routes, the rivers, leaving the visionary route of 'tunnels and bridges,' ups and downs, over mountains and rivers, to perish by the slow but sure progress of dilapidation and decay.

Resolved, That it is now ascertained that the steamboat navigation will soon be completed from Pittsburg to Connellsville, leaving but 79 miles of railroad to connect the steamboats of the Ohio and Mississippi with the Chesapeake and Ohio canal, and the Baltimore and Ohio railroad at Cumberland.

Resolved, therefore, That application be made to the Legislature of Maryland, at their next session, to incorporate a company to meet the Pittsburg and Connellsville railroad company at the State line, which it is confidently believed cannot fail, when the great and decided superiority of this route over all others, and the great superiority over Pittsburg as a point of connection, come to be fully and properly understood.

The friends of the Baltimore and Ohio railroad will not, we presume, be deterred from their present design of carrying their road direct to the Ohio at Wheeling, or a point still lower down. But, that as soon as this is accomplished, they will turn their attention to the extension of a branch to Pittsburg we have not a doubt. Pittsburg will soon be in communication with Cleveland by railway, and we cannot suppose that Baltimore will overlook so important a connection, and one at the same time so easily formed. The people on the route between Cumberland and Pittsburg are losing nothing by this early agitation of the subject, for by the time that all preliminary proceedings are had, and the necessary amount of talk and conference gone through, they will find the Baltimore and Ohio road ready to give them a lift on this work.

The meeting was addressed by Col. A. M. Hill, of Fayette county, and Messrs. Pearson, Hughes, Forward, Witt, Wyand, Kimmell and Pearson, gentlemen well known in that section of the country, and the best spirit prevailed.

Beaver Meadow Railroad.

We learn that the managers of this road have concluded to remove their present flat bar rail, and place in its stead a heavy H iron rail weighing 60 pounds per yard; they have made a contract for a quantity of iron sufficient to accomplish that object with the Montour Iron Company, of Danville, and

the Phoenix Iron Works, each company to furnish about eight hundred and fifty tons.

This improvement, which has been in contemplation for some time past, is now about being accomplished, and we view it as being of great importance to the interests of the middle coal field, and calculated to develop the mineral wealth of that region to an extent, which to those who are but partially acquainted with its location, can hardly be appreciated.

The Beaver Meadow railroad commences at the mines, near the pleasant village of that name in Carbon county, where it connects with the Summit railroad, from which there is now received about one hundred thousand tons of coal annually and the quantity will probably be increased from the Summit mines, and other openings adjoining to two hundred thousand tons in the course of the next two or three years. The railroad takes a southeasterly course to the town of Weatherly about 6 miles distant, where it is joined by the Hazleton railroad, from which it receives about one hundred and fifty thousand tons of coal annually, and the quantity will, from the number of new mines which are about being opened, probably increase fifty thousand tons annually for a number of years.

From Weatherly, its course is down the Quakake to Penn Haven on the Lehigh river, a distance of about five miles; just below Weatherly it is joined by the Cattawissa railroad which it is proposed to relay with iron rails, and when finished to the Girard lands, now owned by the city of Philadelphia, to which point the managers intend to carry a branch road, from this source may be expected in a few years at farthest a supply of coal, which for quality has no superior in the whole range of the anthracite coal fields in Pennsylvania.

From Penn Haven, the railroad follows the course of the Lehigh, to Shipping Port opposite to Mauch Chunk, a distance of about nine miles, its present termination—its entire length being twenty miles.

From the fact that the Beaver Meadow company on their present imperfect wooden road, transport at this time over three hundred thousand tons of coal annually, and that a much larger quantity would immediately be brought upon it, if the delays incident to a wooden road were removed, it is apparent that with the greatly increased facility, which will be furnished by a first class iron road, that the trade of the region will receive such an impetus, as will place it in advantageous contrast with the most flourishing coal region of the country.

In addition to the advantages which this coal district already possesses of having an inexhaustible supply of coal, the quality of which is at least equal to any other, and the facility of reaching market as cheaply as from any other—there is a strong probability that it will be the first which will be brought in connection by railway with New York.

The Summerville railroad is now nearly completed from Elizabethtown to Easton. A railway from Easton to Shipping Port, a distance of forty-six miles, is alone required to put this coal field in direct communication with the city of New York.—For this important link of railroad a charter has been obtained and a survey made which shows that a road can be made with great facility and with the most favorable grades, being all descending, and varying from one foot to eighteen feet per mile.—We do but express the general belief that the gentleman who is at the head of the enterprise "will never cease his exertions till they are crowned with success." Subscriptions to some extent have already been obtained, and there is no reason to doubt but that it will be speedily commenced and pushed forward to completion.—*Carbon Co. Gaz.*

The city councils of Pittsburg have passed an ordinance authorizing the issues of bonds for the city subscription of \$200,000 to the stock of the Ohio and Pennsylvania railroad, whenever called for by the directors. This will enable the company to put the road from Pittsburg nearly to the State line under contract early in the coming year. The surveys are now progressing, and the location of this portion of the road will be finished before the close of the month.

Pittsburgh and Connellsville Railroad Company.

—At an election for directors of the above named company, held at the office of the President, in Pittsburg, on Monday the 3d of December, the follow-

ing named gentlemen received 5962 votes, and were declared unanimously elected directors for the ensuing year:

Wm. Larimer, Jr., A. M. Hill, John C. Plumer, John Gebhart, Walter Bryant, Moses Hampton, Edward D. Gazzam, Wm. J. Totten, Henry Walters, Daniel Kaine, Hugh D. King, A. Stewart.

The election of directors is a mere matter of form for the purpose of saving the charter.—*Post.*

The corporation of Philadelphia have taken measures to place under contract the new bridge necessary to effect a proper connection with the eastern end of the Columbia railroad, some seven miles of which are being constructed on a new location, in order to avoid the present inclined plane. The bridge will cross the Schuylkill at Market street.

New York.

Buffalo and State Line Railroad.—The people of Western New York are moving in behalf of this road from Buffalo to the State line. Mr. Wallace, engineer, has just completed the survey of two distinct lines on the route, and the estimates for its construction are very liberal. The main features of the Buffalo and State line road are thus noticed by the Buffalo Commercial:

The plan proposed, is to build a double track at each station, and on the curved line, so that trains running in opposite directions may always run on separate tracks, on such portions of the road.

A station house will be located at each bend in the main line, near or exactly over the point where the tangent lines intersect, and the change of course in all cases is so small that the track will pass immediately in front of the buildings.

A station house will also be located at each end of the curved line where the double track terminates. The average distance between each station it about seven miles.

This plan if carried out will be an improvement on single track roads, and will prevent those calamitous accidents from collisions which frequently happen, and supersede the necessity of a double track the whole distance, until the increase of business demands it.

It is considered a liberal estimate for the whole cost of the construction of the road and equipping it complete, at \$1,000,000. The indications are encouraging that the stock will be immediately taken or at least so much of it as is necessary to prepare the road for the superstructure. In fact, we understand that there are responsible men who stand ready to take the contract at one-half stock and one-half cash. That the stock will be good investment, there can be no doubt. Since the construction of this line has been entered upon in earnest the people of Pennsylvania and Ohio, along the lake shore, have taken hold of the matter, and we shall not be surprised to find ourselves whirled along the whole length of the southern shore of lake Erie, in a railroad car, within three years.

Erie Canal.

Canal Navigation Closed—Increase of Tolls.

The canals of this State close to-day, just as the business belonging to them had about terminated. The navigation was uninterrupted up to the hour of closing.

On no former occasion have the canals been in better or more constant working condition. And never has a season of navigation passed more pleasantly, for forwarders and boatmen. The officers all along the lines have not only been efficient and faithful in discharging their duties, but attentive, civil and obliging to all who had business on the canals.

And we are gratified to learn that notwithstanding the depressed state of business during the cholera season, the canals have done well financially. The tolls of the present, exceed those of the past year. The amount collected last year was \$3,245,

662. This year the amount collected is \$3,250,210. And in the mean time the work of enlargement has been steadily and advantageously progressing. The expense of repairs has been diminished and the canals are left in better order for resuming navigation than they have been at the close of any former year.—*Albany Journal*.

THE "RAILROAD FESTIVAL."

Some time since we stated that arrangements were being made for a grand railroad festival in Syracuse, which was to come off some time during the present month. The Syracuse Journal says the arrangements are now about completed. Nineteen railroads, embracing all in our State, and several out of it, are represented in the list of honorary managers, by their several officers. Some thirteen or fourteen hundred cards of invitations have been issued, and will be sent in different directions.—The railroad festival at Rochester, two years since, was a very pleasant gathering, and a creditable affair. The 18th of this month is the day named for the gathering at Syracuse.—*Albany Journal*.

Georgia.

Central Railroad.—The Savannah Republican of the 19th inst. says: We append the gross earnings of the road for the past eleven months; the comparison with the eleven months of the previous year, shows an increase of one hundred and twenty one thousand dollars, being over twenty five per centum of increase in the earnings of the road for that period.

	1847-8.	1848-9.
December.....	37,421 72	67,861 05
January.....	52,291 27	66,629 07
February.....	57,786 38	71,691 52
March.....	51,434 38	75,969 72
April.....	30,254 39	61,318 87
May.....	33,945 70	32,544 62
June.....	26,138 12	20,412 33
July.....	25,867 56	22,525 87
August.....	31,964 54	28,940 48
September.....	41,182 37	45,409 30
October.....	63,516 37	79,755 10
	451,802 81	573,054 93

Georgia Railroad.—The Augusta Chronicle and Sentinel of the 9th inst. gives the earnings of the Georgia railroad during the seven months ending 31st August, 1849, compared with the same period of 1848. Also earnings of the road in the month of October, 1848 and 1849 compared.

	Passengers.	Freight.	Mail, etc.	Total.
1849..	99,883 89	170,695 36	22,686 31	293,265 56
1848..	96,800 51	148,206 47	22,215 39	267,223 37
Inc'se	\$3,083 38	22,488 89	470 92	26,043 19
OCTOBER.				
1849..	16,998 74	52,314 68	3,178 83	72,492 25
1848..	14,003 66	41,851 46	3,526 73	59,381 85
Inc'se	\$2,995 08	10,463 22	*347 90	13,110 40

* Decrease.

"The above figures show a very gratifying increase on the business of last year. The completion of the State road, and the rapid improvements of the up-country will add largely to the profits of the Georgia railroad during the next year."

Cars to Chattanooga.—On the 1st inst., as we learn from the Atlanta Intelligencer, the first train of cars that ever entered the boundaries of Tennessee, made its appearance in Chattanooga. It is estimated that there were upwards of three hundred persons on board. On the arrival of the cars, a large procession was formed which proceeded to the river, where a prayer was offered up by the Rev. D. Talmadge, President of the Oglethorpe University. After several elegant addresses were delivered, the Chief Engineer, assisted by Dr. Smith, of Chattanooga, as cup bearer for the occasion, and a large

number proceeded to mingle the waters of the Tennessee with those of the free stone regions of Georgia, and the Atlantic, uttering the sentiment "hat this commingling of the waters of South Carolina, Georgia and Tennessee, might tipify a union and fraternity of the citizens of those States as lasting as their railways."

Alabama.

Alabama and Tennessee Railroad.—We learn from the Mobile Planter that the directors of the Alabama and Tennessee railroad company recently held a meeting at Selma, at which it was resolved to prosecute the work with energy. It is the intention of the company to have at least that part of the route from Selma to Montevallo completed and in full working condition within twelve months.—A portion of the road is already graded, and when completed to Montevallo, a distance of about fifty six miles, will tap the great southern coal fields at the most convenient and central point for opening a large coal trade with the Gulf of Mexico. The road will thus have constant employment throughout the year, and must, from the nature of its position and business, be one of the best paying roads in the Union, or elsewhere. Finished to Montevallo, the entire route to Gadsden will be speedily completed, and develop, within a short time, the vast resources of a large and rich section of our State now cut off from the usual facilities of commerce and travel.

At this meeting of the directors the post of chief engineer of the road, we are pleased to learn, was tendered to Lewis Troost, Esq., of this city. Mr. Troost made the first reconnaissance of the Mobile and Ohio railroad, and has subsequently been employed as assistant engineer on the road. In both cases he has discharged his duties to the entire satisfaction of the company, and with credit to himself. In his new employment he will without doubt meet the just expectations of the friends of the Alabama and Tennessee railroad.

Finances of Alabama.

One of the most gratifying facts that can come to the knowledge of the people, is the one made known by the Report of Mr. Lyon, bank commissioner, recently presented to the legislature, showing that the finances of the State are in a much better condition than has generally been supposed, and that there is no danger that Alabama will ever repudiate a dollar of her foreign debt.

The following statistics we condense from the report:

At the passage of the act of February 6, 1846, to regulate the affairs of the State bank and branches,	
Our foreign debt was.....	\$9,170,555 53
Bonds since paid by commission....	2,476,666 57

Leaving amount of bonds outstanding	
Nov. 1st, 1849.....	6,693,888 96
From this deduct U. S. treasury notes owned by the State, bearing 6 per cent. interest.....	1,100,000 00

Leaving bonds on which the State now pays interest.....\$5,593,888 98

The outstanding circulation of the bank and branches is \$618,407. But as this will be mostly absorbed this year in payment of taxes, it need not enter into the calculation of our liabilities.

The interest on our foreign debt has been reduced from \$469,659 86, to little more than half that sum—say \$277,914 44.

The instalments of interest have been promptly paid as they fell due.

Such is the condition of our foreign debt, and

the State has abundant cause to congratulate both the commissioner and herself, for the removal of so heavy a portion of this burthen from her shoulders.—*Montgomery Journal*.

Virginia.

Alexandria and Valley Railroad.

A large and enthusiastic meeting of the friends of this road was held at Strasburg, in Shenandoah county, on the 25th ult., at which Robert Jamison, of Alexandria, presided. George F. Hupp, of Shenandoah, and Naason Bare, of Rockingham, were appointed Vice Presidents, and John S. Calvert and George A. Hupp, of Shenandoah, Secretaries.

The following preamble and resolutions passed at the meeting will convey a good idea of the object of the meeting and the result of its proceedings.

It appearing to the committee that a convention of the friends of the Alexandria and Valley railroad was held at Front Royal, on the 15th day of May last, at which certain resolutions were passed, and certain committees appointed, and it further appearing that a committee appointed by that convention had been specially charged with the preparation of a memorial to the Legislature.

Resolved, That this convention heartily approve of the action of the convention at Front Royal, and will co-operate therewith to the fullest extent.

Resolved, That a committee of three persons be appointed to obtain such additional statistical information as may be required in reference to a memorial to the Legislature.

Resolved, As the opinion of this convention, that the Legislature should extend the most liberal support to those great lines of improvement, which tend to develop the abundant natural resources of the commonwealth.

Resolved, As the further opinion of this convention, composed of delegates from a large portion of the valley of Virginia, that the Alexandria and Valley railroad specially commends itself to the Legislature, for such liberal support—because it will occupy the only pass in the Blue Ridge, which can be traversed without a tunnel, and at a low grade, because it will tend to develop the resources of one of the most valuable and important portions of the State, because such connections, as are contemplated thereby, go far to destroy sectional jealousies and prejudices; and because an important sea-port town is thereby built up, within the limits of our own commonwealth.

Messrs. George F. Hupp, James Kenny, and L. W. Gamble were appointed a committee to furnish statistics of trade.

Messrs. W. H. Fowle and J. W. Foster were added on the part of this convention to the committee appointed by the Convention at Front Royal, to prepare a memorial to the Legislature.

Messrs. Naason Bare, of Rockingham, John W. Rice, of Shenandoah, Lewis McKenzie, of Alexandria, John R. Jackson, of Warren, Alfred Ball, of Prince William, (delegates from Fauquier to be appointed by central committee) were appointed a committee to attend to the interests of the Alexandria and Valley railroad, at Richmond.

Michigan.

We learn from the Chicago Tribune, of the 32d ult., that the Michigan Central railroad company are about commencing that part of the road between New Buffalo and Michigan city. The work of grading will be very light, and the bridging cheap. It is expected to have it completed from New Buffalo to Michigan city by the 1st of next July, when the steamboats will discontinue their trips to New Buffalo, and run no farther than the former place. It is also expected, that by the 1st of July, the section of the Buffalo and Mississippi railroad, between La Port and Michigan city, will be approaching completion. The legislature of In-

diana, in granting the right of way to the Southern railroad company, made the construction of this branch one of the first duties of the company.

Report on the Causes of Steam Boiler Explosions.

"The Rumford committee having examined the paper submitted by James Frost, Esq., of Brooklyn, New York, and entitled, 'Description of the Causes of the Explosion of Steam Boilers, and of some newly discovered Properties of heat, and other Matters, for the purpose of showing that the Application of Steam for the Production of Motive Force is susceptible both of immense Improvement and Economy,' respectfully report:—

"The chief points which the author claims to have established are—

"1st. That steam of 212° Fahr., heated, out of contact with water, to 216°, doubles its volume;— and heated to 228°, increases its volume threefold.

"2d. That steam of low tension, heated to somewhere about 650°, is converted into another body, which the author calls 'stame,' and which, under favorable circumstances, becomes six times as effective as steam not so heated.

As, in the view of the author, the question of discovery rests upon the truth of the first of these two propositions, the attention of the committee has been particularly directed to its consideration. To this end, the apparatus employed by Gay-Lussac in his determinations of the tension of aqueous vapor at different temperatures was constructed, and a series of experiments made upon steam heated, out of contact with water, from the boiling point to 233°.6. The results arrived at were as follows:—

"A volume of steam at 212° Fahr., measuring 15.80 cubic centi-metres, or 1580 parts, heated to 216°, became 1600 parts, and heated to 228, became 4630 parts. According to Mr. Frost, 1590 parts at 212° should have become 3160, parts at 216 and 4740 parts at 228°. In tabular form we have, at

	Exp.	Frost.	Dif.
212°	1580	1580	—
216°	1600	3160	1560
228°	1630	4740	3110

"The results for higher, intermediate, and lower temperatures are given in the accompanying table. The whole expansion of the steam, when heated from 212° to 228°, was a little more than one-thirtieth of its volume at 212°. According to Mr. Frost, it should have been more than ninety times as great as the committee found it to be.

"The experiments of the committee were made with steam under a pressure ranging from 24 to 24½ inches of mercury, that is, under less than atmospheric pressure. This condition could not influence the result unfavorably to the view of Mr Frost, since the less the pressure, the greater is the expansion with a given elevation of temperature.

Centi-grade.	Fahren-heit.	Vol-ume.	Centi-grade.	Fahr-heit.	Vol-ume.
Deg.	Deg.		Deg.	Deg.	
112	233.6	1644	102	515.6	1600
111.5	232.7	1642	101.5	214.7	1598
111	231.8	1640	101	213.8	1592
110.5	230.9	1638	100.5	212.9	1588
110	230.0	1634	100	212.0	1580
109.5	229.1	1632	99.5	211.1	1574
109	228.2	1630	99	210.2	1560
103.5	227.3	1628	98.5	209.3	1510
108	226.4	1626	98	208.4	1430
107.5	225.5	1624	97.5	207.5	1280
107	224.6	1622	97	206.6	1130
106.5	223.7	1620	96	204.9	870
106	222.8	1618	95	203.0	650
105.5	221.9	1616	94	201.2	550
105	221.0	1614	93	199.4	350
104.5	220.1	1610	92	197.6	200
104	219.2	1608	91	195.8	150
103.5	218.3	1606	90	194.0	125
103	217.4	1604	70	158.0	000
102.5	216.5	1602			

"The committee deem it unnecessary to consider farther the claims of the alleged newly discovered

* Proceedings of the American Association for the Advancement of Science. Second meeting held at Cambridge, Mass., Aug., 1849.

properties of heat, as set forth in the pamphlet of Mr. Frost.

E. N. HORSFORD, Chairman.

Wetting Bricks.—Few people except builders are aware of the advantages of wetting bricks before laying them. A wall twelve inches thick, built of good mortar, with brick well soaked, is stronger, in every respect, than one sixteen inches built dry. The reason of this is that if the bricks are saturated with water they will not abstract from the mortar the moisture which is necessary to crystallization, and, on the contrary, they will unite chemically with the mortar, and become as hard as a rock. On the other hand, if the bricks are put up dry, they immediately take all moisture from the mortar, and leave it too dry to harden, and the consequence is that when a building of this description is taken down it tumbles down of its own accord, the mortar falls from it like so much sand.

Postmaster General's Report.

The following is a brief abstract of the Postmaster General's Report:

The number of post offices in the United States, at the close of the year ending July 30th, 1849, was 16,747; 921 new offices having been established and 333 discontinued, making a net increase of 588. Postmasters appointed during the year 6333. Of these 183 were in consequence of deaths; 234 from change of sites of office; 2,103 removals; 11 commissions expired; 26 renewed commissions and 23 in consequence of becoming presidential, in consequence of income exceeding \$1000; and 921 from creation of new offices.

The changes by the law of 1845 (the cheap postage law) have resulted beneficially to the Department. The cost of transporting the mail previous to June 1845, was eight cents one mill per mile.— It is now reduced to five cents six mills.

The number of mail routes in the United States on the first day of July, 1849, was 4,943, and the number of contractors 4,190. The length of these routes was 167,703 miles. On these the mail was transported 42,547,069 miles at a cost of \$2,485,515.

The gross revenue for the year, ending June 30, 1849, amounted to \$4,905,176 28, derived from the following sources:

From letter postage, including stamps sold.....	\$3,882,762 62
From newspaper and pamphlet postage.....	819,016 20
From miscellaneous items.....	3,254 21
From fines.....	43 75
From dead letter money sold.....	99 50
	\$4,705,176 28

For the appropriation made by the 12th section of the act of 3d March, 1847, for mail service to the government.....

200,000 00
\$4,905,176 28

THE EXPENDITURES DURING THE YEAR WERE FOR	
Transportation of mails.....	\$2,577,409 71
Compensation to postmasters.....	1,320,921 34
Ship, steamboat and way letters.....	36,174 45
Wrapping paper.....	23,936 03
Office furniture.....	4,219 69
Advertising.....	61,813 32
Mail bags.....	20,276 38
Blanks.....	20,802 71
Mail locks, keys and stamps.....	4,386 50
Mail depredations and special agents	21,223 00
Clerks for offices, (offices of postmas- ters).....	317,218 36
Miscellaneous payments.....	70,437 89
Post office laws and regulations.....	31 75
	\$4,479,049 13

Excess of gross revenue for the year..... \$426,127 15
The appropriations under the 12th section of the act of 3d March, 1847, remaining in the Treasury undrawn, exclusive of the appropriation for the past year, already noticed, amounted to..... \$265,555 53

\$691,682 70

Thus showing the sum of \$691,682 70 unexpended of the revenue of the past year, including the former appropriations granted to this department for the transportation of free matter to the department.

The expenses of the department for the current year are estimated as follows:

Expenditures as last year.....	\$4,479,049 13
Additions—excess of cost of service in eastern section.....	96,981 00
New routes let in other sections.....	57,333 00
New service ordered.....	28,083 00
Expense for California.....	50,000 00
Expense of mail across Isthmus.....	5,692 00
Publishing new addition of post office laws.....	8,000 00
Other miscellaneous items.....	25,000 00

Whole expenditures of the service of the department for the current year. \$4,750,138 13

The revenue for the year 1849 was \$3,882,762 from letter postage and sale of stamps, and \$819,016 from newspapers and pamphlets, being an increase of 14 2-10 per cent. in 1848. The Postmaster attributes a portion of this large increase to the retaliatory postage act, the correspondence growing out of the presidential election, &c., causes which do not now exist. He therefore finds his estimate of the income of the current fiscal year, on the basis of what is deemed a natural increase of nine per cent. as follows:

Revenue from postages, year ending June 30, 1848.....	\$4,117,630 00
Add 9 per cent.....	370,587 00

Revenue for year 1849, by natural increase.....	\$4,488,226 00
Add 9 per cent.....	403,940 00

Probable revenue for year ending June 30, 1850.....	\$4,892,166 00
To this add balance on hand July 30, 1849.....	691,682 70
Appropriation for free matter for departments for year ending June 30, 1850.....	200,000 00
	\$5,783,848 70
Deduct expenditures before stated ...	4,750,138 18
Leaving a balance on the 30th June, 1850 of.....	\$1,033,710 57

North Carolina.

The Greensborough Convention.

The convention called together for the purpose of increasing the subscriptions to the stock of the N. Carolina Central railroad assembled at Greensborough on 29th ult. Among the names of the members we notice those of Gen. Saunders, Gov. Morehead, Gov. Swain, Judge Ellis and many other distinguished gentlemen. There were probably 150 delegates present, of whom Petersburg, Va., claimed five. The Hon. Calvin Graves presided. Stirring addresses were made by Gov. Morehead, Gov. Swan, Mr. J. A. Gilmer, Gen. Saunders and others.

We learn from the report of Gov. Morehead, chairman of the committee appointed to ascertain the amount of subscriptions, that only \$190,800 had been unconditionally subscribed—the amount to be subscribed on the part of individuals to secure the charter is \$1,000,000. In a subsequent part of the proceedings Mr. Gilmer introduced a proposition that the whole remaining stock should be divided into 100 parts, and that such members of the convention as were willing should take one or more such part; and to this proposition 51 signatures were obtained. Efforts were afterwards made to insure the whole amount; but they were unsuccessful in getting additional subscriptions, and those taken are not to be binding unless the whole amt should in like manner be pledged. Resolutions were adopted to hold conventions in each of the counties through which the road is to pass with a view of making up the deficiency.

SUPPLY OF LONDON WITH WATER.

At the last returns there were 70,000 houses out of 270,000 that had no water supply whatever; and though it is asserted that the number since has diminished, the supply of water to the poor in general is so scanty in many districts, that it is practically a perfect mockery. Seventy thousand houses inhabited by the poor, with an average only of two families to a house, would give 700,000 persons who have to beg or steal water every day for the ordinary necessities of existence. Although the practice of reducing to figures and to a money value, the sanitary ills endured, is to a certain extent a pandering to the vicious system which prompts an Englishman always, when considering a new project, to regard it in a mere money point of view, still it has its benefits in being an *argumentum ad hominem*, of no inconsiderable value, in determining a speedy conclusion. Now, if the very hardness of the water of London alone leads to an outlay of soap and soda of, at the least double the amount absolutely requisite, and that amount be £630,000 it is surely worth while to determine whether an actual waste of £315,000 should be annually tolerated in the metropolis. But if we embrace the moral and physical evils, and combine with them the sum of the pecuniary loss entailed by the present scanty and intermittent supply of impure, often dirty, water to London, such an array of facts would stand forth as to cause every inhabitant to cry shame upon those whose duty it should happen to be to present a remedy for such a condition of things.—*Health of Towns Journal.*

Railroad Fares.—It is proposed, on the first of January next, to advance the fare on the four railroads, leading West and North from Boston, from 2 to 2½ cents per mile, except for package tickets and steamboat competition. After the first of January the rates on the seven railroads out of Boston, except for special trains, will average about 2½ cents a mile.

AMERICAN RAILROAD JOURNAL.

Saturday, December 15, 1849.

The Debts and Credit of Illinois.

The condition of the finances of this State are so complex, that they almost defy comprehension by any one who has not given them months of examination. Her bonds have been issued for over 20 distinct species of indebtedness which have undergone such a variety of legislative and financial mutations, and have passed into such a variety of hands, that the number of those who have been able to understand their condition, has diminished just about as fast as the parties interested in them have increased.

For the information of such as have not enjoyed any opportunities of investigating the subject, we give the following statement derived from an intelligent gentleman whose authority is unimpeachable. It will be found sufficiently minute and specific for all practical purposes.

The exact amount of the indebtedness of the State is not fully known: but as nearly as can be ascertained it may be set down as follows, in round numbers:

The internal improvement debt.....	\$6,000,000
Unpaid interest since July, 1841.....	3,000,000
The Illinois and Michigan canal debt...	5,000,000
Unpaid interest since July, 1841.....	2,500,000
Other indebtedness, including unadjusted claims.....	1,000,000
Gross amount of indebtedness.....	\$17,500,000
Of this amount of seventeen millions five hundred thousand dollars, eleven millions or over is bearing six per cent. interest—amounting annually to, say.....	\$660,000
The present moneys of the State, applied to the payment of interest is derived from a special tax of 1½ mill on the dollar of	

taxable property in the State; which raises annually about, say..... 120,000

Leaving annually unpaid.....\$540,000

This latter amount is therefore annually swelling the debt, and although the State is now rapidly settling, and increasing in wealth, it cannot in many years so increase the revenues as to meet its annual interest, and stop the accumulation.

In addition to the canal debt, as stated, a loan from holders of canal bonds was obtained, to the amount of \$1,600,000, for the purpose of completing the canal. To secure this amount, and the bonds, which were registered by parties who made the loan, the canal and canal lands were placed in the hands of trustees, who have prosecuted the canal to completion, and have made sales of land to the extent of about \$900,000, partly on a credit of three years. This amount, when collected, together with sales of the residue of the canal lands, and the receipts of tolls, it is probable, will pay off the loan within four or five years, and will then leave the receipts from the canal to be applied annually towards liquidating the arrears of interest on the registered canal bonds. The receipts from tolls on the canal, the present year, will not, it is estimated, vary much from \$120,000; and after paying the current expenses of the year, will leave some \$80,000 to apply towards the payment of the \$1,600,000 loan.

It is possible that the profits of the canal will annually increase; so that it may safely be expected that after the \$1,600,000 loan is paid, there will be \$100,000 or more, annually, to go towards paying the arrears of interest on the registered canal bonds. This arrearage will exceed two millions of dollars, and it will consequently require the profits of the canal for a number of years to discharge it.

The unregistered canal bonds will have no share of the profits of the canal. Nor are they in any way secured by the canal or canal lands. They are, therefore, considered as the poorest class of Illinois securities, there being no provision for payments upon them, beyond the small amount which the 1½ mill tax annually provides.

In the new constitution of the State, which was adopted in 1848, an article provides a tax of two mills in addition to all other taxes, to be assessed and collected annually, and paid pro rata upon the principal of the internal improvement debt. This tax has not yet been assessed, but it will probably be levied next year, and paid over on the first of January, 1851, unless some other provision shall be made for the disposal of that fund. That this may be done, is not improbable, as at the recent extra session of the legislature a measure was brought forward, having for its object a change in the constitution, to authorise the diversion of the two mill tax, for the purpose of creating a sinking fund for diminishing the State debt. This measure has been adopted by the legislature, but will not become operative until it be acted upon by another session of the legislature, and afterwards approved by the people by a vote at a general election. It will require two or three years to accomplish the proposed change, and will consequently suspend any action relative to the present provision with regard to the two mill tax, until the amendment to the constitution shall have been acted upon.

The exact terms of the proposed amendment of the constitution we have been unable to learn, but the proposition as submitted to the legislature was that the fund created by the two mill tax "be used in such manner as may be prescribed by law, for

the purpose of purchasing in open market any of the indebtedness of the State bearing interest, other than the canal registered indebtedness, the school indebtedness, and such other indebtedness as is not fully recognised by the laws of the State."

This measure, it was urged, would meet the views of the creditors of the State, and at the same time without in any way questioning the obligation of the State to pay in full the entire debt, enable her to reduce her indebtedness in a manner to make it certain that within a period of years, although remote, the indebtedness would be taken up.

The strict justice of this method of liquidating the debt may, in the minds of some, be questionable, but a careful examination of the position of the affairs of Illinois, and the operation of the sinking fund, applied in the manner proposed, will show that some similar plan is necessary to save the State from utter bankruptcy, and that this method will operate favorably upon the holders of bonds of the State, by furnishing an annual demand for a certain amount of those bonds, which the holders, by force of circumstances, or a desire to change their investments, may put upon the market, thereby preventing any serious depreciation in the market, and tending to produce competition and advance prices. And, on the other hand, by thus gradually absorbing the liabilities of the State, it secures to the permanent holders of the remaining bonds a certainty that they will ultimately be paid, and annually increase the payments of interest from the proceeds of the 1½ mill tax.

To persist in the course of policy marked out by the constitution, and follow the present plans for meeting the liabilities of the State, would seem to be the extreme of folly; as under the most favorable aspect the debt must continue to run, by the accumulation of the arrears of interest for years, until the amount would become fearfully large, and perhaps beyond the hope of payment. But, under the new course of policy marked out by the proposed amendment to the constitution, it becomes clear that within a few years, any accumulation will cease, and the progressive reduction of the debt will finally fully discharge it.

Pennsylvania Railroad Co.

The annual meeting of the stockholders of this company was held on Monday in Philadelphia, and was numerously attended. The best spirit, says the North American, prevailed, and the annual report appeared to give universal satisfaction.

Thomas P. Cope, Esq., was called to preside, and when the meeting was fully organized, the report of the board of directors was read by the president, Wm. C. Patterson, Esq. The presentation of the affairs of the company is most interesting and gratifying.

The fiscal year closed on the 31st of October last, and up to that date the treasurer's books showed the following state of affairs:

Received from subscriptions and other sources.....	\$3,692,379 44
Amount disbursed.....	3,193,709 15
Leaving a balance of.....	495,670 29
If to this balance be added the amount of uncollected subscriptions, including the second subscription from the city of Philadelphia, about....	1,900,000 00

There is the sum of.....\$2,398,670 29 applicable to the construction and equipment of the road.

The report of the superintendent of transportation shows that the most sanguine expectations have been realised on the small section of the road

now opened between Harrisburgh and Lewistown, and the arrangement made with the Harrisburgh and Lancaster railroad company, for running the cars and engines of this company over their road, has ministered not only to the benefit of the traveling community, but to the company itself. It has secured an increased rate of speed, at a reduced cost.

Arrangements have been made for the discontinuance of all operations upon the road upon the Sabbath, and the report expresses the hope that, "by the concurrent action of other companies and the State authorities, Pennsylvania will soon cease to be the northern frontier of Sabbath desecration.

The opening of the road, at the earliest practicable period, to a point near Holidaysburg, where it will connect with the Allegheny Portage railroad, has been an object of great solicitude to the board, not less on account of the important bearing it will have upon the trade of Philadelphia, than from a firm conviction that the receipts of the road, when finished thus far, will afford the stockholders tangible evidence of the safety and productiveness of the capital they have invested in it.

The portion of the line from Harrisburgh to Lewistown was opened for travel on the 1st of September last, and "very rapid progress has been made on the sections between the mouth of the Little Juniata and the base of the mountains. The work upon the residue of the eastern division has been unavoidably retarded; the general prevalence of disease, during the past season, having disabled a large proportion of the laborers on the line, while it rendered it impossible to supply their places." This difficulty has, however, passed away, and the work is being pushed forward with all proper energy. A justly deserved compliment is paid to the skill and zeal of J. Edgar Thomson, the Chief Engineer, and his assistants.

Having thus presented the actual condition of the road, and its contingents, the report of the board dwells upon the question of the policy to be pursued in future. It says:

"It is now for them (the stockholders) to determine whether the board shall, with the means in hand, finish the eastern division to the point of connection with the branch road to the Portage; and the western division to a point in Westmoreland county, whence a convenient road, about one mile in length, can be opened, at a small expense, to the Southern turnpike, and then pause until the necessities of the trade, and the income to be derived from the road in its unfinished state, shall induce such further subscriptions as may be required to complete it; or by a vigorous effort at this time, secure the means of making a continuous route to Pittsburg as rapidly as it can be built—due regard being had to economy and durability."

It is argued that if the former course be adopted the company will have a well constructed road free from debt, of great public utility, and capable of producing, under judicious management, an ample return for the capital employed. If the latter is resolved upon, the income upon the present investment will be materially enhanced, and the purpose for which the road was originally projected—of securing to the cities of Philadelphia and Pittsburgh the largest possible share of the western trade, with the incidental advantages accruing therefrom to the State of Pennsylvania—will have been achieved, beyond the possibility of doubt, in the possession of the first railroad from the seaboard to the Ohio river.

According to the estimates of the chief engineer, which it is confidently believed will exceed, rather than fall short of the actual result, the cost of constructing the road will be as follows:

Eastern division.....	\$4,180,000
Western division.....	2,865,000
Amount required for the equipment of the road, prior to the year 1851.....	540,000
	<hr/> 7,585,000

To meet which there is a reliable subscription (including a further subscription of \$1,000,000 by the city of Philadelphia) of..... 5,600,000

Leaving a deficiency of..... \$1,985,000

This deficiency, it is believed, can, by extraordinary exertions be made up. An effort is now in progress at Pittsburgh, under favorable auspices, to procure subscriptions to the amount of \$500,000. It is hoped that the recent demonstrations of popular feeling in favor of liberal subscriptions by the municipal corporations of the county of Philadelphia will produce from that source an equal sum of \$500,000. This would leave for private subscription in the city of Philadelphia and elsewhere, the sum of \$985,000, which by proper effort can be secured for the company.

The opening of the road to Huntingdon, during next Spring will, it is confidently expected, concentrate upon it a large proportion of the western travel that has heretofore taken the stage and railroad route, via Cumberland and Baltimore, to the city, and when finished to the mountains, in August, it must, of necessity, become the great thoroughfare from the Atlantic seaboard to the west and southwest.

The remainder of the report is devoted to an argument setting forth the brilliant, but truly reasonable prospects that exist for the road, and it closes with a justly deserved compliment to the late president, Samuel V. Merrick, Esq., who was obliged, from personal considerations, to resign the post he filled so capably.

After transacting some further business the meeting adjourned.

The following persons were elected directors for the ensuing year, at the meeting of the stockholders on Monday last:

William C. Patterson, Samuel V. Merrick, David S. Brown, Stephen Caldwell, George W. Carpenter, Thomas T. Lee, Washington Butcher.

Iron Workers' Convention at Albany.

The convention met at Albany on the 12th inst., pursuant to notice, and organized by the choice of the following persons as officers, viz:

President—ERASTUS CORNING, Albany.

Vice Presidents,

- Alexander J. Coffing, Dutchess.
- Gouverneur Kemble, Rockland.
- James Sterling, Jefferson.
- James S. Whallon, Essex.
- E. B. Judson, Onondaga.
- C. Cayler, Columbia.

Secretaries,

- H. C. Seymour, Rockland.
- A. J. Rosseau, Rensselaer.
- Francis H. Jackson, Essex.

The following are the names of the delegates in attendance:—

- Albany—Franklin Townsend, J. McD. McIntyre, Lewis Benedict, Arch'd. McIntire, Erastus Corning, John Townsend.
- Columbia—Lemuel Pomeroy, C. C. Alger.
- Clinton—James Rogers.
- Dutchess—Noah Gridley, Columbus Reed, Luther S. Dutcher, Alexander J. Coffing, H. A. Webb, W. A. White, Orville Dakin.
- Essex—James S. Whallon, Allen Penfield, C. D. Barton, Wm. H. Lowe, F. H. Jackson.

- Jefferson—James R. Sterling.
- New York—Thaddeus Sellick, J. T. Hodge, A. R. Wetmore, A. S. Hewitt.
- Oneida—J. B. Armstrong, B. S. Seymour.
- Onondaga—E. R. Judson.
- Orange—Peter Townsend.
- Rensselaer—L. G. B. Cannon, Joseph M. Warren, Day O. Kellogg, J. F. Winslow, John Hunter, H. Tator, A. S. Perry, Isaac B. Hart, James Forsyth, Geo. H. Cramer, L. G. Cannon, H. Burden, A. J. Rousseau, H. Ingles, Joel Mallory, D Southwick, Marcus Eldridge, Harry Fisher.
- Rockland—H. C. Seymour.
- Saratoga—John Cramer.
- Ulster—Wm. Burt.
- Warren—Wm. S. Stevens.
- Vermont—Winter H. Holly, Luman Munson, C. C. Hinsdale, Morton Brock.
- New Hampshire—John L. Hayes.
- Massachusetts—John H. Coffing, N. S. Palmer, Benj. Cole.
- Connecticut—George Coffing, Robert Bostwick, A. H. Holly, Horace Langdon, Edwin B. Williams, Gustavus Almet.
- New Jersey—Peter M. Ryerson.
- Pennsylvania—Pred Overman.
- Illinois—Churchill Coffing.

Mr. Lowe, of Essex, moved the appointment of a committee of three, to prepare a memorial to Congress, praying an increase of duty on iron. Carried, and the following committee appointed:—Messrs. Lowe of Essex, Hodge of New York, and McIntyre of Albany.

Mr. Hodge, of New York, moved the appointment of a committee of seven to prepare and report statistics to the convention. Adopted, and the following gentlemen named as such committee, viz: Messrs. Hodge, of New York, Rogers, of Clinton, Winslow of Rensselaer, Jackson, of Essex, Sterling, of Jefferson, Bushnell, of Dutchess, and Leavenworth, of Ontario.

Mr. Barton, of Essex, moved the appointment of a committee of seven to report the names of seven gentlemen to represent the iron interests of this State at Washington during the present session of Congress; and the chair designated the following as such committee, viz: Messrs. Barton of Essex, Davidson of Saratoga, Cannon of Rensselaer, Kingsland of Clinton, Reed of Dutchess, Stevens of Warren, and Prunyn of Albany.

Mr. Barton moved the reference of the letters read to the convention this morning, to the secretaries for publication.

The committee on address and resolutions was composed of Messrs. Winslow of Rensselaer, P. Townsend of Orange, Mr. Burt of Ulster, Webb of Dutchess, Judson of Onondaga, Dutcher of Dutchess, and L. G. B. Cannon, Rensselaer.

Mr. Cannon, from the same committee, reported the following resolutions:

Resolved, that the convention regards the protection of American labor as one of the first duties of government, that the history of the protective policy in this country is the rise and growth of our manufactures and the triumph of American industry. A policy having for its object the just reward of labor and the elevation of the laboring classes; a policy which distinguishes justly between American labor and half paid and half fed labor of foreign countries; which remunerates American labor without injury to the consumer of its products, and upholds all the great interests of the country by giving well paid employment to our people, bringing wealth, independence and happiness to all.

Resolved, That we are not in favor of an excessive duty on foreign importations, but such a rate of duty as will enable us to enter into fair competition

with the foreign manufacturer, and such competition can only be secured by a system of *specific duties* laid upon foreign products.

Resolved, That the amount of duty on iron per ton, excepting the smaller sizes, collected under the present tariff for a period of twelve or fifteen months after its passage did protect the manufactures of iron in this country, for the reason that prices abroad ruled at a rate above their average value, and foreign iron could not be laid down here at a cost below a remunerating price to the home manufacturer. At the present time, and for the last 18 months, the foreign market has ruled at less than one half, diminishing of course the amount of revenue in the same proportion, thereby bringing the article into the country at about one half its cost in 1847. If these are facts, and the records of the trade show it, can the manufacture of iron be protected in this country, while the duty of one year barely protects, and the duty of the next is reduced one-half?

Resolved, (as the sense of this convention) That the manufacture of iron in this country requires *specific duties* for protection. That at least three parts out of four of the value and price of iron are made up of labor—the labor which digs, burns, cleans, blooms, smelts, forges and transports; and that the production of iron in this country, to any considerable extent must be abandoned unless the interest is protected, or the price of labor reduced to the foreign standard.

Resolved, That it is the duty of Congress, at the earliest practicable period, to revise and reform the tariff of 1846, so as to encourage the manufacture of iron by abolishing the system of *ad valorem* duties, and substituting therefor *specific duties*, which shall produce a healthy home competition, diminish prices and afford reasonable protection against foreign pauper labor.

Resolved, That our Senators and Representatives in Congress be requested to urge this subject upon the attention of Congress, and that they be requested to take all proper means to procure so important a revision and reform, affecting the interests of so large a body of their constituents.

Resolved, That in consequence of the peculiar tendency of the *ad valorem* system of duties, the poorest qualities of iron are largely introduced, to the great injury of the country, in place of the more useful and better qualities, these being more highly priced.

Mr. Barton, from the committee on that subject, moved to increase the number of delegates to Washington to ten. Carried; and

The committee reported the following names as such delegates:—

Elisha Peck, of New York; John Cramer, of Saratoga; Erastus Corning, of Albany; Peter Townsend, of Orange; Alex. J. Coffing, of Dutchess; C. C. Alger, of Columbia; J. F. Winslow, of Rensselaer; James S. Whallon, Allen Penfield, C. D. Barton, Essex.

Mr. Barton moved the appointment of the following gentlemen as a State Corresponding and Finance Committee, viz:

Erastus Corning, Lewis Benedict, of Albany; J. F. Winslow, J. M. Warren, L. G. B. Cannon, Rensselaer.

The convention then adjourned to 7 o'clock.

EVENING SESSION—7 o'clock

Mr. Winslow offered the following resolution:

Resolved, That this convention fully appreciates the importance and value of the "*American Railroad Journal*," and particularly that department of it which treats of the Iron Manufacture of the Union, and most cordially recommend its support to the iron interests of the country, and we also add our approbation of the work upon the "*Manufacture of Iron*," by Frederick Overman, of Philadelphia, and commend it to the support of the friends of that interest.

Mr. Winslow sustained this resolution as due the publications named. Both of them contain matter of great importance to the trade. The Journal is a useful periodical, ably conducted and devo-

tedly zealous in its advocacy of the great interests, to promote which this convention has met; and Mr. Overman's volume contains a vast amount of highly valuable theoretical and practical information.

The resolution was unanimously adopted.

Mr. Hodge expressed his thanks to the convention for the flattering notice of the "*Railroad Journal*," and trusted it might continue to merit the approbation it had elicited. He made a few interesting remarks on the general subject before the convention; and reported, on behalf of the committee, a petition to Congress, praying a modification of the existing tariff.

Mr. Winslow, from the above committee, reported the following

ADDRESS.

The committee appointed to report a series of resolutions and an address upon the present condition of the Iron trade of our State and Union, beg leave to submit: That they find this important interest suffering and depressed to an unexampled degree, by being brought into competition with foreign iron, which is admitted at so low a rate of duty under the Tariff act of 1846 as will if persisted in, utterly put an end to its production in this country, thereby causing ruin to the manufacturer, and depriving tens of thousands of persons of their accustomed employment. There is perhaps no department of industry which so much requires the fostering care of a government as the manufacture of iron—none which furnishes so large a share of the national defence—none that is so emphatically the embodiment of labor—and certainly none in this country which suffers to the same extent when brought into conflict with foreign labor—chiefly for the reason that the average rates of labor in this branch of trade in England are, as compared with those in this country, as one is to 3 or 3½, and not until the rewards of labor here rule as low as there (a state of things which no lover of his country would wish to behold) can we prosecute the business of iron making without protection. Nor is the difference of labor the only advantage which England has over us; with her, originated, in a good degree, the process of making iron with mineral coal, and this improvement was not introduced into this country until nearly forty years after its discovery there—affording her ample time and opportunity for the attainment of a high degree of perfection in this art. Within her circumscribed limits are found in great abundance and in juxtaposition, the coal, the ore, and the solvents necessary for its reduction. She has a dense and dependent population, with capital and skill to combine and control the resources which nature and a favoring government have so bountifully bestowed upon her—which, with her peculiar maritime position gives her easy access to all the markets of the world.

In this country we have, it is true all the materials for the manufacture of iron, but they are rarely found in localities from which the avenues for its transit to market are yet completed, and as a consequence, its manufacture cannot at present be prosecuted at those localities, and the iron laid down in our sea-board markets at as low a rate as from like establishments in England and Wales.

Neither have we capital in such abundance, or which is satisfied with like returns for its use; nor a population so entirely dependent upon the caprices of capital and employers, or so depressed as to be content to receive as a boon whatever the necessity of their principles, or inordinate competition in trade may demand. We have here no hereditary rights—no distinctions of birth—but all inherit the right to labor, and if the rewards of that labor are not such as afford a respectable livelihood, and enable us to train up and properly educate our children to become actors in the duties and responsibilities of citizenship, we have the opportunity of becoming possessors of the soil, which, by manorial rights, is denied to the laboring population of England. The same classes, therefore, in this country are not compelled to yield to the exactions of employers or the emergencies of trade; and if told that the products of pauper labor from abroad conflict with the products of their labor in our markets, and to continue that production, the cost thereof, i. e. the

labor must be reduced correspondingly, they are not obliged to submit; but so long as land is so abundant and so cheaply obtained, they have the tempting alternative of emigration and of becoming owners and cultivators of farms, held to them, thus leaving the capital invested in manufacturing wholly unproductive, whereby the farmer, the gardener, and the grocer lose them as customers, to meet them as rivals, and preventing "the productions of the land from being consumed upon the land."

There are in this country east of the Alleghany mountains, thirteen rolling mills employed in the manufacture of railroad iron, and some four or five west of the boundary. At a very low estimate, these seventeen or eighteen mills are capable of making 100,000 tons of rails per annum, worth at the average price for the last four years, about six and a half millions of dollars. At this time but two of these establishments are in operation, and these two but partially at work; all the others are wholly silent, and the thousands of persons who two years ago were fully employed therein, and adequately compensated, are now without employment, exposed to dissipation, to crime and the numberless immoralities that always follow in the wake of idleness. It is a fact worthy of special note that all these establishments are the offspring of the tariff law of 1842, up to which time railroad iron was admitted into this country free of duty, and was unknown as an article of American manufacture; but the duty of 25 dollars per ton imposed by that act was marked by its immediate and sufficiently extended manufacture to meet the demands for railroad construction, and confessedly of a far superior quality to that obtained from abroad. Within the six months ending on the 1st of September last, there was imported into the single port of New York from England nearly 34,000 tons of railroad iron, and about 75 tons of other descriptions, 39,000 of which was pig iron, and the money to pay therefor sent out of the country, the practical effect of which upon the labor of the country is a direct and positive loss, as we have the materials, the labor and the machinery waiting to furnish it, but which have been suffered to stand idle, while we have gone to England to obtain that of which we have a surplus at home, and of far better quality. In this sense, then, the loss to the country is as real as though the same amount of money had been buried in the ocean—even worse, it is a loss of the money we ought to have earned and a loss of the money it cost to support the labor that is waiting for employment. Had that money been kept at home it would have circulated throughout the various channels of trade and enterprise, making active and vigorous the places that are now desolate and languishing. According to the census of 1840, the whole annual value of iron made in the United States at that time was, when in market, \$25,765,330.

Whole amount paid for labor in the manufacture of iron in the U. States in 1840, \$18,762,990.

The number of men employed and the women and children dependent upon iron making for their support, was estimated to be 257,025 souls.

The value of agricultural products consumed during the same year by these persons was \$11,726,766.

Capital employed in the manufacture of iron, inclusive of wood-lands and mines of iron and coal, estimated in 1840, \$30,500,000.

Since the census of 1840, we have no authentic data by which to ascertain the increase in this department of manufactures; but from the time of the passage of the tariff of 1842 up to 1847, the rate of increase was largely beyond all former precedent, and we think we are warranted in supposing that on the 1st of January, 1848, the value of iron of American make was forty millions of dollars, and the amount of capital invested above fifty millions, an increase of at least 66 per cent. in 8 years. This prodigious impulse was given to the business by the tariff law of 1842, and was accompanied by a marked reduction in the prices of the manufactured article, consequent upon increased competition, while the rates of labor were fully sustained; showing, beyond dispute, that protection to the manufactured article is a boon to the labor of the land. In proof of this assertion, your committee cite a fact well known to every member of the trade, viz: that for a period of 16 years, commencing with 1830 and ending with 1846, an era

of high protective duties, the prices paid for ton work in the different iron works throughout the country were not reduced one per cent.; in many cases they advanced; while during the same period the market prices for manufactured goods steadily declined, until in 1846 some descriptions reached a point as low as 50 per cent. below the rates of 1830, thus establishing by experience, that the labor of the country is immediately and almost solely benefited by the imposition of duties upon goods of foreign make; and proving, likewise, that employers in this country cannot, as in England, make the prices of labor bear a corresponding rate with the market value of the articles produced by that labor.

The value of the coal and the ore in the earth constitutes but a very small portion of the value of the manufactured iron. At favorable localities this is as 1 to 60, or nearly so; and is probably less in this country than in England, as they exist in greater variety and abundance, and their geological position being more generally favorable for extraction, and the lands containing them not burdened with onerous "lordship rights, royalties or government taxes." The residue of the cost of a ton of iron is made up of wages for mining, carriage to works, wages and waste of material incident to the processes of manufacture, transportation to market, (and this is only another form of labor) interest upon capital employed, constituting an almost entire whole of manual labor; for although machinery is employed in many of the manipulations, still the aid it affords is incidental to and requires great physical *adult* labor for the accomplishment of its purpose. In affording protection, therefore, to the iron manufacture of our country, it resolves itself into a mere question of fostering and sustaining our own domestic labor, and every dollar that is imposed in the form of a duty upon foreign iron, at least 80 parts of it is a contribution to American industry; and this in turn is paid to the farmer, the gardener, the schoolmaster, and other purposes that enter into the support of the household; but if withheld, then the same amount is given to foreign laborers, and the remaining 20 parts which make up the 100, is taken from the owners of the raw material, the proprietors of the works, and those who transport the produce to market, and goes to enrich like persons abroad.

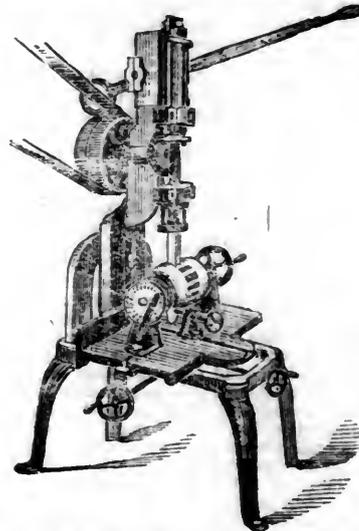
Many proofs might be adduced to show that it is an appeal in behalf of labor which we make; but need we amplify? need we array figures and quote authorities to convince consumers that though foreign iron is nominally cheap, it is really dear?—Facts and statistics by the acre could be collated to prove that all that any nation (or person) may make by buying foreign goods cheap, it loses ten times over by the decline of property, product or labor. How just and comprehensive, as well as pertinent to the views entertained by your committee, is the following extract of a report upon the protective policy made to Congress in 1809, by Mr. Newton, of Virginia. He says: "A nation erect a solid basis for the support and maintenance of its independence and prosperity, whose policy it is to draw from its native sources, all articles of the first necessity." And says Mr. Dallas, in 1816, in his able report to Congress upon a protective tariff: "Although some indulgence will always be required to realise the national independence in the department of manufactures, the sacrifice cannot be either great or lasting. The inconveniences of the day will be amply compensated by future advantages. The agriculturalist, whose produce and whose flocks depend for their value upon the fluctuations of a foreign market, will have no occasion eventually to regret the opportunity of a ready sale for his wool or his cotton in his own neighborhood; and it will soon be understood that the success of the American manufacture, which tends to diminish the profit (often excessive profit) of the importer, does not necessarily add to the price of the article in the hands of the consumer." To the minds of your committee, the policy herein advocated is so sound and truthful, that none but those whose apprehensions are blunted by interest or uncandid views, can resist the conviction that no people can be great or prosperous, unless their interest be properly cared for; and their labor profitably employed. As an illustration of this, we need only point to Spain, to Portugal, to Turkey, and indeed to any government that has made "free trade" its policy,

and looked to other nations for the comforts and staples of life. Heaven forbid that those who come after us, should point to the policy of our own country in proof of the enervating and ruinous effects of depending upon Europe for the products of mechanical labor! In the judgment of your committee, the tariff law of 1846, in its application to foreign iron, is mainly objectionable by reason of its *ad valorem* feature. Herein it works wrong and injustice, both to the honest importer of foreign iron, and to the home producer, exposing the former to unfair and unequal valuations from rivals of loose principles, and withholding from the latter protection when the price is low abroad, and when most needed, and subjecting him to frequent and at times ruinous fluctuations of prices in foreign markets, thus making the revolutions and disturbances of European governments as disastrous to our trade and industry as to their own. Had the rates of duty which were collected under this law at the time of its enactment been made specific, all reasonable protection would have been extended to the industrial interests of the country! and if now substituted, with perhaps some additional discriminations in favor of the smaller sizes of iron, the wishes of a large majority of the persons interested therein, we believe, would be realised. It is due, perhaps, to the friends of, and parties interested in other branches of American manufactures, not represented here, to refer to the peculiar character of this convention, and to its smugly isolated composition, by way of removing any misapprehension that may arise from its apparently sectional character. Our explanations are cheerfully given, and we believe will be satisfactory to all. The iron manufacture of our state is a leading one, involving the capital as well as the welfare of a larger number of persons than any other individual pursuit, and while it was thought by those who have a deep concern in its prosperity, that its condition and claims would be the best considered and represented by a convention composed exclusively of persons engaged therein; still, we do not intend to urge upon Congress the consideration of our interests, to the exclusion or at the expense of others. On the contrary, we hope to meet in our efforts before that body, the representatives of the various industrial interests of the Union, and to receive from them that aid and co-operation which, as members of one common family, and the friends of a system as a whole, we owe one another. We feel that their cause is our cause, their interests our interests, and "If one member suffers all the members suffer with it; and if one member be honored, all rejoice."

In conclusion, your committee beg leave to add, that with a somewhat intimate acquaintance with the subject committed to them, and a careful examination into the condition of the interest here represented, we feel safe in asserting that of the large amount of machinery in this country for the manufacture of iron, not more than 33 per cent. thereof is in operation at this time, and this proportion is daily diminishing, and a considerable share of this is kept in motion more for the sake of keeping up business organizations than from any profit derived from it. We too often hear of the disastrous consequences to our brethren in their struggles to sustain themselves in the unequal conflict with England under our *ad valorem* Tariff.—Too often are we invited to the sale of iron establishments, "brought to the hammer" after years have been consumed in building-up a business, and which was called into existence by the hopes and allurements of what once seemed a permanent protective policy, but which, instead of being stable and uniform, has halted and fluctuated between excessive protection and the almost total abandonment thereof. We think we speak the sentiments of our craft, when we say that we do not desire a rate of duty upon foreign iron which will prohibit its introduction from abroad, but we only ask that such discriminations be made as will recompense and elevate our own working population beyond and above the poorly-paid laboring classes of Europe, and enable them to participate not only in the necessities, but also in the comforts and accomplishments of life. In this way we may ennoble labor, and open to its votaries the paths of education; intelligence and subsequent usefulness. Unless we have reflected in vain, it is

the industry of our country which is to ennoble it. Greatness with us is not entailed. He only is truly great who works his own way to distinction and eminence, and confers the greatest amount of real enjoyment upon his species. We have not in this country such enormous accumulations of wealth in the hands of individuals with which to monopolize any of the departments of trade, and which depends upon the omnipotence of capital for success; but we have a country rich in resources and a people gifted with abundant energies for their development; and if not crippled by unwise legislation, the field of enterprise will be speedily occupied and the harvest of reward shared by the laborer and the husbandman, the merchant and the manufacturer, filling our land with an industrious and prosperous people, causing "the waste places to rejoice and the wilderness to blossom as the rose."

Capt. Alfred Swingle's PATENT BORING & MORTISING MACHINE.



The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to H. B. TEBBETTS, 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15, 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS **Rider's Patent Iron Bridge Co.**

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, No. 74 Broadway, New York.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by **FISHER, MORGAN & CO.,** 75 N. Water St., Philadelphia.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849. 3145

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.

1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.

1 Brick, slate roof, engine and dry house, 30 by 40. 1 Lumber house.

2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.

1 Barn, 18 by 28 feet.

1 Wood dwelling house, 21 by 28 feet.

1 Brick block, six tenements, two stories.

A number of building lots.

Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1849.

BY FERDINAND E. WHITE.
STORE NO. 22 LONG WHARF.

Valuable Real Estate in South Boston.

On WEDNESDAY, December 19, at 12 o'clock, M. on the premises.

ALL the Property of the MASSACHUSETTS IRON COMPANY, consisting of their Two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 feet by 174, including Sheds. The two contain 15 double Puddling Furnaces, and nine Heating Furnaces.

There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with it, and will be sold at the same time, about 417,000 feet of upland, on which are erected, besides the mills, four blocks, containing each four brick Dwelling Houses for workmen; a wooden Counting Room, with Dwelling adjoining; a horse stable, and a coal shed 210 feet long by 70 feet wide, now containing 3100 chaldrons Pictou Coal, and 923 tons of Pig Iron.

The terms of sale will be made liberal. For further information apply to B. T. REED, Esq., or to the Auctioneer.

December 1, 1849.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co. DUDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE, }
Washington City, D.C., April 28th, 1846. }

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for Improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York. 3m

October 27, 1849,

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,

Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chatanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Higgins, B.

Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,

Central Railroad, Savannah, Ga.

Roebling, John A.,

Trenton, N. J.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,

Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac K.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

BUSINESS CARDS.

DUNLAP'S HOTEL,

On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tilters, &c., by JOHN A. ROEBLING, Civil Engineer,
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CAST STEEL WARRANTED SAWS,
IMPORTER OF THE
GENUINE WICKESLY GRINDSTONES,
NO. 8 LIBERTY STREET,
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Doremus & Harris,

ANALYTICAL & CONSULTING CHEMISTS,
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SCHOOL OF CHEMISTRY.

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IRON COMMISSION MERCHANTS,
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Furnishing Store.**
F. S. & S. A. MARTINE,
IMPORTERS AND MANUFACTURERS OF
**RAIL ROAD CAR &
CARRIAGE LININGS,**
PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsteds; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Buntings

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

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MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street
Nathan Starks, ALBANY Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.
For particulars see Adv. in another column.

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. mak-
ers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE

HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.
S. C. HILLS, No. 43 Fulton street, New York, has
constantly for sale Steam Engines, Boilers, Lathes,
Chucks, Drills, Planers, Force and Suction Pumps;
Tenoning, Mortising and Boring Machines, Shingle
Machines, Bolt and Nut Machines, Belting, Oil, Iron
and Lead Pipe; Rubber, Percha and Leather Hose,
&c., &c.
S. C. H.'s arrangements with several machine shops
are such that he can supply, at very short notice, large
quantities of machinery.
November 23, 1849.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. Butt Hewson, Civil Engineer, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.
500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849. 1m46

Railroad Iron.
THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849.

Railroad Iron.
1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ "
590 " " 53 "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.
They offer also to import and contract to deliver
ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE
and Cables for Inclined Planes, Standing Ship
Rigging, Mines, Cranes, Tillers, etc. by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the
planes of the Portage railroad in Pennsylvania, on the
Public Slips, on Ferries, and in Mines. The first rope
put upon Plane No. 3, Portage railroad, has now run
four seasons, and is still in good condition.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.
ILLIUS & MAKIN,
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Merritt & Co., New
York; E. Pratt & Brother, Es. Annapolis, Md.

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to the office of the subscribers will have
prompt attention. J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " " "
100 " 2, " " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catoctin " " "
250 " Chikiswalungo " " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x 1/2 Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler* and *Flue Iron* from the mills of *Edge & Hilles* in *Delaware*, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the *Caledonian Tube Company*, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous *Andover* iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.

October 30, 1848. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the *New-Jersey Iron Company*, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boontown Foundry Pig Iron.
100 " No. 2 do. do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Faggoting Iron, for shafts
Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
Do do Rounds and Squares, 1/2 to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND ENGINEERING AND MACHINE FILES,
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their *Cyclops Steel Works* Sheffield.

JOHNSON, CAMMELL & CO.,

100 William St., New York.

November 23, 1849.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer *Missouri*, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,

No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with *Fraunhoffer's* Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive *LOCOMOTIVE ENGINE* department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles*, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woolen, or other Mills*, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the *Mattewan Company's* Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Text Book of Mechanical Drawing,

FOR the use of **SCHOOLS** and **SELF-INSTRUCTION**, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the *parallel ruler, plane scales and protractor*.

2d. Examples for drawing *plans, sections and elevations* of Buildings and Machinery, the mode of drawing elevations from *circular and polygonal* plans, and the drawing of *Roman and Grecian Mouldings*.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with **50 STEEL PLATES.**

Published by **WM. MINIFIE & CO.,**

114 Baltimore St., Baltimore Md.

Price \$3, to be had of all the principal booksellers.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,**
Reading, Pa.

To Railroad Companies and Contractors.

FOR SALE—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.

May 19, 1849. 20t

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street,
New York, May 21, 1849.

Fire Brick

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

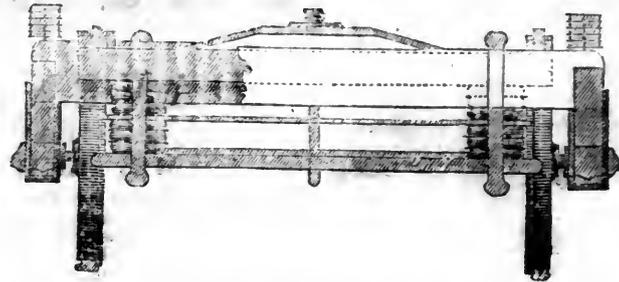
ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also, **COAL,** of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also, Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber set of any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are **G. M. KNEVITT,** 38 Broadway, N. York, General Agent for the U. S.; and **JAS. LEE & Co.,** 18 India Wharf, Boston. **JOHN THORNLEY,** Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, **JOSEPH P. PIRSSON,** Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

Arch St. Machine Shop.

BIRKENBINE, MARTIN & TROTTER,
Makers of

STEAM ENGINES,

and

HYDRAULIC MACHINERY,

NO. 16 ARCH STREET,
PHILADELPHIA,

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc; Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with (BIRKENBINE'S PATENT VALVES.)

B., M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

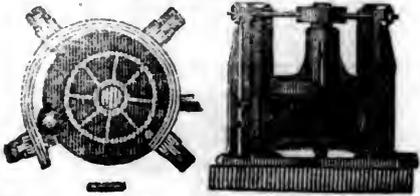
J. E. Mitchell,

NO. 14 OLD YORK ROAD, PHILADELPHIA.
Importer and manufacturer of

New Castle }
Nova Scotia } Grindstones, of all sizes and grits.
Wickersly }
French Burr }
Cocaheo } Millstones, made to order, with all
Cologne } the recent improvements.
American and }
Patent compressed } Fire Bricks and Tiles of various
Garnkirk } sizes.
Burr Blocks, Bolting Cloths, Mill Irons, etc.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co.,
March 14, 1849.

ENGINE AND CAR

WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

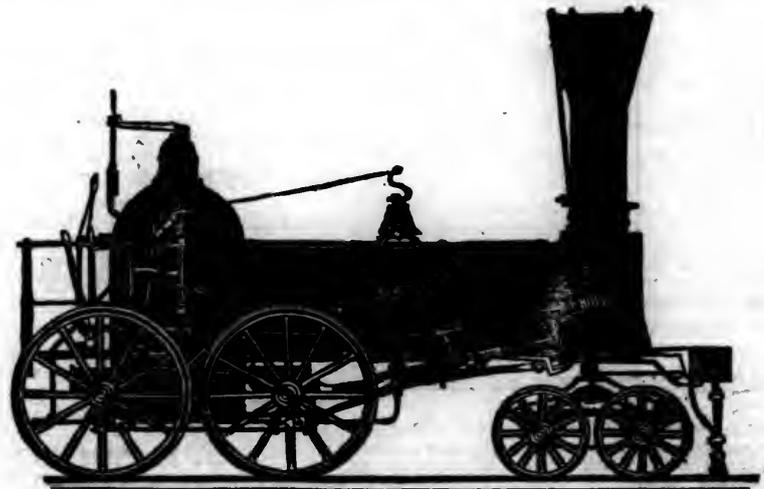
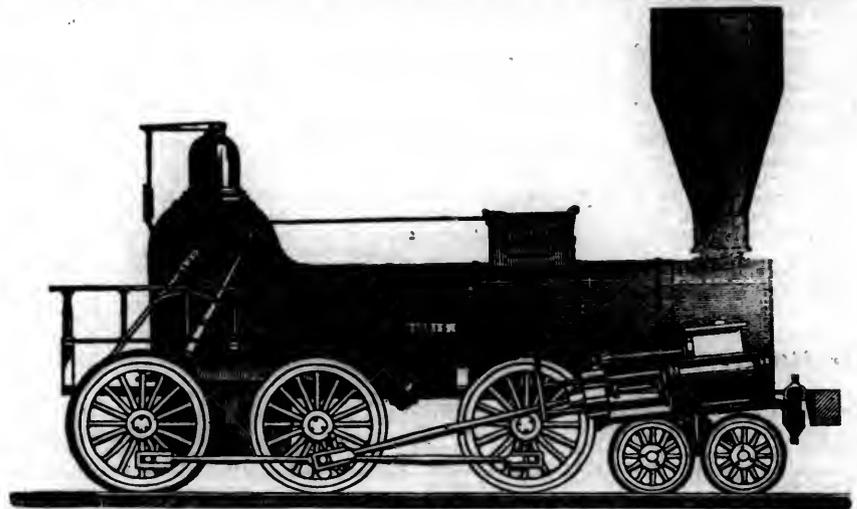
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

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 GEN. CHAS. T. JAMES, *For Manufactures and the
 Mechanic Arts.*
 M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, December 22, 1849.

Tennessee, Mississippi and Alabama Railroad.

A great convention in aid of this road was held at Huntsville, Alabama, on the 26th ult., at which Gov. James C. Jones, of Memphis, Tennessee presided. The following gentlemen were elected vice presidents of the convention, viz:
 Hon. Nicholas Davis, of Limestone county.
 Hon. Henry D. Smith, of Lauderdale “
 Dr. Houston, of Franklin “
 Col. J. T. Abernathy, of Lawrence “
 Judge Louis Wyeth, of Marshall “
 Jno W. Garth, of Morgan “
 Col. Rob't. T. Scott, of Jackson “
 Hon. Silas Parsons, of Madison “
 O. T. Owen, Esq., of Cherokee “

From Tennessee.

Col. Robertson Topp, of Memphis.
 Dr. W. Estill, of Franklin county,
 Levin C. Graw, Esq., of Lincoln county.
 J. W. Clay and Wm. B. Figures, of Madison,

and L. T. Thustin, of Lauderdale were appointed secretaries.

The convention was very large, 263 delegates being in attendance, embracing the leading men of the section of the country interested in the work, and many of them well known throughout the country. We have not room for the proceedings of the convention in detail, and can only give the results of its action. The utmost enthusiasm prevailed, and about \$250,000 were subscribed to the stock of the company during the sitting of the convention. We entertain no doubt both of the disposition and ability of those interested in the road to furnish the means for this work as fast as they can be economically expended. The spirit manifested at the meeting gives us ample pledge of this.

The Charter adopted by this convention, provides in its last section, that the company shall have the right of passage through the territory of this State along the valley of the Tennessee from the State line west to Huntsville, and thence to some point on the Nashville and Chattanooga railroad or on one of the Georgia roads—and also the right of way, over the bed and bank of the Muscles Shoals canal, if necessary, and over the lands of the State, the State Bank and its branches—and the right to use wood, stone and other material thereon. It also grants all the rights, powers and privileges guaranteed by the Tennessee Legislature to the portion of the road lying in the State.

Sec. 2. Provides, that, if the road shall pass thro' Tuscumbia, there shall be a branch to Florence, and if north of the river near Florence, there shall be a branch to Tuscumbia, provided the town or county applying for such branch subscribe enough to pay the cost of it.

Sec. 3. Provides, that subscription books shall be opened for capital stock within this State to the amount of \$1,500,000 and if not taken in Alabama in six months, it may be taken elsewhere.

Sec. 5. Provides, that the moncys subscribed by citizens of Alabama shall be first applied to the construction of the road within this State, provided that the whole road may be put under contract, when funds enough have been obtained.

Sec. 6. Provides that the rates of charges for the transportation of persons or property shall be equal and uniform on all parts of the road and in both directions.

Sec. 7. Provides that this road shall not be located on the track of the Tennessee Valley or any

other railroad, for which charters have been heretofore granted, provided companies have been organized under said charters, without first getting the assent of said companies. It also grants the company, formed under this charter, the power to acquire, by purchase, gift, release or otherwise, the rights, privileges and immunities of any other company.

We know of no work in the country more important in all its bearings than this, which is to connect the Georgia and South Carolina railroads with the Mississippi river, nor one that offers better inducements for the investment of capital. It would at once become the great outlet to the Atlantic of the produce of the section it proposes to traverse, and the great route of travel between the Central Mississippi valley and the Eastern section of the Union. We have good reason to expect that the cities of Charleston and Savannah, as well as the railroads of Georgia and South Carolina, will lend substantial aid to a work in which they are so deeply interested.

Virginia.

Lousia Railroad.—The gradation and bridging of the Louisa (Va.) railroad from Waynesboro' to Staunton, has been put under contract to responsible men on very moderate terms. The whole cost independent of superstructure is estimated at less than \$7000 per mile, and with a heavy rail \$170,000 will complete it.—When the gap is filled between Waynesboro' and the present work of the Louisa road, there will be a continuous road to Staunton from Richmond.—The tunnel through the mountains is done to Waynesboro' on State account.

Michigan.

The Milwaukie *Wisconsin* announces that over \$500,000 have been subscribed to the Milwaukie and Mississippi railroad. The track will be six feet wide, and will be laid with heavy T rail.

Iron Ores and the Iron Manufacture of the United States.

MARYLAND.

Continued from page 768.

Furnaces.—The following table comprises the names of the various furnaces in the State, their proprietors, position, capacity, fuel, and ores employed. The two small furnaces of the Savage manufacturing company, though built many years, have never been in blast, excepting one of them for a short time. All the others, if not actually in operation, are in condition for use, and will not probably be long idle at a time.

No.	Names.	Proprietors.	Situation.	Capacity Tons.	Fuel.	Ores.	Date.
1	Principio	G. P. Whittaker & Co.	Principio Creek, Cecil county	2100	Charcoal.	} Carb. & hem.	.....
2	Rough & Ready, Havre ..	" "	Havre de Grace, Harford county	4500			
1	Bush	Green & Co.	Bush River, 26 miles NE. from Baltimore	1800	} Anthracite.	} Carb. & hem.	.....
1	La Grange	Rogers	Deer Creek, Harford county	500			
1	Sarah	Small & Shade	Head of Winter's Run, Harford county ..	1200	Charcoal.	Hematites	1844
2	Locust Grove	Howard	8 miles NE. from Baltimore, Balt. Co ...	} 600 1000	Charcoal.	Carbonates	.....
1	Chesapeake	George Cary	} E. side Baltimore harbor. ....					2300	Carbonates	1844
2	Munson	Moale & Harrison		} South side Baltimore harbor	4500	Charcoal.	Carbonates	} 1843 1845
1	Maryland	S. & P. T. Ellicott	} South side Baltimore harbor		2200	Charcoal.	Carbonates
1	Laurel	Reese & Mills		} South side Baltimore harbor	2200	Charcoal.	Carbonates	1845
1	Patapsco	Wm. H. Ellicott	} South side Baltimore harbor		2000	Charcoal.	Carbonates	1836
2	Ashland	Patterson, Small & Co.		18 miles N. from Baltimore, Balt. Co ...	5500	Anthracite.	Hematites	1846
1	Oregon	Green & Fernandez	Beaver Dam Run, Baltimore county.	2800	Anthracite.	Hematites	1848
1	Elk Ridge	A. Ellicott, Jr., & Brothers	Lelay House, Washington railroad	1500	Charcoal.	Carbonates	1826
1	Curtis Creek	J. Barker & Son	Ann Arundel county	1500	Charcoal.	Carbonates	.....
2	Savage	Messrs. Williams	near Wash. R.R., 20 miles from Balt. ....	.....	Charcoal.	Carbonates	.....
2	Patuxent	Lemmon & Glenn	Patuxent river	2200	Charcoal.	Carbonates	.....
1	Muirkirk	S. & P. T. Ellicott	Washington R.R., 26 miles from Balt.	2200	Charcoal.	Carbonates	1848
1	Snowhill	T. A. Spence	Worcester county, Eastern shore	700	Charcoal.	Bog.	1830
1	Elba	James W. Tyson	Sykesville	1500	Charcoal.	} Hematite, specular ac	} 1848
2	Antietam	J. McPherson Brien	Washington county	4300	Charcoal.			Hematites	.....
1	Catoctin	Fitzhugh & Co.	Little Hunting creek, Frederick county ...	1400	Charcoal.	Hematites	} 1774 1787
3	Mt. Savage	Mt. Savage Co.	Allegheny county	6000	Coke.	of the coal formation.	
1	Lonaconing	George's Creek Coal and Iron Co.	" "	3000	Coke.	Coal form.	.....
1	Lena	Bridge & Penniman	Cumberland, Allegheny county	1200	Coke.	Hematite from Virginia, &c.	.....
34				Total	58,700		

Beside the furnaces included in the above table, there is one building on the Great Gunpowder Falls near its mouth by Mr. Howard, proprietor of the Locust Grove furnaces, and two others are about to be built on Baltimore Harbor. On the line of the Baltimore and Ohio railroad there are two furnaces on the Virginia side of the Potomac, one in Loudon county, 12 miles below Harper's Ferry, called the *Potomac furnace*, and owned by Dr. Mc Murtry, and one called the *Vulcan furnace*, near Cumberland, Md., belonging to Mr. Gamber, both of which run with hematite ores, and make about 1,500 tons each of iron per annum.

If some exception should be found to my estimates of the capacity of any of these furnaces, it may be remarked that it is impossible to give them to the satisfaction of all. Different persons equally conversant with the business, I find, rate the yield of the various furnaces quite differently: indeed, the same furnace will work differently one year with another. The Chesapeake furnace, rated at 2300 tons, made in 1848 over 2400 tons of pig iron — while the two Locust Grove furnaces, one of them of equal capacity with the Chesapeake, are rated together at 1600 tons, which perhaps is more than they have ever made, in consequence of inadequa-

cy of their steam and water power. For the same reason the Ashland furnaces have hitherto failed to produce the amount rated as their capacity, while there is reason to believe they will soon exceed it. On the whole this estimate must be regarded as my own opinion of the capacity of the furnaces formed from the best data I could procure. If I had given to each furnace of the same size the same figure of yield, it would have been contrary to the results of their running for many years.

FURNACES OF CHESAPEAKE BAY.—These are 19 in number. They make use almost exclusively of the carbonates and charcoal, and are situated either on the shores of the bay, or at a convenient distance from it. Differing little in size and in the materials employed, the same general description will apply to all, the peculiar advantages of each depending more upon the skill and capital employed than upon its natural resources.

Fuel.—This is derived for the most part from the forests of pine on the shores of the Chesapeake and its tributaries. The wood collected by vessels is brought to those furnaces, which are built near to the water's edge. Each of these is supplied with about seven large kilns, of which I have given a plan (rather better than the usual class, however),

in the description of the Stockbridge furnaces of Mass., and the Siscoe furnace of Lake Champlain. They were first introduced into Baltimore by one of the Ellicott family, who received the suggestion from seeing some similar structure in Vermont many years since. From Baltimore they were next adopted in Massachusetts and then in other parts of the country.

Of this pine wood converted into charcoal it is estimated that three and a half cords will supply the steam engine and make a ton of iron; of oak wood, which is more used by the furnaces situated a little back from the bay, it takes a less quantity, but this costing more per cord, makes the cost to the ton of iron about the same. The price of the pine wood varies from \$2 to \$3, averaging \$2 50 per cord piled in the yard. The expense for charring three and a quarter cords for the furnace is about \$1 50. The cost of fuel then to the ton of iron is about \$10 25. It has not varied essentially from this for many years: and as the territory near the bay, which grows this wood, is very extensive, particularly on the eastern shore, it is not likely that it will vary for some time to come. If the demand increases, so facilities increase for bringing supplies of the wood as well as of bituminous coal

and anthracite from the interior, which tends to keep down the price.

Oak wood, which is used for the most part by the furnaces several miles inland, is valued at from fifty cents to one dollar per cord standing. Chopping will be fifty cents more, and transportation to the works according to the distance. Three cords in kilns will make about 150 bushels, and this is an ample supply for a ton of iron with allowance for waste.

Anthracite being afforded at low rates on the Chesapeake may come into extensive use, when the iron made with this fuel is generally admitted to be as good as that made with charcoal with the same ores. But as from the high price of materials the furnaces of this district are run at greater expense than most establishments of the kind in other places, it is of the last consequence to them to sustain the high character their iron has always enjoyed, which by commanding a superior price alone sustains them in depressed periods of the trade.

Flux.—This is mostly oyster-shells. They are a small item in the expenditure of making iron.—Ten to twelve bushels are used to the ton, the cost of which is about thirty cents. Enormous quantities are consumed in the different furnaces, but there seems to be no limit to the supply. At the works inland limestone also is employed, of which there is no deficiency.

Cost of Pig Iron.—For the works supplied with materials at the rates I have given, the following estimate will represent the full expense of manufacture; and I believe the amount will be found but little out of the way for nearly all the furnaces in the district; for if some get one material cheaper, the others are apt to come higher.

Ore 2½ tons, at \$3 62½	.....	\$9 06
Fuel, 3¼ cords, 2 50	.....	8 75
Flux, oyster shells	.....	0 30
Labor, including 1 50 for charring.	2 75	
Interest, repairs and superintendence.	2 00	
		<hr/>
		\$22 86

Two other estimates which have come to me from two different parties conducting the business, tho' varying somewhat in the items, do not essentially vary in the aggregate from the above, which I have prepared with particular care. They are as follows, neither, it will be seen, allowing any amount for repairs and interest, if for superintendence.—The estimates bear the date of December 9, 1848.

" 2½ tons of ore at the furnace, at \$3 50.	\$7 88
3¼ cords of wood " " 2 30.	7 48
Oyster shells for one ton of iron	0 50
Labor	4 00
	<hr/>
	\$19 86"

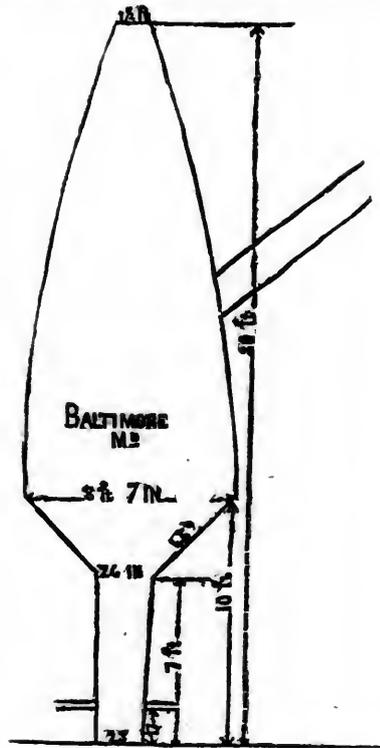
" 3 tons of ore at the furnace, at \$3 50.	\$10 50
3¼ cords of wood " " 2 31.	7 51
Oyster shells	0 15
Labor	3 50
	<hr/>
	\$21 66"

A portion of this iron is converted into castings or into bar iron at works near the furnaces. A larger portion is sold to the rolling mills and nail factories at the North, principally in Massachusetts. To sell at cost in New York the following items should be added.

Freight	.....	\$1 25
Carting to store 25 to 50	.....	0 37
Weighing	.....	0 40
Storage and advertising	.....	0 50
Commission, guaranty and interest		

on sales at six months	.....	1 50
		<hr/>
To which add first cost	.....	\$4 02
		22 86
		<hr/>
Whole amount of cost and charges in New York	.....	\$26 88

In form of construction these furnaces differ but little from each other; each new one is built like the rest, and no attempts are made by alterations to improve, and produce a larger yield of iron. That this form is susceptible of great improvement there can be no doubt. It is seen in the accompanying figure, and cannot fail to strike the eye in its pecu-



liarities of small size, flat boshes, contracted tunnel head and narrow hearth. The pressure of the blast is only from ¼ lbs. to 1¼ lb. to the square inch. To the excellence of the ore rather than to the judicious plan and arrangement of the works is to be referred the success of the operations of this district.

The usual material employed in the construction of the furnaces is red brick, which are made on the shores of the harbor and sold for from six to seven dollars per thousand. The stacks are often built up of conical form and hooped with iron. Excellent building stone may be procured on the Susquehanna, or on the line of the Baltimore and Susq. railroad, either limestone or granite, but brick is generally preferred, notwithstanding its high price. In the country a company, about to build a furnace, make their own brick at a cost of from \$3 50 to \$4 per thousand. All the brick made about Baltimore are of the best quality. Fire brick for lining the stacks are also made in the city or are brought of very excellent quality from the Mt. Savage works in Alleghany county and sold at a less price than they can be afforded for in the other cities. Fire stone of good quality for hearths is brought from Deer creek in Harford county. It is obtained in very large blocks and is easily wrought into situa-

ble shapes. A mass laid in the hearth of the Oregon furnace weighed about four tons. By a little search other more accessible quarries might be found among the quartz rock of the hematite ore range. There are several localities near the railroad, which would probably furnish it of as good character as that from Deer creek.

To the above general description I will add a few remarks upon some of the individual furnaces.

Principio Furnace.—This is situated about three miles from the mouth of the Susquehanna river on the road to Philadelphia, where it crosses Principio creek. It is one of the oldest establishments of the kind in the State, and the furnace has been several times rebuilt. The present stack has stood only about three years. In 1840 I visited the place and the furnace then standing, from which the present does not probably materially differ, was thirty three feet high and eight feet across the boshes. It was provided with the hot air arrangement at the tunnel head, and blew with only one twer at a pressure of about 1¼ lb. to the square inch. Its yield was from 25 to 30 tons per week of high iron. The ores were carbonates from the neighborhood of Baltimore, hematites from the vicinity of the furnace, to which was added forge cinder, in common use at several of the furnaces; its tendency seems to be to make hard iron. The creek affords water power near its mouth for the furnace, and higher up for forges also, in which the pig iron is converted into bars.

The *Havre de Grace Furnaces* are conveniently situated at the mouth of the Susquehanna. They are hot blast furnaces driven by steam power, and one of them using anthracite, the other charcoal. Their ores are the carbonates from Baltimore and hematites from Chestnut Hill mines near Columbia, Pa. These cost at the mines \$1 50 per ton, hauling to the river 75 cents, wharfage 5 cents, to which are to be added loading, transportation and tolls. Anthracite is worth about \$3 50 per ton; pine wood \$2 50 per cord delivered.

The *Bush and Harford furnace* is one of the oldest also in the State. It is conveniently situated on tide water, at the head of the inlet called Bush River, and near valuable beds of the carbonates of iron.

The *Lagrange furnace* is a small cold-blast furnace situated on Deer creek about twenty miles above its mouth. It runs on hematite ores, producing a small yield.

The *Sarah furnace* is at the head of Winter's Run, a few miles south from the Lagrange furnace. It is a stack of 7 feet bosh, and makes when in blast about 30 tons a week of foundry iron. Its ores are hematites, which are hauled 2¼ miles. Wood costs 30 cents a cord standing. It is charred in pits, and the coal hauled from three to seven miles to the furnace. The iron is carted to the Baltimore and Susq. railroad a distance of about ten miles. H.

ORDNANCE SURVEY.

The second report (just issued) from the select committee on army and ordinance expenditure supplies some curious figures connected with the cost of the ordinance survey of Great Britain and Ireland. The survey of England and Wales (commenced in 1791) was originally intended to be made on a scale of one inch to a mile, and the estimated cost was £306,000.—it has cost up to the present time as much as £702,617. The original estimate for the survey of Ireland (as may be seen by reference to the estimates of 1838-9 and of previous years) was £300,000.—while the expenditure incurred up to the present time (and the Irish survey is as yet incomplete) is £758,000. Gaining knowledge by experience, the estimate for Scotland was fixed at £806,-

180.—of which £66,970. only has as yet been expended. This disparity between the estimate and the actual cost is in some measure to be attributed to the increased scale—namely, six inches to a mile—but mainly, we believe, to the principle adopted of showing the physical relief or configuration of the country by a system of contour or level lines. When the six northern counties of England shall have been completed, the survey of England alone will have cost a million. The committee recommend that the survey of the large towns should be undertaken before the general survey of the counties. This change it is said, will increase the entire cost of the survey; “but on the other hand,” as the committee observe, “it will relieve municipal bodies from the necessity of making local surveys—and moreover it will hasten the adoption of sanitary measures throughout densely peopled districts, where such improvements are most needed.” This we think is a wise recommendation; nor, when we reflect on the great excellence of the ordnance survey of the United Kingdom, can we quarrel with the large sums it has cost—and must continue to cost before it be completed. The ordnance survey is in every respect worthy of a great nation.—*The Athenæum.*

Virginia.

We give below the following extract from the Message of the Governor of this State, having reference to its internal improvements:

Notwithstanding the fears expressed by many, lest the liberal spirit evinced in the more recent legislation of the state, touching the improvement of roads and canals, would embarrass our finances, the reports I herewith transmit to you from the several departments, will show that our condition is sound and prosperous. Indeed, there is everything in it to vindicate the wisdom of the legislature, and to gratify the friends of a judicious and liberal system of internal improvement. It will be, I am sure, gratifying to you, and to the people at large, to know that Virginia has at her command ample means to discharge all her subsisting public debt, with the exception of a very small and inconsiderable sum. If it were thought desirable to-morrow to wipe out the public debt, a sale at par of her profitable and interest-paying stock would effect it. This present subsisting debt amounts to \$7,541,294 11.—The annual interest and dividends received by the state amount to \$130,752 08; showing that the stock yielding this sum are worth, at par, \$7,179,200, or about the amount of the public debt; that is within \$362,000 of our present indebtedness. There is, however, an additional sum of \$6,000,000, which, under existing laws, may be called out of the Treasury, and about 5,000,000 of which will, it is thought, be certainly demanded in the course of a few years; hence this sum, although not now a subsisting debt, will become so, and ought, therefore, to be taken into the estimate of our liabilities. This view shows the precise condition of our financial situation, and is fully sustained by the reports and documents which will be laid before the legislature.—The state, it is true, has guaranteed loans to a considerable amount, for various incorporated companies, which security some have regarded a part of the public debt; but this is unquestionably an error, for a knowledge of the resources and the prospects of the companies whose bonds have been guaranteed, will satisfy all that they are, or will ultimately be, amply able to pay their bonds, as, up to this time, they have always done the interest on them.

This exposition is a cheering one to all, but to none more so than the friends of internal improvements, for which the debt has been mainly created. However, whilst it shows the perfect capacity of the commonwealth to manage her present debt without inconvenience, it also shows the necessity of the greatest prudence and circumspection on the part of the legislature, to avoid such increase of indebtedness as may result in future embarrassment and additional taxation. Nothing ought to be more cautiously avoided, or earnestly deprecated by the advocates of the recent liberal system of improvement than such a result. I would recommend, therefore, that, except sums as are necessary to carry on the great works already begun, or such as are essentially necessary to contribute to their success and

profit, no farther appropriations should be made for the present out of the treasury. I make this recommendation with the greatest confidence, because I believe the success of a permanent and wise system of internal improvements depends upon it.

If anything can ever restore to Virginia that pecuniary and commercial ascendancy which she once possessed in the confederacy, it must be the consummation of the system of internal improvements, she has already embarked in, and the completion of the truly great works already commenced. To endanger the system, or to impede the prosecution of those works, is to strike a fatal blow at the resuscitation of the commonwealth; and nothing would be so effectual for this, as to lavish expenditure of public money upon insignificant projects, from which the state at large could never receive any benefit.

The great works of internal improvement, already undertaken and so generously sustained by the public funds and public credit, together with one or two proposed but not yet determined upon, are calculated to develop very fully the resources of the state, and to swell the tide of her commercial prosperity to its utmost limits. The entire energies of the commonwealth should be devoted to their completion, but in such a way as to avoid embarrassment and to escape onerous taxation. That this can be effected by the prudence and wisdom of the legislature, I have no doubt.

It is now reduced almost to an axiom, that the greatest commercial prosperity in the Atlantic States, is only attainable by a connection with the valley of the Mississippi; and hence, from Massachusetts to Georgia, we see almost every state along the sea coast, competing anxiously and earnestly with each other, for the shortest, cheapest and safest communication.

The commercial ascendancy of Virginia was at one period of our history undisputed; her natural advantages of navigable streams, climate and soil, gave it to her. Trusting to these, we have neglected those artificial means, which could alone secure it to us permanently; and therefore the commerce which once whitened with its sails our seaports, has almost disappeared from our shores. The example set us by our neighbors at the north is one of wisdom, and deserves our most careful attention.—In spite of a bleak climate and a sterile soil, they have, by a judicious policy, afforded such facilities to intercommunication and trade, that commerce with her golden tides has filled the land with plenty, prosperity and wealth. Our natural advantages remain still the same; they are unequalled by any Atlantic state; and whilst it is probably too late now to divert the commerce of the Atlantic cities from its present channels; still it is in the power of demonstration to show that a vast deal of what we have unwisely lost, can be regained, and that we can still secure a fair division of that commercial wealth and power which is now monopolized by the north.

Situated about midway between the northern boundary of the United States and the Gulf of Mexico, we escape in a great degree the rigors of the northern winters, and the scorching heat of the south. Our eastern border upon the river Potomac—and the Chesapeake bay, is dotted with harbors unsurpassed in safety and capacity. The fleets of the whole earth could ride safely at anchor within them. Our western border is washed for several hundred miles by the Ohio river, and at other points along it, the rich region of Kentucky and the fertile valley of the Tennessee are of easy access.—Besides this, the country lying between the eastern and western boundaries, of which I speak, is unsurpassed for its fertility and the variety of its products. Minerals of every description are to be found of the most superior quality, and in quantities absolutely inexhaustible, whilst the earth in which they are imbedded, unlike other mineral regions, is of the most desirable character for husbandry. Let this country be penetrated by improvements connecting our seaports with the Ohio, with Kentucky and the valley of Tennessee, and it will infuse a spirit of enterprise into the population, which must, in a short time, fully develop all of our resources.

The topography of the country is most favorable for the completion of these great connecting lines. From tide-water to the Mississippi river at Memphis, there is no mountain barrier interposing a

serious difficulty to the construction of a railroad, whilst the region traversed by it is inferior to none of the same extent, for mineral and agricultural resources upon the continent of North America.—The valley of the Tennessee, one of the most magnificent of all those washed by the waters of the west, the annual commerce of which is worth thirty-five millions of dollars, will find in this road an outlet for its rich products to the Atlantic. And a cargo of merchandise, landed at Norfolk or Richmond, would be safely transported to the city of Memphis, ready for distribution upon those mighty waters, in less than ten days. The Virginia and Tennessee railroad will effect this great object, when it shall be finally completed; and it affords me great pleasure to say, we are warranted in the belief that will be prosecuted with energy and despatch.

The James river and Kanawha canal, having for its object the connection of tide-water with the Ohio river, has for a good many years been generously sustained by appropriations of public money; and, although it has met with strong opposition, it still maintains itself steadfastly in the approbation of well informed reflecting men. The results to Virginia, which are to flow from its completion, will strike the mind, upon a little reflection, as really stupendous. I have no doubt but that the commerce passing through this canal will rapidly build up the towns of Virginia, to the magnitude of the first American cities, and will rescue us in a great measure from the miserable consequences of our past apathy and inaction.

The effects upon the prosperity and destiny of New York, produced by the completion of the Erie canal, opening the commerce of the lakes to that city, are perfectly familiar to every one; the daily increasing importance of it, is also quite as well understood. Without the Erie canal, the city of New York would have been second still to Philadelphia. Great as the advantages of this work unquestionably are, those of the James river and Kanawha canal are undoubtedly superior. It possesses the striking advantage of lying five degrees south of the great northern work, and being therefore, free from the ice that obstructs the navigation there, for so large a portion of the year. It touches the Ohio river, far south of any water communication from the Atlantic whatever; and at a point, south of which there can be across the country no water connection. It will, after the first of November, command all trade of a great part of Ohio, Kentucky, Indiana, Illinois and Missouri—and most probably, of those regions lying still higher up towards the sources of the Missouri and Mississippi; for, after that period, it is unsafe to send produce forth, in the direction of Boston, New York and Philadelphia. A striking and peculiar advantage presented by this line, is its continuity. There is no necessity whatever for transhipment. We will see canal boats laden at the falls of St. Antony or Council Bluffs, discharging their cargoes at Lynchburg, Richmond and Norfolk. The extent and fertility of the region through which this work will pass, is unsurpassed by any accessible country within the territories of the United States. Superadded to this, the rivers, canals, and railroads, emptying into and resting upon the Ohio and Mississippi, will bring from the remote interior, which in every direction they penetrate their contributions, to swell still higher the rich tide of commerce, flowing thro' the heart of the commonwealth. The trade in Indian corn which has recently sprung up, and is increasing with such surprising rapidity between Europe and America, will be almost monopolized by this line; and will of itself, presently build up and sustain a great city. Norfolk must be the point for its shipment, for it can reach there and be sent away, without the injury which it is sure to sustain from detention at the more southern points. Indeed, this line will monopolize, in a great measure, the transportation of all the principal articles of food, which are produced in the Mississippi valley for consumption in our Atlantic states and in Europe. It is a fact universally known, that provisions of every kind suffer injury from the climate during their transit by New Orleans and through the Gulf.

We have seen what the commerce of the lakes has done for the States of Massachusetts and New York; but the country which supplies it, sinks into comparative insignificance, when looked at by the

side of that I have just described. These are some, probably the most striking, but only a very few of the reasons which present themselves to the mind in behalf of this great enterprise. To elaborate the subject would require a volume. I earnestly recommend a steady, energetic prosecution of the work to its completion.

The southwest is already provided with a great work—the central line accomplishes all that is necessary, or that can be effected for the country through which it passes. The Louisa railroad is wending its way slowly, but most certainly to the banks of the Ohio. The Baltimore and Ohio railroad, together with the Chesapeake and Ohio canal, provide our northern border with every facility of transportation to market.

It has been frequently proposed and very strongly urged, to construct a railroad from some point on this side of the Blue Ridge to the Ohio river at Parkersburg. It would seem as if even-handed justice required from the legislature for that extensive, fertile and prosperous country, between our northern line and the central canal, an improvement which would penetrate and pass through it about midway. I would advise the examination of this route by competent engineers, to ascertain its feasibility, and its advantages. If upon full information this work should be determined upon and carried out, then four grand lines of improvement passing from the western limits of the state eastward across the Blue Ridge, would pour the rich tides of that really fine country into the tide-water cities, and would unite in one common and familiar brotherhood, the inhabitants of all "the grand divisions" of the state. In place of three divisions there would be no division, and instead of the senseless jealousy which now exists, one common interest, as one common parentage and glory, would unite them in a single effort for the advancement of the common happiness and prosperity of all.

Another connection between the tide-water of Virginia and the Ohio river, by means of a railroad has been settled on the public mind; nor will it be abandoned until the work is completed. Its importance no one familiar with the results most likely to accrue from it will doubt. Its feasibility has been demonstrated by actual surveys, and the only question still in doubt of material moment to the project, is, at what point the Ohio river shall be reached.

In determining this, a proper regard must be had to the chartered rights already secured to other companies, and care be taken to prevent a rivalry between the works, which might endanger the complete success of either. This great object can be attained, in my opinion, by selecting Louisville, Kentucky, as the western terminus for the road; and it is of no moment whether this road be a branch of the Virginia and Tennessee railroad, the Louisa road, or a branch of the Alexandria and Gordonsville road, crossing through Manassa's gap and passing thence westward to the proposed point. The route is accessible to each, and will, in my opinion, amply remunerate the patrons of each, although all of them should unite in the work, and depend for their profit upon the respective branches connecting with the main trunks which would extend from Covington to Louisville. The construction of a railroad from tide water to Louisville, upon this route, has been a favorite idea with me for many years, and I am sure is one which will challenge the approbation of all reflecting men, who will take the trouble to investigate the subject.

The surveys of competent engineers have shown that Covington is of easy access from tide water. From thence to Louisville, although no engineer has surveyed it, I venture the opinion, is a route of more easy accomplishment, than any other now proposed, lying between the northern boundary of New York and the valley of Tennessee. The great barrier of the Alleghany is, upon this line, in the county of Monroe, depressed into a gentle ascent, scarcely perceptible to a traveller on horseback. The insurmountable obstacle which the Cumberland mountains present everywhere else, sinks down between Virginia and Kentucky, at the head waters of the Sandy river in the county of Tazewell, into a low and narrow ridge. The residue of the line to Lexington, Kentucky, lies along easy and accessible valleys and planes. From Covington to the Kentucky line is less than 150 miles,

and the distance from thence to Lexington is still shorter. So that when the united efforts of Virginia and Kentucky shall have accomplished the construction of less than three hundred miles of railroad, the falls of Ohio and the falls of James river will be united by railroad and canal in bonds of eternal fellowship.

The advantages of a connection at Louisville are numerous and very striking. The navigation of the river below that point is seldom, for any length of time, impeded by ice in winter or the drought of summer and fall. Not so above. With this connection the merchandise, intended for the winter and early spring supplies of a very large portion of the west, would most certainly be distributed from Louisville, having reached there from the northern cities by this unimpeded southern route, while the water communication at the north would have been closed, so to remain for months afterwards. Nor is there any railroad north of us which could compete, successfully, with this combined water line and railroad in the transportation of merchandise or produce. The diminished distance and the mild climate must settle in our favor, beyond a doubt, the question of competition. But this link of railroad from Covington to Louisville is but a very short one in the great chain, of which it will certainly form a part, stretching from the Atlantic ocean to the shores of the Pacific. The energy of the American people is aroused on the subject of this work, and its accomplishment has already been determined upon in the public mind. It cannot be believed that an improvement from which are to flow the most momentous results, consequent upon any enterprise since the discovery of the passage around the Cape of Good Hope, will be long neglected by this great and prosperous nation. The fruits of our glorious war with Mexico will be imperfect—the monument which the valor of our invincible armies has erected to our national grandeur and renown will be unfinished, without the construction of this most stupendous work.

From the earliest history of the world down to this day, the commerce of India has been the price for which the nations of the earth have eagerly contended. From the time when Hiram, king of Tyre, sent his ships to bring gold from Ophir to decorate the temple of Solomon, down to the last arrival of British merchantmen at the East India docks in London, there has never failed a stream, bearing upon its bosom spices and rich silks, jewels and pure gold, to give wealth, elegance, refinement, and power to the nation of people fortunate enough to be its recipient. Great cities have sprung up under its invigorating influence, and won for themselves an immortal fame. But commerce changing into a different channel, has left these once opulent marts a "desolation and reproach." The same consequences which have followed for thousands of years upon a given cause, cannot now fail in our day and country. "By means of our possessions on the Pacific, the obstacle which this continent presents to the direct line of vessels from India to Europe, is not only removed, but made to afford means of a more rapid and safe intercourse than the ocean itself could secure.

If the East India commerce can then be brought across our continent upon a railroad, that road, seeking the best route, must pass through the midst of our commonwealth. From Norfolk, the best Atlantic seaport, or from any other tide water city of Virginia, there is no difficulty in reaching the city of Louisville. At this point the Ohio can be easily bridged, affording, as it does, a rock foundation across the entire channel. From thence, through the states of Indiana and Illinois, the ground is favorable for a road, and the Mississippi itself furnishes a rock foundation for a bridge across its bosom, at "the Grand Tower," not far above the mouth of the Ohio. From this, if I am rightly informed, no water courses interpose barriers to the construction of a railroad, until the magnificent bay of San Francisco shall be reached. There is nothing, then, to hinder a car, laden with the rich silks and aromatic spices of India on the shores of the Pacific, from pursuing its continuous and uninterrupted course, until its journey is completed, and it rests upon the banks of the Chesapeake. To complete this line to the frontiers of the United States, Virginia, Kentucky, Indiana, Illinois and Missouri, are all equally interested. These five

great central states are unequalled for fertility of soil and variety of product, mineral and agricultural. That their united efforts should achieve the completion of the work to our frontier, without materially feeling the burthen, is beyond cavil or dispute. This view is not chimerical. The object can be attained—the enterprise will be accomplished.

There is already a greater length of railroad in the United States than would, if in a single line, connect the two great oceans—and the stock of all is profitable. But the combined commerce of all these roads is but a tithe of that which would pass across our continent from India—how then could the road fail to pay such profit as would amply compensate capital for its construction?

We cannot misunderstand or fail to appreciate the value of the prize; and the construction of the proposed road to Louisville is a most powerful means of securing it for ourselves.

The legislature has been munificent towards the city of Alexandria, since its re-annexation to the commonwealth: and it is pleasing to know that this course is equally approved by the dictates of wisdom and of justice. This liberality has expedited the completion of that really great work, the Chesapeake and Ohio canal, as far as Cumberland, in the State of Maryland. Upon this canal, now nearly ready to be opened, presently will be transported a coal trade, inferior to none in America, either in the quantities carried down upon it, or in the quality of the mineral itself. Alexandria will be the chief mart for it, and the commerce hereby brought to her wharves, will not only resuscitate her, but must give such impulse to all her interests as cannot fail to raise the city to a high degree of prosperity and advancement. The works undertaken and proposed by her enterprising citizens, leading into the interior, are important to her well-being, as well as that of the country proposed to be reached by them. These works deserve the patronage and support of the commonwealth.

The other public works of the state are prosecuted generally, I believe, with energy, and promise much usefulness. The Danville railroad company is pushing on its work to completion with great vigor, and, as far as I have been able to ascertain, on the most favorable terms.

The London *Times*, speaking of the coal beds of England, says: "The exhaustion of our coal beds would be the final and utter catastrophe of our greatness, that England would immediately sink into a third rate power. It is to coal that we owe every thing which is great in our position and history. Our coal fields are the rude foundation of this fair Corinthian pile, and England is as indebted to them as Egypt to her Nile. Athens to her schools, and Rome to her policy and arms."

PUBLIC HYGIENE.

"I believe that nearly half of the accidental illnesses (that is, illness not resulting from old age) that occur among the lower classes, might be prevented by proper public management."—*Dr. Arnott.*

We cannot think that the introduction into our paper, of a topic of such vital importance to the working classes, as that of their health, can need any apology. It is a lamentable fact, that many thousands of persons in these islands are annually poisoned by matters taken into the body along with the air they breathe, and that a vast amount of ill health and unhappiness is suffered by the whole surviving community. It has been proved, on the best evidence, that a large portion of these evils are remediable, and the legislature has lately taken the matter in hand. But we are quite convinced that the government, though the main spring of improvement, can of itself do little in the work of effectually removing these fearful evils. The people themselves must put their shoulders to the wheel, and assist, to the best of their power, in carrying out the details of any sanitary measures. The misfortune, however, is that the very persons who would be most benefitted by changing the present state of things are the most apathetic, and the least disposed to avert disease, and its long train of attendant ills, by taking precautionary steps. How is this? We think it mainly arises from ignorance of the facts of the case. They regard things as

they are, as evils undoubtedly; but they regard them as inevitable evils, and hence they cut themselves off from all motives and all desire to remedy them. In the hope of doing something in the way of dissipating this ignorance, and of inducing such of our readers as possess any influence over their poor neighbors, to exert that influence for their good, we have drawn up the present paper. The main facts have been taken from the evidence of eminent physiologists and medical men, given before a parliamentary committee for inquiring into the state of large towns and populous districts, and may therefore be considered as of the first authority.

The five grand requisites of a healthy existence are: 1. A due supply of good air. 2. A suitable degree of temperature. 3. A sufficient quantity of nourishing food. 4. Exercise of body and mind. And 5. Personal cleanliness. It is to the first of these requisites that we shall now confine ourselves.

Air is just as necessary to life as food, for without a due supply of this want, no food, however excellent and abundant, as to quality and quantity, can sustain health and strength. The atmospheric air provided for us by nature is a compound of two gases, of which one (oxygen) is consumed in the process of respiration; the other, being unsuited for the regeneration of the blood, is rejected. If we were to place a man in a room perfectly airtight, and firmly close all the doors and windows upon him, he will at first breathe with great ease; after a while his respiration will become more difficult; at last it will cease altogether, and the man will die, unless a fresh supply of air is given him. A case of this kind, where many persons lost their lives, occurred in the Black Hole of Calcutta, of which every one has heard, and the rationale of it is not difficult to perceive. All the life-sustaining part of the atmosphere having been abstracted from it by repeated inhalation, nothing remains to continue the process; it stops, just as a fire goes out, unless it is kept supplied with fuel, and the man dies of suffocation. Upon the same principle, if you put a lighted candle under a bell glass, and place something at the mouth to prevent the air entering, the candle will burn dimmer and dimmer until it fairly goes out. It has consumed all the oxygen about it; and flame, no more than life, cannot exist without that gas.

But respiration does not only take away oxygen from the atmosphere, it also prepares and throws out upon it a quantity of carbonic acid: an acid which, under the form of a gas, is particularly deleterious to the bodily functions; hence there is another reason why air, which has been breathed, should be removed as soon as possible; its feeding quality has not merely been destroyed, but the whole has become contaminated.

In the human frame, a considerable part of the bulk is occupied with apparatus intended solely for the purpose of ventilating the blood; that is, of exposing it to the action of pure atmospheric air.—This part is the chest, the machinery of which is kept incessantly at work, from the moment an individual enters the world until he leaves it. Each individual requires, in the course of 24 hours, a supply of 600 cubic feet of pure air to maintain the healthy composition of his blood. This being so, it is very easy to understand, that if 600 cubic feet of impure air are supplied to him instead, and that not for one day only, or occasionally, but constantly and habitually, the chance, or rather the certainty is, that he must die before his time. In thickly-inhabited districts, the consumption of air is enormously great. It has been calculated that the mere action of the lungs of the inhabitants of Liverpool daily, renders unfit for respiration a stratum of air sufficient to cover the whole town to the depth of three feet. To shut up a number of men in a room nearly closed against the admission of fresh air, is in effect to render useless the breathing apparatus provided by nature, and yet we see this frequently done in the most reckless manner. How often do we see individuals confine themselves for many hours together in small rooms, without once admitting a draught of fresh air! How often do we see persons, even in the better ranks of society, immerse themselves in low narrow bed rooms, in which they spend more than a third of their time, and where during the greater part of that time they are breathing vitiated air! How is it possible such persons can enjoy a healthy existence? No wonder, in-

deed, that physicians should state it as their firm conviction, that the immediate and chief cause of many of the diseases which impair the health of the people inhabiting towns, and brings a considerable portion prematurely to the grave, is the poison of bad air.

Let us then consider how the air in such places becomes impure, and unfit for its grand purpose of supporting the life of man. Three causes are chiefly at work: 1. The malaria which it receives from the decomposition of animal and vegetable matters in and around his dwelling. 2. The impurities given out by the body. And 3. The contamination it undergoes where a multitude of persons are inhaling it in close neighborhoods, as previously explained.

Wherever human beings are congregated together, there will always be a mass of animal and vegetable refuse; and the quantity being, of course, in proportion to the number of persons, must always be greatest in large cities. It is, therefore, of the first importance to remove this refuse before putrefaction takes place, and consequently before the poisonous matter is matured and diffused. This can only be done effectually by a proper system of drainage and sewerage, by which the rejected remnants and accumulating filth are rapidly and completely carried away. All precautions against fevers and epidemic complaints, without resorting to these primary and fundamental means of prevention, will be in vain. The highly injurious nature of one of the gases emitted from cess-pools and receptacles of that description, has been proved over and over again, by direct experiment. Sulphuretted hydrogen, the principal gas, is a most deadly poison. A rabbit, with its body placed in a bag of it, and its head left free to breathe atmospheric air, died in ten minutes. Nine quarts injected into the intestines of a horse, killed it in one minute. Even when largely diluted with common air, it retains in a great degree its noxious qualities. A dog was killed by being made to breathe a mixture of one part of this gas with 800 parts of atmospheric air, and a mixture of only one part with 1500 of ordinary air is speedily fatal to small birds.

It would be a very inadequate view (says Dr. Southwood Smith) of the pernicious agency of the poison generated in filthy and neglected districts, to restrict it to the disease (fever) most obviously produced by it. Its indirect action is highly obnoxious, though the evil is not so manifest, it is a matter of constant observation, that even when not present in sufficient intensity to produce fever by disturbing the function of some organ or some set of organs, and thereby weakening the general system, this poison acts as a powerfully predisposing cause of some of the most common and fatal maladies to which the human body is subject. For example, the deaths occasioned in this country by diseases of the digestive organs, by inflammation of the air passages and lungs, and by consumption, form by far the largest proportion of the annual mortality. Now no one who lives long in or near a malarian district, is ever for a single hour free from some disease of the digestive organs. But disordered states of the organs, not only constitute in themselves highly painful and even fatal maladies, but they lay the foundations of several other mortal diseases. By a disordered state of the digestive organs, for example, the body is so much enfeebled that it is wholly incapable of resisting the frequent and sudden changes of temperature to which the climate is subject; the consequence is, that the person thus enfeebled, perishes, by inflammation, set up in some vital organ, and more especially in the air-passages and lungs, or by consumption, the consequence of such inflammation; so that, to the total number of deaths that take place annually from fever in its different forms, must be added those caused by the indirect operation of the same poison that produces fever.—*Practical Mechanic's Journal.*

To be Continued.

PRUSSIAN AND GERMAN RAILWAYS.

The extent of railway in the Prussian territories is about 440½ miles German (equal to 2,025 English miles); of which 322½ miles were opened for traffic at the end of 1848, and 118 miles in course of construction. The capital required amounts to about 160,700,000 dollars, of which about 126,500,000 dollars had been expended at the end of 1848,

leaving rather more than 43,000,000 to be provided. To the above there must be added the length of the lines undertaken by Prussian companies, in territories not belonging to Prussia, which amount in length to about 42½ miles, with a capital of about 16½ millions; so that the total number of miles amounts to 482, and the capital to 187½ millions of dollars. Of this sum 139,700,000 dollars have been subscribed for by private companies in Prussia; 129,500,000 have already been raised, and there remain therefore about 10,700,000 to call up. The Prussian state has subscribed for about 43½ millions of which about 9,000,000 have been spent, leaving 34,500,000 dollars. The Prussian Government has guaranteed the payment of 3½ per cent. interest on 31,000,000 capital, and has given priority of interest to 11,000,000 of the capital.

In German Austria, at the end of 1848, there were open for traffic about 148 miles of railway, (700 English miles) and 54 miles (248 English miles) in course of construction. These 248 miles of railway require a capital of \$84,000,000 dollars; of which the Austrian Government has subscribed 55,000,000 dollars, and private companies 29,000,000 dollars.

The remaining states of Germany have about 508 miles (2,337 English miles) of railway, the capital of which amounts to 199,000,000 dollars, for which private companies have subscribed to the amount of 65,000,000, 336 miles (1,545½ English miles) were open for traffic at the end of 1848.

The total length of all the railways in Germany amounts, therefore, to 1,148 miles (5,280 English miles) and the capital to 453,000,000 dollars, of which 235,000,000 dollars have been subscribed for the authorities, and 218,000,000 dollars by private companies. At the end of 1848 the number of miles open for traffic was 806, and the capital expended about 350,000,000 dollars. The interest of Prussia, Austria, &c., is as follows in the:

	Total expense per cent.	Total length for traffic per cent.	Open per cent.
Prussia.....	37½	38½	40
Austria.....	18½	17½	18½
Other German sts.	44	44	41½

Of the railways open for traffic at the end of the year 1848 each mile in length corresponds—

In Prussia with . . . 15¼ sq mls & 51,500 inhabitants.			
In German Austria.....	24½	82,000	"
In the rest of Germany.....	13	50,000	"
In all Germany.....	16½	55,800	"
In Belgium.....	5	40,000	"
In France.....	32½	116,000	"
In Great Britain.....	5½	28,000	"

The expenses average per head of the population: In Prussia, 10 dollars; German Austria, 7 dollars; the rest of Germany, 12 dollars; all Germany, 10 dollars; Belgium, 14 dollars; France, 18 dollars; Great Britain, 78 dollars.

Finally, the cost of construction averages per mile German (equal to 4 3-5ths English miles):—In Prussia, 369,400 dollars; in German Austria, 420,000 dollars; in the rest of Germany, 394,000 dollars; in all Germany, 395,600 dollars; in Belgium, 566,000 dollars; in France, 745,000 dollars; Great Britain, 911,000 dollars.

DISCOVERY IN VENTILATION.

At a time when cholera, with an appalling voice, calls the most earnest attention to house ventilation, and dreadful explosions and loss of life in mines demand no less anxious efforts to devise means for the prevention of these calamities, we have much satisfaction in anticipating that human residences may easily be supplied with a continual circulation of wholesome air, and the most dangerous subterranean works be preserved against accidents from foul currents of fire-damps. Dr. Clowne has enrolled a patent for improvements in ventilating rooms and apartments, of the perfect efficacy of which, we believe, there cannot be a doubt, and on a principle at once most simple and unexpected.—Without going into details at present, we may state that the improvements are based upon an action in the syphon which had not previously attracted the notice of any experimenter—namely, that if fixed with legs of unequal length, the air rushes into the

shorter leg, and circulates up, and discharges itself from the longer leg. It is easy to see how readily this can be applied to any chamber, in order to purify its atmosphere. Let the orifice of the shorter leg be disposed where it can receive the current, and lead it into the chimney [in mines, into the shaft] so as to convert that chimney or shaft into the longer leg, and you have at once the circulation complete. A similar air syphon can be employed in ships, and the lowest holds where disease is generated in the close berths of the crowded seamen, be rendered as fresh as the upper decks. The curiosity of this discovery is, that air in a syphon reverses the action of water, or other liquid, which enters and descends, or moves down in the longer leg; and rises up in the shorter leg. This is now a demonstrable fact: but how is the principle to be accounted for? It puzzles our philosophy. That air in the bent tube is not to the surrounding atmosphere as water or any heavier body, is evident, and it must be from this relation that the updraft in the longer leg is caused, and the constant circulation and withdrawal of polluted gases carried on. But be this as it may, one thing is certain—that a more useful and important discovery has never been made for the comfort and health of civilized man. We see no end to its application. There is no sanitary measure suggested to which it may not form a most beneficial adjunct. There is not a hovel, a cellar, a crypt, or a black close hole anywhere, that it may not cleanse and disaffect. We trust that no time will be lost in bringing it to the public test on a large scale, and we foresee no impediment to its being immediately and universally adopted for the public weal. We ought to remark, that fires or heating apparatus are not at all necessary; and that as the specification expresses it, "this action is not prevented by making the shorter leg hot whilst the longer leg remains cold, and no artificial heat is necessary to the longer leg of the air syphon to cause this action to take place." Extraordinary as this may appear, we have witnessed the experiments made in various ways, with tubes from less than an inch to nearly a foot in diameter, and we can vouch for the fact being perfectly demonstrated. Light gas does descend the shorter leg when heated, and ascends the longer leg when the column of air is much colder and heavier.—*Literary Gazette.*

STATISTICS OF GAS WORKS.

The number of gas works in England and Wales is, say 400, in Scotland and Ireland, 170. There are about 45 others, of which 33 belong to private individuals, and the remainder to parochial or municipal bodies. These make a total, for the United Kingdom, of 775 distinct establishments for the manufacture and sale of gas, and which are considered to represent a capital of £10,500,000. The dividends may be quoted at all rates—from none at all, to ten per cent.; the average being a little over five per cent. The quantity of gas produced annually, say in 1848, may be taken as equal to about 9,000,000,000 [nine thousand millions] of cubic feet; the coal required for that quantity being 1,125,000 tons. After allowing for waste and leakage, the quantity of gas actually sold is about 7,200,000,000 [seven thousand two hundred millions] of cubic feet. These quantities, and the terms in which they are expressed, are but imperfectly understood by persons not practically acquainted with the subject. It may help a little to illustrate the matter by mentioning, that a gas holder capable of containing the quantity first quoted, would require to be two miles in diameter, and one hundred and three feet in height. The light produced by the last quoted quantity of gas, being that sold, is equal to 342,857,143 [three hundred and forty-two millions, eight hundred and forty-seven thousand, one hundred and forty-three] pounds, or 153,061 tons of mould candles of six to the pound, and which, at 8d. per pound, would cost £11,428,571. Compared with sperm oil, the quantity of that article required to yield the same light would be 33,133,640 gallons; costing at 8s. per gallon, £13,253,456. The average price realized by the gas companies, for all the gas sold, including that supplied to street lamps, is, I believe, less than 4s. 6d. per 1000 cubic feet.—Taking it at that price, the sum charged for the same would be £1,620,000. The number of men occupied in the manufacture of gas averages about

600; and more than double that number obtain by it in various ways, constant employment, making a total of at least 20,000. This does not include, probably, an equal, if not greater, number, engaged in mines and iron works, and in numberless processes which have had their origin, and are kept in motion, by this branch of domestic manufacture.—*Rutter on Gas Lighting.*

Illinois.

Chicago and Galena Railroad.—We learn from the Chicago Journal, that the work is progressing rapidly on their road. \$365,000 have been subscribed, and 50 per cent paid. The amount expended on the road from Chicago to Elgin, a distance of about forty two miles, is 290,699.27, and the amount of subscription on this paid in, \$182,000. The cost, including the furnishing of the road will be \$365,000.

From the commencement of running, on the 1st of March last to the 1st of November, a period of eight months, the receipts from passengers were \$8,522 07; freight, \$9,256 45, and mails, \$108—making a total of \$17,881 52; from which, deducting the operating expenses during the same period, leaves a nett of \$12,575 24. The number of passengers carried over the road, for the eight months, was \$20,836.

The receipt for the month of October were, for freight, \$3,881 22, for passengers 3,208 11, and for mails, \$15 50, amounting to \$7,104 93. It will be recollected that this road is yet only a few miles in length. The Journal is confident of its early completion to Galena.

From the New York Tribune.

Structure of Steamers.

The construction of a steamer is directed by three men, each of whom performs a separate duty, namely, the engineer of the company or proprietor, the ship builder and the engine builder. The engineer designs the ship's form and calculates the force to be given to the engines, on which the speed of the vessel depends; the responsibility of success or failure in this respect belongs to him. The builders, while each obeys the rules of his art, must follow the general plan; it is their business to see that the ship is so made that it will roll easily and the engine work with steadiness. They succeed or fail according as the vessel lasts a long or a short time and requires much or little repairing.

The engineer having designed the midship frame, examines what kind of bow and stern should be adapted to it. On this much depends, for according to the length and the curve fixed upon, the resistance of the water varies as much as in the proportion of one to four. Then, measuring the surface of the perpendicular section of the frame, he determines the force necessary for the engine in order that the ship should attain the speed required; the elements of this calculation are the surface of the section and the supposed resistance of the water according to the form adopted.

The speed of the ship depends on its form and on the force of the engine according to the following physical laws:

1. The speed of ships having the same immersed section and equal engines but different forms, will be inversely proportional to the cube root of the resistance of the water to their forms respectively.
2. The speed of ships having the same immersed section and the same form, but different engines, will be proportional to the cube root of the force of the engines.

By this it is plain that the form and the force of the engine have an equal effect upon the speed, and that it amounts to the same result, to give the bows a curve which doubles the resistance of the water or to double the force of the engine. But it is plain that the second method has serious disadvantages. It is not always possible to enlarge the engine, and even when it is, it diminishes the stowage, increases the quantity of coal necessary for a voyage, and makes a greater difference in the draft between leaving and coming into port, which is so unfavorable to the action of the paddles.

To illustrate these remarks the following table has been prepared with all possible care, according to the information which has been kindly furnished the writer:

		VESSELS.	
Northerner	300	33	12
Southerner	300	33.5	13.5
Panama	300	40	21
Hennam	320	35	18
Washington	320	35	18
Cambric	320	35	18
Pacific	320	35	18
Atlantic	320	35	18
Ohio	320	35	18
Georgia	320	35	18
Bay State	320	35	18
Empire State	320	35	18
	310	40	9
	40	9	40
	10.33	394	12
	19	76	6
	30	19	76
	19	76	6
	120,300	1,786	49.5
	1,786	49.5	14.2
	13	18	13
	18	13	18

In the above table we have introduced one English ship, the Cambria, and one steamboat, the Bay State. By comparing these two, the result is obtained for a good model.

By comparing the Northerner with the Bay State it will be seen that the latter would not make more than twelve knots an hour, if she had the same form as the former; and that even if the Bay State had the same engine, she would gain three knots on the Northerner by her form alone. Applying the two principles involved in this, we see that her model is equivalent to a second engine of the same power as that she carries; that is to say, it economises 1,786 horse power.

By comparing the Washington with the Northerner, we see that for the former to sail with the same speed as the latter, she would need a double power per square foot of immersed section.

The first voyage of the Ohio has been unsuccessful, since she made only an average of eight knots. It is true that this is to be attributed to bad weather, but still it appears doubtful whether this ship or those of Mr. Collins, will meet the expectations formed

with respect to them. They will move easily at sea, their hulls and engines will have the greatest solidity, but it is not certain that their respective models will answer the end proposed, and notwithstanding their powerful engines it is likely that they will be beaten by the Cunard ships.

The writer trusts that experience may show that this anticipation is erroneous. But even if it should prove true, there is a remedy. By attentive examination of the *Hermann* he has arrived at the conviction that an inconsiderable modification of the bows, which could be made without deranging her day of sailing, would enable her to gain four days between here and Southampton. And what has not been done for the *Hermann* might easily be done for the ships of Mr. Collins, without seriously delaying the day of their completion; the importance of the enterprise certainly would make the attempt worth while.

The financial considerations connected with the question are also weighty, and even presumptory. There must be a more thorough study of the models of ocean steamers. The cause of the failure of American steamships hitherto has, beyond doubt, been in their models much more than the force of their engines.

VICTOR BEAUMONT, Civil Engineer.

AMERICAN RAILROAD JOURNAL.

Saturday, December 23, 1849.

Railroad to the Pacific.

It is a remarkable fact, that while the subject of a railway to the Pacific is at the present time the leading topic for discussion, not only with the press, but with nearly the whole community, the engineering profession, the one we expected would take the lead in this matter, have maintained entire silence in regard to it. We have not in our eye at this moment a single eminent engineer, who has committed himself to the practicability of the work. On the other hand, all engineers with whom we have discussed this matter have either professed themselves incredulous as to its feasibility, or declined to express any opinion as to its practicability, from the entire want of reliable information upon which to base an opinion. In this, as in all similar works, men are diffident in giving their opinions just in proportion to the value of them—because an opinion is valuable or otherwise, just as it is based on evidence instead of conjecture. We believe we are correct in saying, that the engineers in this country of the widest experience, have the least faith of the success of the work. They do not believe it to be impossible, nor do they doubt perhaps its ultimate accomplishment, but they doubt its success, with the means, which, at present can be brought to bear upon it. Such men fully appreciate the difficulties encountered in the construction of lines of limited extent in the old settled parts of the Union. They are entirely overwhelmed at the vastly increased obstacles, which a road to the Pacific presents, must encounter. They, therefore, before they feel authorised to express any opinion upon the subject, prefer to wait till the proper evidence is adduced, upon which a correct opinion may be founded. Such we believe to be the position of the engineering profession in relation to this great work.

On the other hand, there are a class of men, who, having had no opportunities of subjecting their theories to the test of practical experience, have exercised their imagination upon this subject till they believe, like the sprite Ariel in the play, they "can put a girdle round the earth in forty minutes." They may do this, but we doubt whether any of the material made use of will weigh "60 pounds to the yard," though the "line of beauty" would undoubtedly be followed in laying down the

track. The truth is, that by far the greater part of all that has been said and written upon this subject is composed of "stuff that dreams are made of," which will all dissipate like the remembrance of dreams, as soon as the stern realities of the work disclose themselves before us.

Meanwhile, till the proper evidence is obtained, which is to guide us in this work, independent of theory, or local or sectional interests, we must expect that ardent and visionary men will speculate and out of the plastic unknown, will present us with magnificent schemes and magnificent results; and that individuals and communities, corporate and legislative bodies, will resolve in favor of such schemes as will coincide with the views or interests of particular sections. Such harmless amusements we are not disposed to quarrel with. We have no fear that such speculations or resolutions will work any harm. There is too much prudence in the public mind of this country to act without the proper evidence; and as this evidence will be presented to us step by step, its obligation will be acknowledged as it is presented; and we shall gradually find ourselves entertaining correct ideas & pursuing a proper course, tho' these may entirely conflict with preconceived opinions, and tho' we may have been unconscious of the change we have undergone.

We give in another column the resolutions of the citizens of Memphis, approving Capt. Pike's plan for the construction and management of the Pacific railway. Our readers will see that it adopts the main features of the plan for the same, put forward by this paper some time since. We are glad that is so soon to be brought before Congress, in a shape that must command attention.

Dick's Antifriiction Press.

Below we give a letter from Messrs. Cooper and Hewitt, of this city, relative to a very remarkable invention by Mr. Dick, of a press, in the action of which, friction as a resisting force is entirely obviated. It may be absolutely said that the only limit to the force it is able to exert, is the strength of material, which of course is an ultimate boundary in experiments on the physical sciences.—The machine has been put to several tests, and the results of all justify all we have said in its favor. We hope soon to be able to give a detailed account of the machine and its operations, illustrated by suitable diagrams of the whole.

The readers of the Journal in former years will be happy to hear again from their old friend, and pioneer in the railway movement in this country, Mr. Bloomfield, whose letter, in answer to the invitation to the railway festival, we give in another column. We should be happy to hear from him oftener upon a subject, the history of which, is so familiar to him. Experience has so vindicated the position early taken by him, as to relieve him from the necessity of further urging them, but the history of their success is now a most interesting subject.

New York, Nov. 30, 1849.

Joseph E. Holmes, Agent for Dick's Antifriiction Press.

Dear Sir—Your favor of the 23d ult is received. Your press is now in daily use at the Trenton Iron Works, straightening railroad iron—and it works to our entire satisfaction. In fact, we are most agreeably disappointed in regard to its operation—for in consequence of the peculiarly stiff form of the rail we are making, we feared that a machine of adequate power could not be obtained. The rail

is 7-1-8 inches high, with a flange 4-1-2 inches wide, and weighs 93 lbs. per lineal yard. The ordinary mode of straightening rails by the sledge is entirely unavailable on the bar, and yet the machine does the work with the utmost ease, and with so much expedition, and so little derangement of the fibres of the iron, that we should never think of using the sledge again.

Some idea of the stiffness of the rail may be formed from the following experiments tried by the Camden and Amboy railroad company.

The rail was placed on bearings 67 1-2 inches apart in the clear, a weight of 24,000 lbs. was then placed in the centre between the bearings, and the deflection of the bar was 68 1000 of an inch. A second experiment with another bar, under precisely similar circumstances gave a deflection of 55 1000 of an inch, and a permanent set of 12 1000 of an inch. The bearings in your machine are only about twenty-eight inches apart, so that the power required to make the deflection is very much increased—and yet the machine does not seem to feel the work.

We have no hesitation in recommending the machine in the highest terms, for straightening rails and for all purposes where great pressure is required. Its simplicity and comparative cheapness must certainly bring it into very extensive use—and for an immense variety of applications.

With our best wishes for your success, we are,

Very respectfully,

Your ob't servants,

COOPER & HEWITT.

Pacific Railway.

The people of Memphis have passed resolutions approving Capt. Albert Pike's plan of a railroad connection between the Mississippi and the Pacific: and recommend the plan to "the assembled wisdom of the nation now at the Federal seat of government in the capacity of Senators and Representatives in Congress:" and have deputed five delegates to "present the proposed plan to the General Assembly of Tennessee, asking its countenance and action thereon, the more promptly to ensure the attention of Congress."

The plan of Capt. Pike is, that said road consist of two branches commenced at the same time and carried on simultaneously: one from Memphis or some other proper point in the southern States on the Mississippi, connected or to be connected by railroad with the southern Atlantic cities, and one from St. Louis or some other proper point in the northern States on the Mississippi, connected or to be connected by railroad with the northern Atlantic cities: uniting at some proper point west of Mississippi or Arkansas, and thence running by a single line by the best practicable route, which shall afford equal facilities and equal advantages to the northern and southern Atlantic cities, to such point on the Pacific ocean in California as shall be most eligible in respect to commerce and the interests of the different sections of the Union.

Capt. Pike also proposes that as soon as such road is completed and put in operation, the whole cost thereof be ascertained, and divided into as many equal parts as there may then be States and organised Territories in the Union; and that each State be then, or so soon as it becomes a State, entitled to purchase one such part of the stock of such road, by paying to the general government her ascertained share of such cost, which payment shall be made, first by the appropriation thereto of the sum which may then stand to her credit in the national treasury, and the residue in cash, or by the

bonds of the State secured by the hypothecation and irrevocable devotion thereto, until full payment of all moneys in future coming to such State from the public lands, and of her share of the profits and net receipts of such road.

Also, that said road be managed by a Board of direction, equal in number to the States of the Union: each State which takes her share of the stock selecting one director, in such manner as she may by law provide, and the others being appointed by the President of the United States, who shall also appoint a president of such board.

And, finally, that the troops, munitions of war, and the mails of the United States shall at all times be conveyed on such road without charge, and that the rates of freight and passage on such road shall be always regulated by Congress, which shall also through all time, exercise a supervision over the acts of such board of directors.

Cumberland Coal.

A letter from Alleghany county, on the subject of the Cumberland coal region, has the following statements:

The railroads of Europe, as well in Great Britain as on the continent, use *coke* almost exclusively. This can be made only of bituminous or semi-bituminous coal. But the Americans (always on the alert, though disappointed in the numerous attempts to introduce anthracite coal in locomotive use) have discovered that bituminous coal, without undergoing the expensive process of *coaking*, is far better and more economical than *wood*, even at present prices.

Col. William Young, a most intelligent gentleman, and large coal land proprietor in the Cumberland coal field. (who was formerly at the head of the West Point Foundry, subsequently President of the "Ulster iron works of New York, but more recently President of the great English iron company at Mount Savage,) has kindly shown me a letter addressed to him lately by Mr. Latrobe, chief engineer of the Baltimore and Ohio railroad. In this letter are given in detail the result of two years' practical tests, and experience on that road in the use of wood and Cumberland coal. One ton of this coal he pronounced equal to two and a half cords of wood for locomotive engines, aside from the advantage possessed by the former in the diminished space it occupies in the tenders. The consequence is that the Baltimore and Ohio railroad company have progressively adapted almost all their locomotives to the exclusive employment of this fuel. The New York and New England railroad companies pay \$4.25 per cord for wood. Estimating the sawing for locomotive use at thirty cents per cord, and it is shown that the wood necessary to perform the work of one ton of Cumberland coal costs \$11.37½, while the Cumberland coal can now be delivered in New York for \$5.37½ per ton; and when the Chesapeake and Ohio canal is finished, in November next, for less than \$5 per ton.

But let me go nearer home. If my recollection is not at fault one report of the Reading railroad company shows an expenditure of \$37,000 per annum for *wood* used in bringing *anthracite coal* to market. The wood costs that company about four dollars and ten cents per cord. According to the experience of the Baltimore and Ohio railroad company this item of expense can be diminished at least one half.

Notwithstanding the extravagant accounts of bituminous coal being found near Panama, as well as a few miles from Monterey, and on Vancouver's Island, the eminent house of Howland and Aspinwall are now supplying their Pacific steamers exclusively with Cumberland coal, which is taken around Cape Horn. The British West India steamers are also importing large quantities of it into Bermuda; and the Cunard line of steamers from New York to Liverpool consume no other on their return trips. This may be regarded as a high compliment from John Bull, as, if he preferred it, he could obtain the drawback of duty on *English coal* at New York, and use it exclusively.

The abundance and proximity to the iron region

of this coal has, naturally enough, caused a rapid increase of iron establishments along the Baltimore and Ohio railroad and Chesapeake and Ohio canal east of Harper's Ferry, as well as in the immediate coal region. Four manufacturing alone Baker and Co.'s, at Waverton, Brown's, at Antietam, McMurtrie's at the Point of Rocks, and McCoy and McCullough's, near the latter place,) will consume in their furnaces a quantity of *coak* per annum equivalent to one hundred thousand tons of Cumberland coal. In addition to these, as well as many smaller furnaces at and near Cumberland, are the very extensive iron works at Mount Savage and Lonaconing. In charge of the latter is a gentleman, named Detmold, who as well as Dr. McMurtrie, and McCoy, and McCullough, has lately removed from Pennsylvania, and here taken up his permanent abode.

The charges, from the interior of the mines to the coal wharves at Baltimore, are at present as follows: Mining 28 cents per ton; railroad to Baltimore \$2.91; placing on board of vessels 5 cents; total \$3.24 per ton. On the completion of the canal to Alexandria and Washington the second item of expense will be diminished to about \$2 per ton, which will enable the coal companies to place the coal on board the coasters at a cost to themselves of about \$2.50 per ton. This will of course be independent of all charge for the coal itself.—*Baltimore American.*

New York.

Ogdensburgh R. R.—We learn that the road from Oldensburgh to Lake Champlain is progressing rapidly. A writer in the St. Lawrence Republican, who recently passed over the eastern division, says that the rails are now laid from Rouse's Point to Ellenburgh, a distance of thirty miles, and trains run over the whole route. This is as far as they will be laid until next spring, when they will reach Chetcaugay in season for business in carrying freight and passengers. For about half the distance over which the rails are already placed, the track is gravelled and finished, and presents one of the finest and most perfect specimens of a railroad to be met with any where. An engine with about fifty gravel cars are at work hauling gravel upon the remainder of the track.

At Rouse's Point a magnificent dock has been constructed, which, though not so extensive, is well worthy to compare with the splendid wharf at Ogdensburgh. The dock at Rouse's Point has a width of 150 feet, and extends into the lake about 600 feet, affording accommodation for a large fleet to receive and discharge cargoes at the same time, without the least inconvenience or interference with each other. This dock is completed except a portion of the tank, and is filled with earth. In the spring a large building, 95 feet by 400, is to be erected upon it to serve the purposes of a freight and passage station. An engine house is already put up, and is being furnished with its machinery for the purpose of making repairs when necessary. This building is 80 feet by 175, and embraces a water tank and two wood sheds. A large turn-table has been constructed, capable of turning the largest engine and tender.

An engine house of an inferior class has also been built at Champlain, together with a car house and wood-shed. Two buildings to serve as offices and passenger stations, have been erected at Centerville and in Moores; and at the former place is also a turn table. There are several other buildings at different points, but they are designed to be temporary only.

There are now four locomotives at work hauling gravel, earth, iron, lumber and other materials for the uses of the road; and incidental to this there has been done a considerable amount of freighting for other persons in the neighborhood of the road, This last amounts to some 500 or 600 dollars per

month income, and scarcely interferes with the general business of the trains.

Vermont.

Passumpsic Railroad.—We understand that contracts for the grading and masonry of this railroad from Wells river to St. Johnsbury, were closed last Tuesday. The contractors are Messrs. Chase and Keyes, and Mr. A. P. Balch. The work is to be completed in one year. A dividend of 6 per cent. has been declared upon the capital stock of this company, being the net earnings for the year ending December 1, 1849, which, together with the interest due to stockholders from December 1, 1847, to December 1, 1848, is payable in shares of stock on the first of January next, agreeably to a vote of the stockholders at their last annual meeting.

We believe but few of the best paying railroads in New England have equalled six per cent. net earnings for the first year.

The above result of earnings upon this road must be gratifying to the stockholders, and indicates at once the resources of the road.

We have no doubt that when the road now under contract to St. Johnsbury, shall have been completed the net proceeds upon the capital invested will be permanently increased.

Mexico, Dec. 9, 1849.

To the Editor of the Railroad Journal:

Dear Sir—Permit a retired railway amateur to bring to your consideration, and through you to the railroad committee on invitation, the name of Edwin F. Johnson, C.E., as among the first who published (1827) eighteen reasons tending to prove the "advantage of railways over canals." They were certainly in advance of the times, and were adopted by Mr. Chas. Clinton, 1828, when he published his pamphlet to aid the construction of the Erie—then "*Western Railroad*," which, by the by, should be connected with Syracuse via Binghamton and Cortland Co. The stockholders should take it up and aid you.

These sound reasons of Mr. Johnson converted me, 1835-6, from canals, to this "*better improvement of the age*," when, with more zeal than discretion, I raised the flag of "*Railways versus Canals*" with the Railroad Journal. I was even then considered fit for a straight jacket in advocating such heterodox doctrine. The State was, and is, canal ridden, but time will show if Mr. Johnson was not right in his 18 reasons for railways in preference to canals. I will except the Erie, as *unique* in its character, connecting inland seas with the ocean. It will sustain itself. What shall I say of the others? I well recollect arguing with Mr. B———t an intelligent director on the Utica and Schenectady railway "that railways could carry freight of all kinds." I was derided, and it was denied by him and others in Albany, although I had stated that I had seen an 8 ton engine draw after it on their flat bar road 40 cords, or 80 tons, of green maple wood. This incredible story was not listened to. The State went in for the construction of the Black river and Genesee Valley canal, at an expense of \$8 to \$10,000,000—and as I contend, money thrown away, as their use will be superseded by railways.

You may recollect, if not see Assembly Doc. for 1835, that our best engineering talent, then only viewed, and so reported, "a railroad as intermediate between a canal and a turnpike," and "the actual cost (motive power) of transporting a ton of goods over a *level* railway was three and a half cents."

How "times have changed," and as the adage goes "we change with them." We are now to have three railways within 30 miles distance of the noble Hudson, where steam costs little, and where there are no canal tolls. In 1840, when I contended that one railway to Albany, and to connect with the western railways, was necessary, I was laughed at, when I wrote, published and proved by figures, to my satisfaction at least, that such was the travel and traffic on this *great throughfare*, that if the steamboats gave a passage and a supper, and charged fifty cents for a bed, yet still the railway could contend with them, and force them to a rate mutually beneficial to both parties, and to the public, and could pay dividends.

Every day I am more and more convinced that our railways, parallel to the canals, should be left free of canal tolls, the entire year, or if you please, at a reduced rate, under a liberal system, to pay off the canal debt, altho' this will be an injustice to private enterprise. We have and should improve *the only pass* at the Little Falls, through the Appalachian Ridge, and I repeat, by a liberal State railway policy, to compete with other States.

I have long contended, we must change our state canal policy, and connect our improvements, and the city of New York, with the continuous lines of western railways, that are sure to reach St. Louis in four or five years. In two or three years they will connect with Charleston, Baltimore and Philadelphia, on the east, and will finally terminate as sure as the sun apparently rolls to the west, at San Francisco or Oregon.

The example of what the Western, the Reading and the Erie railroads are doing, and can do, in carrying freight at cheap rates should open the eyes of the New York statesmen. I trust that the Governor will think railways and the construction of one to the Pacific, aided by the General Government worthy of his notice.

As to the flat bar railway, I contend that it cannot be used for *cheap transit of freight*. You are aware that the present line can be vastly improved from Buffalo to Albany and Troy. I perceive, as a good omen, that "the stockholders of the Syracuse and Auburn Railroad, and the Auburn and Rochester railroad, propose to amalgamate their roads and interests, and build the *direct freight route* from Rochester to Syracuse." This was always a favorite plan of mine, and as it would appear, "the direct route" was the idea of Col. Stevens as early as 1812, in preference to a canal. While on this subject, I will state that I have a remarkable railway curiosity in a pamphlet entitled "Documents, tending to prove the superior advantages of railways and steam carriages over canals; by John Stevens, Hoboken, N.J.; published by T. & J. Steward, N.Y., 1812."

This pamphlet was prepared to lay before members of Congress, to procure an experiment, after Col. Stevens had failed in this State to get a great man of that day to entertain the subject.

What think you, at that early period, Mr. Stevens described the direct route from Lake Erie to the Hudson, and the present locomotive engine, adopted afterwards, as I suppose, by Stephenson, when he took the premium, in 1825, of £500 sterling, for *inventing* for the Liverpool and Manchester railroad, the Rocket, "capable to draw after it its weight, (5 or 6 tons) at the rate of 20 miles per hour," more the directors of this road did not expect. "The father of railways," Mr. Wood, then wrote, "It was folly, and an injury to the railway cause to expect more than 12 to 16 miles per hour."

But to return to Stevens—see page 16, to prove the position assumed, that "the expense of transportation would be much less than a canal of the best construction." Mr. S. remarks:

"A small steam engine, then, ten inches diameter, worked with steam, the elastic power of which, was 50 pounds to the circular inch, (equal to 70 pounds to the square inch) would possess a power equal to 5,000 pounds on the whole area of the piston moving at the velocity of three feet to the second. This exceeds the power of 20 horses; but one horse, as above stated, can transport on a level railway 8 tons, and 20 horses would at the same rate transport 160 tons."

On the 24th of February, 1812, Col. S. wrote:

DeWitt Clinton, Esq., I enclose a memorial, addressed to the commissions for exploring the route of an inland navigation." * * and closes, "The more I reflect on the plan I propose, the more thorough is my conviction, not merely of its practicability, but that it must eventually supercede every other mode of conveyance."

Mr. Clinton replied in short metre:

ALBANY, March 2, 1812.

"I have received your interesting communication, and shall lay it before the board of inland navigation at their first meeting,

Yours respectfully.

Mr. Robert R. Livingston, on behalf of the board replies:

"March 11. I had before read your ingenious propositions as to a railway communication. I fear however, on mature reflection," (hear him) "that they will be liable to serious objections, and ultimately more expensive than a canal." * * * These objections are amusing, and really a curiosity. On the 16th of March, 1812, Mr. Stevens answers in full Mr. L's objections, and at page 15, gives among others, five reasons, "of the many important advantages, from carrying a railway from Lake Erie to Albany, on an inclined plane, 300 miles in length."

First—the railway will not cost as much as a canal.

Second—It may be accomplished in two years.

Third—It will never be interrupted by the deepest snows.

Fourth—These railways from the nature of their construction, will be free from many casualties to which canals are liable," (now mark the

Fifth—The expense of transportation would be much less than on a canal of the best construction.

To prove this a summary calculation will be necessary. He then goes into it mathematically, to show that 1000 tons can be drawn 300 miles for \$50.

How true to the letter are these reasons, and the cost of transportation, where there is an abundance of passengers and freight for transportation.

Yours, respectfully,

JOS. E. BLOOMFIELD.

GREAT BRITAIN.

The Mortgaged Oligarchy.—Mr. D'Israeli says, on the authority of a London attorney, the amount of the mortgages in England is £100,000,000, producing, at 4 per cent., £16,000,000 a year. The landlords of Scotland are at least as deeply mortgaged as those of England; and undoubtedly the Irish squires are in a still worse condition. Suppose that the mortgages in Ireland and Scotland amount only to one half of those of England—200,000,000, producing, at 4 per cent., £8,000,000 a year—the mortgages of the aristocracy of the three

kingdoms amount to \$600,000,000, for which they have to pay, in the shape of yearly interest, £24,000,000!

Louisiana.

Railroad between New Orleans and Jackson, Miss.—Last evening, in pursuance of the notice of the mayor, a number of our citizens assembled in the Commercial Exchange for the purpose of appointing delegates to attend the convention to be held at Monticello on Monday next. This convention has been called to devise ways and means for the immediate construction of a railroad between Jackson and this city. The meeting was organized by calling A. D. Crossman to the chair. Capt. Clendenin, by request, addressed it upon the subject of the proposed road, and in a clear and forcible manner showed the advantages resulting to New Orleans by the construction of the route. He spoke at some length upon the importance of having an easy transit for the cotton of the interior to this market, and stated that in that great staple alone 200,000 bales would at least be annually added to our trade by the road. After a review of the subject, showing a converseance with the facts submitted, Capt. C. closed his remarks amidst much applause. The meeting then proceeded to select the delegates to the convention.—*Delta.*

Kentucky

This State, which has thus far done so little toward the building of railways, is now thoroughly aroused to their importance, and is moving in the construction of several important lines; one of which is the road from Maysville to Lexington.—The citizens of Maysville have held several spirited meetings in relation to this work, and the city has voted to subscribe, in her corporate capacity, \$150,000 toward the road. The county of Mason, of which Maysville is the third town, has also agreed to subscribe \$100,000 for the same object. Other counties on the line of the road will undoubtedly follow this example, and it is believed that no difficulty will be found in obtaining the amount of money requisite for the completion of the work. The road traverses one of the finest agricultural sections of the Union, and in addition to its local traffic, will become, in connection with the road from Lexington to Louisville, one of the links which is ultimately destined to connect this last named city with Baltimore. We learn that the preliminary surveys are to be made under the direction of M. L. Robinson, a gentleman well known at the East, as a skillful and energetic and experienced engineer, and who is fully competent for the task assigned him. We hope soon to present the results of his survey to our readers.

Railway Enterprise in Austria.

The following is a list of the Austrian Telegraph lines already completed, and those to be finished within three years:

I. The completed lines:—1, from Vienna by Ganserndorf, to Pressburgh; 2, from Vienna by Ganserndorf, Lundenberg, Prerau, Olmutz, to Oderberg, where it joins the Prussian telegraphs; 3, from Lundenberg by Brunn to Trubau; 4, from Olmutz to Trubau; 5, from Trubau to Prague; 6, from Vienna to St. Polten, Linz, to Salzburg, where it joins the Bavarian telegraph; 7, from Vienna, by way of Wiener Neustadt, Gratz, Marburg, Laibach, to Trieste.

II. In construction:—1, from Prague to Bodenbach, where it will join the Saxon telegraph; 2, from Venice, by Padua, Vicenza, Verona, Breseia, to Milan; 3, from Padua to Treviso; 4, from Milan to Bergamo; 5, from Milan, by Pavia, Lodi, to Piacenza and Cremona; 6, from Verona to Mantua.

III. The already finished lines to be prolonged

are—1, from Oderberg, by way of Cracow, Tarnow, Jaraslaw, Lemberg, Tarnopol, Czernowitz; 2, from Pressburg, by Waitzen, thence to Debrezin, Grosswardein, Klausenburg, to Hermannstadt; 3, from Marburgh to Klagenfurt; 4, from Laibach, by Agram, Peterwardein, to Semlin; 5, from Trieste, by Fiume, Zeng, Zara, Spalato to Cattaro; 6, from Salzburg by Innsbruck, Feldkirch, to Linden, on the Lake of Constance; 7, from Agram by Waradin to Pesth; 8, from Pesth, by Kaschua, Eperies, Przemialt to Lemberg.

IV. The following connecting lines:—1, from Prague, by Tabor, Bedweis, to Linz; 2, from Innsbruck, by Botzen, Trieste, to Verona; 3, from Semlin, by Temesvat, Arad; 4, from Klausenburg, by Bistriz, Subzawa, to Czernowitz.

V. Branch lines are proposed for such places as, being the seat of the presidency of the circle, are at some distance from the telegraph stations.

Georgia.

We learn from the Savannah papers that the Central railroad of Georgia is doing a large, steadily increasing and profitable business. The official report of the operations of the company for the fiscal year ending 30th November, shows the following results:

The total amount of earnings for the year has been.....	\$668,383 91
The total am't of expenses for maintaining and working the road for the same period, has been.....	337,628 87

Leaving a balance as a net profit of... 330,755 04
And an increase in the gross receipts of the road over the previous year of 152,131 27

After paying a dividend at the rate of seven per cent. the company has on hand a surplus of more than seventy thousand dollars.

Massachusetts.

Essex Railroad.—The Gazette states that Hon. Stephen C. Phillips has been elected president of this road, in place of Benjamin Wheatland, Esq., resigned.

The fares upon this road were raised on Monday last to 60 cents between Salem and Lawrence, and in a like proportion between other localities.

India Rubber Springs for Railroad Cars.

We have recently been written to by a gentleman connected with a railroad in the West, making inquiries as to the applicability of India rubber for car springs, its mode of preparation, application, etc. We do not know that we can better answer his inquiries, than by re-publishing an article which appeared in our paper in May last, relative to this matter; merely adding that the superior qualities of this article for springs is, we believe, universally admitted, and this kind of spring is now considered a necessary appendage to every car and locomotive.

Among those agents that men have but recently made use of in ministering to their wants, one of the most useful is India-rubber, ranking next in the scale of importance to steam and electricity. There is scarcely any article used in the arts possessed of so many valuable properties, and capable of so many different applications. Its most important properties of elasticity, ductility and imperviousness to water, are well known, and are causing it to be applied to the arts of life in a thousand different ways.

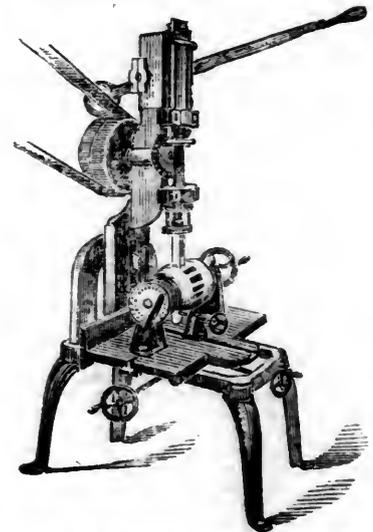
Among the most important of these applications, is that to the Springs of Railroad Cars and Locomotives. For this purpose it is fast superseding the old fashioned steel spring, having already been applied by the New England Car Company to 1400

cars in this country. As its peculiar fitness for this purpose is but as yet little understood, we propose to give some account of these springs, the manner of their preparation and the qualities they are made to possess to fit them for this use. A few days since we had the pleasure of visiting the India-rubber works at Harleim, where these springs are manufactured for the New England Car Company, and examined somewhat in detail the mode of preparing them.

To make these springs the best quality of South American rubber is used, costing from 28 to 30 cents per pound. After this is thoroughly washed and cleansed of all extraneous matter, it is mixed with certain mineral or earthy substances, and then fed to large iron rollers, heated by steam to about 175°. It is passed between these rollers until the rubber and the mineral substances become thoroughly intermixed the rubber becoming so softened by the heat as nearly to lose all its tenacity, the whole very much resembling putty in its appearance. It is then transferred to other rollers, which are also highly heated, from which it comes in regular sheets or webs, of any given thickness or width. That designed for springs is rolled into very thin sheets, and is wound on a spindle as it comes from the rollers, till it reaches the size required for the spring. As it is highly heated when it comes from the rollers, it instantly unites with the rubber on the spindle, making one solid mass as fast as wound off. When taken from the spindle, it is then tightly fitted into cast iron cylinders, which are closed by an iron cap, secured by a strong iron bolt running through a cylinder. The cylinders are then placed in a large iron oven, heated by steam up to about 300°, where they remain about nine hours. This process is what is termed curing the spring. Before subjected to this last process, it is very easily indented, and possesses but little elasticity. If it was subjected to this degree of heat without being confined, it would be enlarged to two or three times its former dimensions, and so enormous is the pressure caused, that it often parts the bolts that confine the cap, which are one and a half inch in diameter, or burst the cylinders which have a two inch shell. In the process of curing, all the moisture is expelled, and a chemical union of the ingredients used seem to take place. After the curing is complete, the springs come from the cylinders changed from a gray to a jet black color; their resistance to pressure vastly increased, and their elasticity perfect. Subject to any pressure they return to their original shape as soon as it is removed; so that in most cases, from the appearance of the spring, it is almost impossible to tell that it has been compressed out of its original shape. Neither does the long continuance of the pressure, make any difference. All the moisture being expelled in the curing, it is not affected in any degree by the cold, and if properly cured it is impervious to water. The manner of applying these springs can be seen by referring to the advertisement of the New England Car Co., in another part of our paper. The weight of a common passenger car settles a twelve inch upright spring about one and a half inch. It yields about one half an inch more when it receives its ordinary load. Unlike a steel spring, its resistance increases with the increase of pressure, and it never allows the car to strike the axle, as the steel spring does, when overlaid. Assuming then that these springs preserve their elasticity, their superiority to all others must, we think, be apparent; and we have the testimony of conductors and engineers that the difference between the two can hardly be estimated,

as it relieves the car from that unpleasant jar which is so wearing to the nervous system, and which in a few years frequently breaks down the strongest constitution. The preparation used in making them is "Goodyear Patent Metallic India-rubber." Mr. Goodyear's patent consists in the combination of rubber with the various mineral substances, and in combining these substances by subjecting the preparation to artificial heat. This preparation, the exclusive right to use for the springs of cars, patented by Mr. Goodyear, has been purchased by the New England Car Co., and its application to this use was invented by F. M. Ray, in 1844, and subsequently patented by him, under the assignment of which the above company are manufacturing them.

Capt. Alfred Swingle's PATENT BORING & MORTISING MACHINE.



The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to H. B. TEBBETTS, 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15, 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, au'tf No. 74 Broadway, New York.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by FISHER, MORGAN & CO., 75 N. Water St., Philadelphia.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.
3145

November 10, 1849.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 28 feet.
- 1 Wood dwelling house, 21 by 28 feet.
- 1 Brick block, six tenements, two stories.

A number of building lots.

Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing; and a variety of other labor saving machines, constituting a complete and extensive establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1849.

BY FERDINAND E. WHITE.
STORE NO. 22 LONG WHARF.

Valuable Real Estate in South Boston.

On WEDNESDAY, December 19, at 12 o'clock, M. on the premises.

ALL the Property of the MASSACHUSETTS IRON COMPANY, consisting of their Two Mills, situated on Boston Harbor, at South Boston. Each Mill is 214 feet by 174, including Sheds. The two contain 15 double Puddling Furnaces, and nine Heating Furnaces.

There are two trains of Rolls in each Mill, altogether capable of manufacturing 1000 tons of rails per month. They are well located for the receipt and delivery of iron from vessels, with every convenience usually attached to such an establishment. There is connected with it, and will be sold at the same time, about 417,000 feet of upland, on which are erected, besides the mills, four blocks, containing each four brick Dwelling Houses for workmen; a wooden Counting Room, with Dwelling adjoining; a horse stable, and a coal shed 210 feet long by 70 feet wide, now containing 3100 chaldrons Pictou Coal, and 923 tons of Pig Iron.

The terms of sale will be made liberal. For further information apply to B. T. REED, Esq., or to the Auctioneer.

December 1, 1849.

IRONDALE PIG METAL, MANUFACTURED & sold by the Bloomsburg Railroad Iron Co. DUDLEY FISHER, Treasurer. 75 N. Water St., Philadelphia.

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE, }
Washington City, D.C., April 28th, 1846. }

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 140 Hudson St., New York. 34t

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York.

October 27, 1849,

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,
Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roebling, John A.,
Trenton, N. J.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

DUNLAP'S HOTEL,

On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tilers, &c., by JOHN A. ROEBLING, Civil Engineer, TRENTON, N. J.

Samuel D. Willmott,

MERCHANT, AND MANUFACTURER OF CAST STEEL WARRANTED SAWS,
IMPORTER OF THE GENUINE WICKESLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,

ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,

IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Railroad Car Manufacturer's Furnishing Store.

F. S. & S. A. MARTINE,

IMPORTERS AND MANUFACTURERS OF

RAILROAD CAR & CARRIAGE LININGS,

PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Moireens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting

Walter R. Johnson,

CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

S. W. Hill,

Mining Engineer and Surveyor, Eagle River, Lake Superior.

Starks & Pruyn,

MANUFACTURERS OF ALL KINDS OF STEAM BOILERS,

52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters Bridge and Roof Bolts, Heavy Jobbing and Forging of all kinds.

For particulars see Adv. in another column.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

Samuel Kimber & Co.,

COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has constantly for sale Steam Engines, Boilers, Lathes, Chucks, Drills, Planers, Force and Suction Pumps; Tenoning, Morticing and Boring Machines, Shingle Machines, Bolt and Nut Machines, Belting, Oil, Iron and Lead Pipe; Rubber, Percha and Leather Hose, &c., &c.

S. C. H.'s arrangements with several machine shops are such that he can supply, at very short notice, large quantities of machinery.

November 23, 1849.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,

130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. Burr Hewson, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

Alfred W. Craven,

Chief Engineer Croton Aqueduct, New York.

Manning & Lee,

GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works, Maryland Mining Company's Cumberland Coal "CED"—"Potomac" and other good brands of Pig Iron.

IRON.

Railroad Iron.

500 Tons, afloat, weighing 57 pounds per lineal yard, for sale by

COLLINS, VOSE & CO.,

158 South St.

New York, November 17, 1849.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.

COLLINS, VOSE & CO.,

158 South St.

New York, November 17, 1849.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.

185 " " 57½ "

580 " " 53 "

of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,

119 Greenwich street.

New York, Oct. 13, 1849.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.,

68 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tilters, etc. by
JOHN A. ROEBLING, *Civil Engineer*,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.

41 Broad street.

March 29 1849.

3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for sale by
GEORGE GARDNER & CO.,

5 Liberty Square, Boston, Mass.

Sept. 15, 1849.

3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent*.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Br: Co., Eastmore Md

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

**TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.**

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentee.

28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,

22 South William street,

February 3, 1849.

New York.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig Iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849.

1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*

Troy, N. Y.

ERASTUS CORNING, Albany.

WARREN DELANO, Jr., N. Y.

JOHN M. FORBES, Boston.

ENOCH PRAIT, Baltimore, Md.

November 6, 1843.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,

45 North Water St., Philadelphia.

March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
 Corner of North and Monument Sts.,—Baltimore,
 HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
 In complete operation, are prepared to execute
 faithfully and promptly, orders for
 Locomotive or Stationary Steam Engines,
 Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw
 Mills,
 Slide, Hand or Chuck Lathes,
 Machinery for cutting all kinds of Gearing.
 Hydraulic, Tobacco and other Presses,
 Car and Locomotive patent Ring Wheels, war-
 ranted,
 Bridge and Mill Castings of every description,
 Gas and Water Pipes of all sizes, warranted,
 Railroad Wheels with best faggoted axle, fur-
 nished and fitted up for use, complete
 Being provided with Heavy Lathes for Bor-
 ing and Turning Screws, Cylinders, etc., we can
 furnish them of any pitch, length or pattern.
 Old Machinery Renewed or Repaired—and
 Estimates for Work in any part of the United States
 furnished at short notice.
 June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
 Card, Reed, Cotton-flyer, Annealed, Broom,
 Buckle, and Spring Wire. Also all kinds of Round,
 Flat or Oval Wire, best adapted to various machine
 purposes, annealed and tempered, straightened and
 cut any length, manufactured and sold by
ICHABOD WASHBURN.
 Worcester, Mass., May 25, 1849.

American and Foreign Iron.
FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
 100 " 1, " " " "
 100 " 2, " " " "
 100 " " Forge " "
 400 " Wilkesbarre " "
 100 " "Roaring Run" Foundry Iron.
 300 " Fort " " "
 50 " Catocin " " "
 250 " Chikiswalungo " " "
 50 " "Columbia" "chilling" iron, a very su-
 perior article for car wheels.
 75 " "Columbia" refined boiler blooms.
 30 " 1 x 1/2 Slit iron.
 50 " Best Penna. boiler iron.
 50 " "Puddled" " "
 50 " Bagnall & Sons refined bar iron.
 50 " Common bar iron.
 Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
 New York. 64 South street

**American Pig, Bloom and
 Boiler Iron.**

HENRY THOMPSON & SON,
 No 57 South Gay St., Baltimore, Md.,
 Offer for sale, *Hot Blast Charcoal Pig Iron* made at
 the *Catocin* (Maryland), and *Taylor* (Virginia), *Fur-*
naces; *Cold Blast Charcoal Pig Iron* from the *Clover-*
dale and *Catawba*, Va., *Furnaces*, suitable for *Wheels*
 or *Machinery* requiring *extra strength*; also *Boiler*
 and *Flue Iron* from the mills of *Edge & Hilles* in *Del-*
aware, and *best quality Boiler Blooms* made from *Cold*
Blast Pig Iron at the *Shenandoah Works*, Va. The
 productions of the above establishments can always be
 had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled* and
Hammered Bar Iron furnished at lowest prices. *Agents*
 for *Watson's Perth Amboy Fire Bricks*, and
Rich & Cos. New York Salamander Iron Chests.
 Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
 for Tubular Boilers, from 1 1/2 to 15 inches diame-
 ter, and any length not exceeding 17 feet—manufac-
 tured by the Caledonian Tube Company, Glasgow, and
 for sale by
IRVING VAN WART,
 12 Platt street, New York.
JOB CUTLER, Patentee.

These Tubes are extensively used by the British
 Government, and by the principal Engineers and Steam
 Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
 turning out one thousand tons of rails per month,
 at their works at Trenton, N. J. They are prepared to
 enter into contract to furnish rails of any pattern, and
 of the very best quality, made exclusively from the fa-
 mous Andover iron. The position of the works on the
 Delaware river, the Delaware and Raritan canal, and
 the Camden and Amboy railroad, enables them to ship
 rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
 October 30, 1848. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numer-
 ous brands of Charcoal and Anthracite Pig Iron,
 suitable for Machinery, Railroad Wheels, Chains, Hol-
 lowware, etc. Also several brands of the best Pudd-
 ling Iron, Juniata Blooms suitable for Wire, Boiler
 Plate, Axe Iron, Shovels, etc. The attention of those
 engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
 Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency
 of the New-Jersey Iron Company, are prepared
 to execute orders for the different kinds and sizes of
 Iron usually made at the works of the company, and
 offer for sale on advantageous terms.—
 150 tons No. 1 Boonton Foundry Pig Iron.
 100 " No. 2 do. do. do.
 300 " Nos. 2 & 3 Forge do. do.
 100 " No. 2 Glendon do. do.
 140 " Nos. 2 & 3 Lehigh Crane do do.
 100 " No. 1 Pompton Charcoal do.
 100 " New-Jersey Blooms
 50 " New-Jersey Faggoting Iron, for shafts
 Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
 Do do Rounds and Squares, 1/2 to 3 inch.
 Rounds and Squares, 3-16 to 1 inch.
 Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
 Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
 Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
 Nail Plates. Railroad Spikes.
DUDLEY B. FULLER & Co., 139 Greenwich-
 st. and 85 Broad-st.

WILLIAM JESSOP & SONS'
CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly re-
 ceiving from their manufactory,
PARK WORKS, SHEFFIELD,
 Double Refined Cast Steel—square, flat and octagon.
 Best warranted Cast Steel—square, flat and octagon.
 Best double and single Shear Steel—warranted.
 Machinery Steel—round.
 Best and 2d gy. Sheet Steel—for saws and other pur-
 poses.
 German Steel—flat and square, "W. I. & S." "Eagle"
 and "Goat" stamps.
 Genuine "Sykes," L Blister Steel.
 Best English Blister Steel, etc., etc., etc.
 All of which are offered for sale on the most favora-
 ble terms by
WM. JESSOP & SONS,
 91 John street, New York.
 Also by their Agents—
 Curtus & Hand, 47 Commerce street, Philadelphia.
 Alex'r Fullerton & Co., 119 Milk street, Boston.
 Stickney & Beatty, South Charles street, Baltimore.
 May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TEN-
DEERS AND CARS.—The subscriber is engaged
 in manufacturing spring steel from 1 1/2 to 6 inches in
 width, and of any thickness required: large quantities
 are yearly furnished for railroad purposes, and wher-
 ever used its quality has been approved of. The estab-
 lishment being large, can execute orders with great
 promptitude, at reasonable prices, and the quality war-
 ranted. Address
J. F. WINSLOW, Agent,
 Albany Iron and Nail Works.

JOHNSON, CAMELL & Co's
Celebrated Cast Steel,

AND
ENGINEERING AND MACHINE FILES,
 which for quality and adaptation to mechanical uses,
 have been proved superior to any in the United States.
 Every description of square, octagon, flat and round
 cast steel, sheet, shovel and railway spring steel, best
 double and single shear steel, German steel, flat and
 square, goat stamps, etc. Saw and file steel, and steel
 to order for any purposes, manufactured at their Cy-
 clops Steel Works Sheffield.
JOHNSON, CAMELL & CO.,
 100 William St., New York.
 November 23 1849.

American Cast Steel.

THE ADIRONDAC STEEL MANUFAC-
TURING CO. is now producing, from Amer-
 ican iron, at their works at Jersey City, N.J., Cast
 Steel of extraordinary quality, and is prepared to
 supply orders for the same at prices below that of
 the imported article of like quality. Consumers
 will find it to their interest to give this a trial. Or-
 ders for all sizes of hammered cast steel, directed as
 above, will meet with prompt attention.
 May 28, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its
 cost, the following *new machinery*, calculated for
 an engine of 62 inches cylinder and 10 feet stroke, viz:
 2 Wrought Iron Cranks, 60 inches from centre to
 centre.
 1 Do. do. Connecting Rod Strap.
 2 Do. do. Crank Pins.
 1 Eccentric Strap.
 1 Diagonal Link with Brasses.
 1 Cast Iron Lever Beam (forked).
 The above machinery was made at the West Point
 Foundry for the U. S. Steamer Missouri, without re-
 gard to expense, is all finished complete for putting to-
 gether, and has never been used. Drawings of the
 cranks can be seen on application to
HENRY THOMPSON & SON,
 No. 57 South Gay St., Baltimore, Md.
 Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES,
Theodolites, with Fraunhoffer's Munich Glasses,
 Surveyor's Compasses, Chains, Drawing Instru-
 ments, Barometers, etc., all of the best quality and
 workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
 No. 179 Water St., cor. Burling Slip.
 New York, May 19, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Ma-
 chine Works an extensive **LOCOMOTIVE ENGINE**
 department, and are prepared to execute orders for *Lo-*
comotive Engines of every size and pattern—also *Tend-*
ers, Wheels, Axles, and other railroad machinery, to
 which they ask the attention of those who wish such
 articles, before they purchase elsewhere.
STATIONARY ENGINES, BOILERS, ETC.,
 Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favora-
 ble terms, and at short notice.
COTTON AND WOOLEN MACHINERY,
 Of every description, embodying all the modern im-
 provements, second in quality to none in this or any
 other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
 this company has probably the most extensive assort-
 ment of patterns in this line, in any section of the
 country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
 gether with all other tools required in machine shops,
 may be had at the Mattewan Company's Shops, Fish-
 kill Landing, or at 39 Pine street, New York.
WM. B. LEONARD, Agent.

**Text Book of Mechanical
 Drawing,**

FOR the use of **SCHOOLS** and **SELF-INSTRUCTION,**
 containing,
 1st. A series of progressive practical problems in Ge-
 ometry, with full explanations, couched in plain and
 simple terms; showing also the construction of the
parallel ruler, plane scales and protractor.
 2d. Examples for drawing *plans, sections and eleva-*
tions of Buildings and Machinery, the mode of draw-
 ing elevations from *circular and polygonal plans,* and
 the drawing of *Roman and Grecian Mouldings.*
 3d. An introduction to *Isometrical drawing,* with 4
 plates of examples.
 4th. A treatise on *Linear Perspective,* with numer-
 ous examples and full explanations, rendering the study
 of the art easy and agreeable.
 5th. Examples for the projection of shadows.
 The whole illustrated with **50 STEEL PLATES.**
 Published by **WM. MINIFIE & CO.,**
 114 Baltimore St., Baltimore Md.
 Price \$3, to be had of all the principal booksellers.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Omond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,**
Reading, Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Pres't. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa. 20tf

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

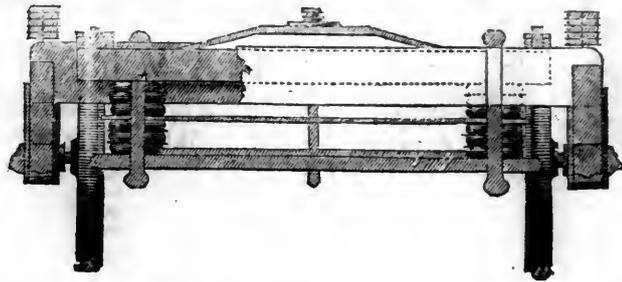
ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also, **COAL,** of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also, Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1849.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad Companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are **G. M. KNEVITT,** 38 Broadway, N. York,
General Agent for the U. S.; and

JAS. LEE & Co., 18 India Wharf, Boston.
JOHN THORNLEY, Chestnut st., Philad.

Arch St. Machine Shop.

BIRKENBINE, MARTIN & TROTTER,
Makers of

STEAM ENGINES,

and
HYDRAULIC MACHINERY,
NO. 16 ARCH STREET,
PHILADELPHIA,

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc;

Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with

(BIRKENBINE'S PATENT VALVES.)

B., M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

J. E. Mitchell,

NO. 14 OLD YORK ROAD, PHILADELPHIA.
Importer and manufacturer of

New Castle }
Nova Scotia } Grindstones, of all sizes and grits.
Wickersly }
French Burr }
Cocahoe } Millstones, made to order, with all
Cologne } the recent improvements.
American and }
Patent compressed } Fire Bricks and Tiles of various
Garnkirk } sizes.
Burr Blocks, Bolting Cloths, Mill Irons, etc.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

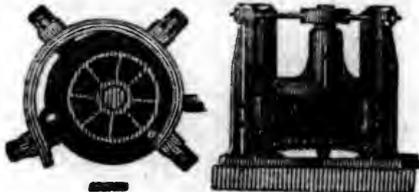
THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 17, 1848. }

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

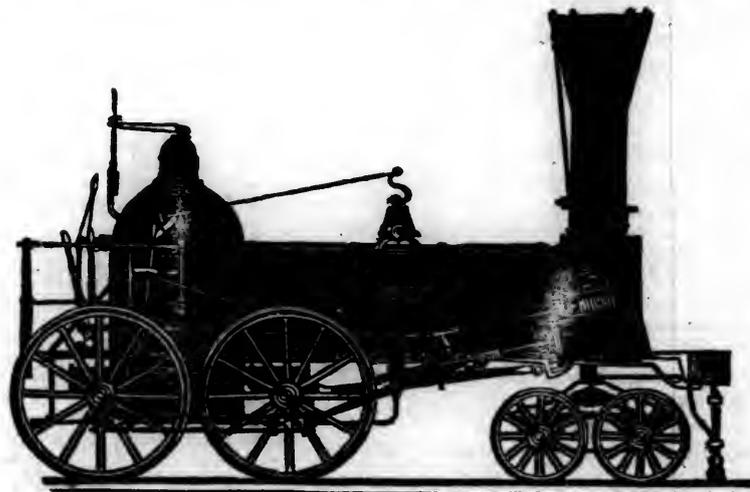
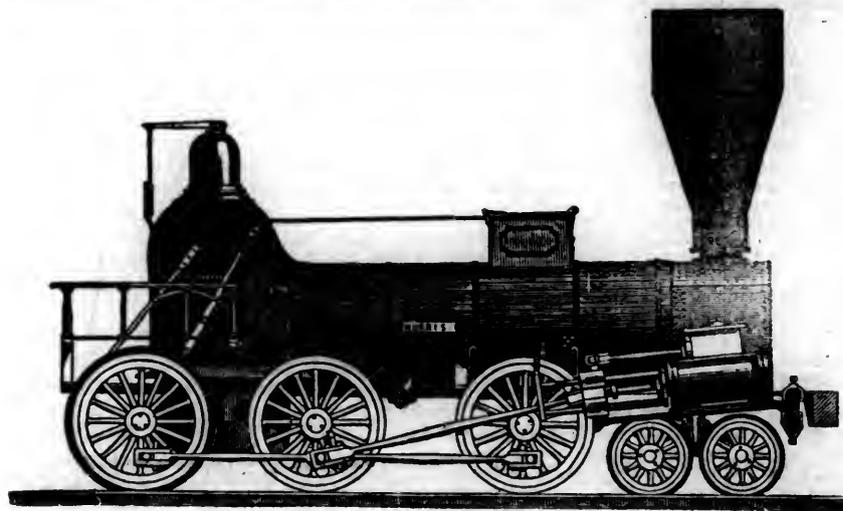
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish. Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside. Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

the blast is usually seven months; in this time it makes from 1000 to 1100 tons. Three weeks only are required to cool off and put in a new hearth. Six kilns keep the furnace in charcoal. A puddling furnace is connected with this blast furnace, but it has not lately been in operation.

Ashtand Furnaces.—These two anthracite furnaces, owned by Messrs. Patterson, Small & Co., are situated about 17 miles out from Baltimore on the Baltimore and Susquehanna railroad. Beaver Dam Run, a little above its junction with Western Run, furnishes a part of the power required for the blast; the remainder is supplied by a steam engine of about 60 horse power. The boilers are five in number, 30 feet long, placed between the two stacks at the level of the tunnel head, running across from one to the other. The gas for these is taken out in one flue to each furnace five feet below the filling plate: two other flues to each furnace at the same level carry the hot air to the oven for the heating pipes.

The stacks, built of brick, are 32 feet high; tunnel head 5 feet in diameter; across the boshes they measure 11 feet, and the same diameter is continued for 6 feet higher up.

Two cast iron blowing cylinders are connected with the water wheel, and two others of 5 feet diameter and 5 feet stroke with the steam engine. The regulator of boiler plate iron, is an upright cylinder, 126 feet high and 6 feet diameter. The furnace is blown by three tweres with blow pipes of 2½ inches diameter at a pressure of 2½ lbs. to the square inch.

The ores are hematites brought from the great bed at the head of Beaver Dam Run, three miles west from the furnaces and the railroad. They are used with no care in sorting and without washing any of them or roasting. They are thrown in in large masses, and the fine ore with much dirt intermixed. Large pieces of stone, pure granite from the mine, go in with the rest, the limestone too used as flux is in the coarsest lumps. Such treatment, which would seriously derange a charcoal furnace, is here considered more economical, than it would be to sort and clean the ores, though the effect of it cannot but be seen in the cinder heaps in the undigested lumps of quick lime, half reduced ore and heaps of unconsumed anthracite. Until December, 1848, only one of these furnaces had been in blast. Its yield was from 4 to 5 tons at a casting, of which there were two in 24 hours; once 5½ tons were obtained. The iron is good foundry iron of Nos. 1 and 2. The harder quality is used to some extent for puddling.* The cost of anthracite delivered at the furnace, is \$3 75 per ton; and it is estimated that the consumption here to the ton of iron is 38 cwt. Of the ore, 2½ tons ought to be sufficient to make a ton of iron; its cost is for mining about 60 cents, transportation about 70 cents. The company own the portion of the mine from which they are supplied. From these data the cost of making iron at this locality ought to be very low, not differing essentially from the following estimate:

1 18-20 tons anthracite at \$3 75.....	\$7 12
2½ tons hematite at 1 20.....	2 70
Labor 2 50, flux 30.....	2 80
Interest, superintendence and repairs 3 00	
Transportation to Baltimore.....	0 74
	\$16 36

* Since the above was written, which is now about a year, I understand the iron has materially improved, and is now regarded as a superior quality of forge pig.

In New York city then its cost would be about \$21. This cannot be considered a low estimate, for with two furnaces the general expenses of labor, interest, superintendence and repairs must be much less in proportion than with one.

In consequence of many alterations, however, and the substantial and thorough manner in which the work has been done, the capital invested is large, and it is not supposed that with one furnace only in operation the profits to the company have been of any amount.

The Oregon Furnace.—This is an anthracite furnace on the great bed of hematite at the head of Beaver Dam Run, three miles west from the furnaces just described. It was built by Messrs. Green & Fernandez, and completed in December, 1848. It is one of the most thoroughly built and well provided furnaces in the country. The height of the stack is 36½ feet, its diameter at the boshes is 10½ feet, and six feet higher up it is 11 feet; at the tunnel head 4½ feet. The hearth, which is singularly constructed, is 6½ feet high. At the bottom it is 40 inches square, and for the first 28 inches, where the three tweres come in, its sides are built up plumb. Above these they spread outwards and into a curved form till they fall into the slope of the boshes, making here a circle, at the height of 6½ feet, of 5½ feet diameter: the boshes rise a foot in 4 inches, which gives an angle of about 72°. The gas is taken out for the heating oven and boilers by two flues of two feet height each, the lower edge of which is 6 feet below the filling plate. Two other flues (18 inch pipe) are placed, their lower edge 11 feet down to be used for the boilers if required. The heating pipes consist of two bed-pieces 18 inches diameter with 15 uprights of 5 inches diameter to each bed-piece. Between the bed-pieces is a row of elbows opening upwards, which receive two more rows of uprights from the elbows above, thus making four rows of uprights arranged in cross sections like the letter M, the two bed-pieces lying at the two outer corners below. There are 3 three-flue boilers 20 feet long and 3½ feet diameter.

The hearthstones for this furnace are of large size and excellent quality, hauled from Deer creek in Harford county, more than 20 miles. They are most of them 2 feet thick or more; one piece put in over the tympan weighs over 4 tons. It is calculated these will stand from 15 to 18 months.

The anthracite for the furnace is hauled from the Cocheysville depot, about 3 miles, and the teams take the iron for a back-load. Reckoning the cost of fuel at \$437½ a ton and its consumption at a ton and three-quarters to the ton of iron, which is a large supply for these ores in well conducted furnaces, the cost of this item would not exceed \$7 62. The ores do not probably cost delivered at the furnace more than 75 cents per ton, and 2½ tons is enough for a ton of iron. We have then the following estimate of cost of production of the pig iron:

Fuel.....	\$7 62
Ore.....	1 69
Flux.....	0 50
Labor.....	2 50
Repairs, interest and superintendence	3 00
Transportation to Baltimore.....	1 25
	\$16 56

Its cost in New York city is then about the same as of the iron last described.

The **Elkridge furnace** was built in the year 1826 by Andrew Ellicott, Jr., & Brothers, near Elkridge landing in Ann Arundel county. The furnace is 32 feet high with boshes of 8½ feet. The blast is

driven by water from the Patapsco and is carried into the furnace by one twer.

"The duration of the blast is from nine to ten months, and the average annual product, which has been stated to me at 1400 tons is almost entirely produced in castings of various kinds, principally water and gas pipes. The iron is of good quality; and I have had occasion to notice the advantage of its being mixed with some other pig to produce castings of the second fusion, in which the maximum of stiffness and tenacity was desirable."*

This furnace I have not visited myself, and am unable to give farther details concerning it. Its ores are carbonates procured from the mines south of Baltimore near the Washington railroad.

Curtis Creek Furnace.—This is described by Mr. Alexander as 30 feet high and 9½ feet boshes. It is driven by water power, using 900 cubic feet of air per minute, which is blown in by one twer. The ore is the carbonate from the vicinity of the furnace and from the neighborhood of Baltimore. Oyster shells are used as flux. The yield of the furnace is about 1100 tons per annum of foundry iron. Running on forge pig it would make more. The iron is mostly made into castings in a cupola furnace near by and in another in Baltimore; these and the blast furnace all belonging to Messrs. Barker & Son.

The Principio furnace, supplied in part with ore from the same beds with this furnace, makes forge pig, while this makes foundry iron; the difference is in part owing to the mixture of hematite and forge cinder employed by the former, and by the Curtis Creek furnace working hotter and slower.

The two furnaces of the **Savage Manufacturing Company** were built several years since at their works on a branch of the Patuxent river, a mile west of the Washington railroad, about half way between Baltimore and Washington. They are small stacks of light construction, rather intended for remelting of iron, than for making it from the ore. One of them has however been successfully run for some weeks, after which they have remained idle. Should iron again bear a good price these furnaces being conveniently situated for supplies of ore might be without much expense put in condition for melting iron to profit.

The **Patuxent furnaces** are built on the Patuxent river, near the Annapolis railroad, three miles east of the Washington railroad. They are placed at each end of a long casting house. The size of one of them (the only one spoken of by Mr. Alexander) is 28 feet in height and 8 feet across the boshes. The other was probably built between the time of his publication and my visit to the works in 1845. They are blown by water power with only one twer pipe, and at a pressure of 1½ lb. Only one of the furnaces has been in operation at a time, probably for want of sufficient power. The ore is the carbonate of iron, which is found abundantly and of good quality in the neighborhood, at Jessup's four miles from the furnace, and at White Oak bottom on the Washington railroad, 8 miles; it is mixed with some forge cinder. The fuel is oak-wood charred in the kilns standing near the furnaces. The flux is oyster shells and sometimes a coarse granular limestone. The yield of one of these furnaces is estimated at 1100 tons per annum.

The **Muirkirk furnace** was built by John Ellicott in 1848 at White Oak Bottom near Bladensburg, 26 miles from Baltimore on the Washington railroad. This furnace is of the best class, provided

* Alexander's Report, p. 91.

with good steam engine and hot blast apparatus. Its ores are carbonates obtained from the immediate vicinity of the furnace.

The *Snowhill or Naseongo furnace* is in the bog-ore district in the southern part of Worcester county, on the Eastern Shore of Maryland. The region where it is situated is low and unhealthy, traversed by many small shallow streams, which in a wet season overflow their banks and flood the country around. The bog ore is found abundantly in these low lands, and is obtained at little cost. Pine timber is also plentiful and cheap, and with these materials and the employment of slave labor, a soft and weak iron, cold short, suitable only for castings, is made at very little expense. This iron, though sometimes so rotten as hardly to bear transportation, is still in demand by a few consumers, who find it remarkably well adapted for fine ornamental castings. It is used with an equal quantity of other iron.

The *Elba furnace* at Sykesville, 32 miles from Baltimore, on the Baltimore and Ohio railroad, was built in 1848 by Mr. Fales of Baltimore. The water power here on the west branch of the Patapsco is sufficient with a wheel 15 feet diameter and 5 feet buckets to raise the blast for the small stack. This is 28 feet high with a base of 23 feet square. The hearth is 5 feet 10 inches high, square at the bottom 24 by 23 inches. Across the boshes the diameter is about 6½ ft., their slope 47°. Eleven feet above the boshes the cylindrical cavity has contracted three inches, it then draws in to two feet diameter at the tunnel head. Over the wheel are two cast iron cylinders with wooden heads 4 feet diameter and 4 feet 10 inches stroke. They are calculated to blow 900 cubic feet a minute through three twerers. The blast is heated at the tunnel head.

This furnace was built to use the hematites from the Point of Rocks on the Potomac, which are brought down on the railroad and delivered at \$3 per ton, or the carbonates from the Washington railroad, which are brought up at a cost of \$3 25 delivered on the road, and 50 cents additional for transportation, making \$3 75. But as other beds of hematite are found within four miles of the furnace and are now leased by the company, they may prove more economical than the ores from a greater distance. Since the furnace was built the beds of specular iron ore also have been discovered within a mile and a half of the furnace, and these now controlled by the furnace, will no doubt be worked in with economy and advantage. For variety of ores and the advantages that may be secured by mixing them to produce any quality of iron, probably no furnace in the State is so well situated as this. It is also in the way of the great quantities of bituminous coal carried past the furnace from Cumberland, which it can make use of at any time when the charcoal fails with which it is now supplied from the neighboring woodlands at the rate of five to six cents a bushel.

Estimating the ores to cost \$3 37 per ton and 2½ tons to the ton of iron, and transportation to Baltimore at 75 cents, we have the following for the expense of pig metal delivered in the city:

Ore	\$7 60
Charcoal	8 25
Flux 30, labor 2 50.....	2 80
Repairs, superintendence and interest.....	3 00
Transportation to Baltimore.....	0 75
	<hr/>
	\$22 40

H.

We give below such extracts from the President's Message, and other public documents, as come with the object of our paper, and possess a permanent and general interest:

Extracts from the President's Message.

Communications across the Isthmus.—A contract having been concluded with the State of Nicaragua, by a company composed of American citizens, for the purpose of constructing a ship canal through the territory of that State, to connect the Atlantic and Pacific Oceans, I have directed the negotiation of a treaty with Nicaragua, pledging both Governments to protect those who shall engage in and perfect the work. All other nations are invited by the State of Nicaragua to enter into the same treaty stipulations with her; and the benefit to be derived by each from such an arrangement will be the protection of this great inter-oceanic communication against any power which might seek to obstruct it, or to monopolise its advantages. All States entering into such a treaty, will enjoy the right of passage through the canal on payment of the same tolls.

The work, if constructed under these guarantees, will become a bond of peace, instead of a subject of contention and strife, between the nations of the earth. Should the great maritime States of Europe consent to this arrangement, (and we have no reason to suppose that a proposition so fair and honorable will be opposed by any,) the energies of their people and ours will cooperate in prompting the success of the enterprise. I do not recommend any appropriation from the national treasury for this purpose, nor do I believe that such an appropriation is necessary. Private enterprise, if properly protected, will complete the work, should it prove to be feasible. The parties who have procured the charter from Nicaragua, for its construction, desire no assistance from this Government beyond its protection; and they profess that, having examined the proposed line of communication, they will be ready to commence the undertaking whenever that protection shall be extended to them. Should there appear to be reason, on examining the whole evidence, to entertain a serious doubt of the practicability of constructing such a canal, that doubt could be speedily solved by an actual exploration of the route.

Should such a work be constructed, under the common protection of all nations, for equal benefits to all, it would be neither just nor expedient that any great maritime State should command the communication. The territory through which the canal may be opened ought to be freed from the claims of any foreign power. No such power should occupy a position that would enable it hereafter to exercise so controlling an influence over the commerce of the world, or to obstruct a highway which ought to be dedicated to the common uses of mankind.

The routes across the Isthmus, at Tehuantepec and Panama, are also worthy of our serious consideration. They did not fail to engage the attention of my predecessor. The negotiator of the treaty of Guadalupe Hidalgo was instructed to offer a very large sum of money for the right of transit across the Isthmus of Tehuantepec. The Mexican government did not accede to the proposition for the purchase of the right of way, probably because it had already contracted with private individuals for the construction of a passage from the Guasacualco river to Tehuantepec. I shall not renew any proposition to purchase, for money, a right which ought to be equally secured to all nations, on payment of a reasonable toll to the owners of the improvement, who would, doubtless, be well contented with that compensation and the guarantee of the maritime States of the world, in separate treaties negotiated with Mexico, binding her and them to protect those who should construct the work. Such guarantees would do more to secure the completion of the communication through the territory of Mexico than any other reasonable consideration that could be offered; and as Mexico herself would be the greatest gainer by the opening of this communication between the Gulf and the Pacific Ocean, it is presumed that she would not hesitate to yield her aid, in the manner proposed, to accomplish an improvement so important to her own best interests.

We have reason to hope that the proposed railroad across the Isthmus at Panama will be successfully constructed, under the protection of the late treaty with New Grenada, ratified and exchanged by my predecessor, on the 10th day of June, 1848, which guarantees the perfect neutrality of the Isthmus, and the rights of sovereignty and property of New Grenada over that territory, "with a view that the free transit from ocean to ocean may not be interrupted or embarrassed" during the existence of the treaty. It is our policy to encourage every practicable route across the Isthmus, which connects North and South America, either by railroad or canal, which the energy and enterprise of our citizens may induce them to complete; and I consider it obligatory upon me to adopt that policy, especially in consequence of the absolute necessity of facilitating intercourse with our possessions on the Pacific.

The position of the Sandwich Islands, with reference to the territory of the United States on the Pacific; the success of our persevering and benevolent citizens who have repaired to that remote quarter, in christianizing the natives, and inducing them to adopt a system of government and laws suited to their capacity and wants; and the use made by our numerous whale-ships of the harbors of the islands as places of resort for obtaining refreshments and repairs, all combine to render their destiny peculiarly interesting to us. It is our duty to encourage the authorities of those islands in their efforts to improve and elevate the moral and political condition of the inhabitants; and we should make reasonable allowances for the difficulties inseparable from this task. We desire that the islands may maintain their independence; and that other nations should concur with us in this sentiment. We could in no event be indifferent to their passing under the dominion of any other power. The principal commercial States have in this a common interest, and it is to be hoped that no one of them will attempt to interpose obstacles to the entire independence of the islands.

RAILWAY TO THE PACIFIC.

The great mineral wealth of California, and the advantages which its ports and harbors, and those of Oregon, afford to commerce, especially with the islands of the Pacific and Indian Oceans, and the populous regions of Eastern Asia, make it certain that there will arise, in a few years, large and prosperous communities on our western coast. It, therefore, becomes important that a line of communication, the best and most expeditious which the nature of the country will admit, should be opened, within the territory of the United States, from the navigable waters of the Atlantic or the Gulf of Mexico to the Pacific. Opinion, as elicited and expressed by two large and respectable conventions, lately assembled at St. Louis and Memphis, points to a railroad as that which, if practicable, will best meet the wishes and wants of the country. But while this, in its successful operation, would be a work of great national importance, and of a value to the country which it would be difficult to estimate, it ought also to be regarded as an undertaking of vast magnitude and expense, and one which must, if it be, indeed, practicable, encounter many difficulties in its construction and use. Therefore, to avoid failure and disappointment; to enable Congress to judge whether, in the condition of the country through which it must pass, the work be feasible, and if it be found so, whether it should be undertaken as a national improvement or left to individual enterprise; and in the latter alternative, what aid, if any, ought to be extended to it by the Government, I recommend as a preliminary measure a careful reconnaissance of the several proposed routes by a scientific corps, and a report as to the practicability of making such a road, with an estimate of the cost of its construction and support.

Extracts from the Report of the Secretary of the Interior.

PUBLIC LANDS.

It will be seen by the report of the Commissioner of the General Land Office that the surveys of public lands have been pressed forward with diligence and energy, so as to bring new and good lands into market sufficient to supply the wants of emigration.

The quantity sold for cash in the first three-quarters of the year 1848 was.....1,448,240 51 acres
In the first three-quarters of 1849 887,206 40 do.

Showing a diminution of... 561,034 11 do.
The amount located by bounty warrants in the first three-quarters of 1848.....1,525,200 acres.
In the first three-quarters of 1849,2,496,560 do.

Showing an increase of..... 971,360 acres.
And making together an aggregate increase over the sales and locations of the first three-quarters of the preceding year of.....410,325 89 acres.

The claims for bounties, under the acts of February 11, 1847, and 10th August, 1848, as shown above, are, in round numbers..... 83,000
Estimated number yet to be filed..... 20,000

Making in the aggregate..... 103,000

Of these, 2,922 have been satisfied in money, and 70,390 have been allowed—to be satisfied in land—which will require..... 10,636,120 acres,
And should there be but 100,000 valid claims, as is estimated, then there will remain 26,688 unsatisfied claims which, if settled in land, will require a further quantity of..... 4,020,480 acres.

Making in all..... 14,656,600 do.
Prior to the 1st of October last there had been located with these Mexican war warrants.. 5,025,400 do.

Leaving yet to be located... 9,631,200 do.

The proportion of warrants used instead of purchase money in the ordinary sales will probably absorb them in the three next ensuing years, and sooner if they take the place of cash generally in the current sales. Until the bounty warrants are exhausted, the receipts in cash from the sales of the public lands must be comparatively small.

The attention of this department was early directed to the continuation of the geological explorations and surveys of the mineral lands in Michigan, Wisconsin, and Iowa. On the 12th day of April, about the opening of the session for field operations, Dr. Charles T. Jackson, the principal geologist, who had conducted in person the survey of the mineral lands of Michigan, resigned his situation, and recommended the appointment of his assistants, Mr. J. W. Foster and Mr. J. D. Whitney, Jr. to finish the work. In a few days, however, he asked leave to withdraw his resignation.—After looking into the progress of the work, and considering the time which it had required for its execution thus far, I was convinced that he could not, by any effort which it was reasonable to require of him, conduct the field work in person and prepare a report of what he had already done, and what was yet to be done, in time for it to be laid before Congress at their coming session. I therefore dispensed with his further service in the field, and instructed him to finish his analysis of the minerals collected, and prepare a report of the work done by him in the two preceding years. This report has been received, and will accompany that of the Commissioner of the General Land Office. It will be found to contain much historical information touching the early explorations of the country bordering on Lake Superior, with a full and able description of the geological relation and character of the rich deposits of native copper on Isle Royal and Keweenaw Point.

The magnetic observations of Dr. Locke, one of the assistant geologists charged with that service by Dr. Jackson, will be regarded with peculiar interest. The magnetic energy which manifests itself at different points on the earth's surface, by its action on the needle in different directions, and with different degrees of force, giving to it what are called its dip, its declination, and its intensity; the

diurnal variations of each of these, the variation of each of them in long periods of time, and the manner in which they are affected by meteorological and electrical phenomena, have for many years been objects of great interest to science, and of careful observation on almost every part of the earth's surface accessible to civilized man. Our linear surveyors and our topographical corps, in their survey of Lake Superior, have found it necessary to observe the magnetic action so far only as regards the declination of the needle, or its direction toward or variation from the true pole. The observations of Dr. Locke, which accompany Dr. Jackson's report, are therefore all that we have in that region which regards the magnetic force in its various manifestations, and it is matter of regret that they could not have been longer continued and further extended.

The residue of the field work of this district was intrusted to Messrs. Foster and Whitney, who have pressed it forward with much diligence and industry. Their report is not yet completed, but the synopsis and the geological maps, which they have returned, and which will accompany the report of the Commissioner of the General Land Office, are highly satisfactory to the department and creditable to themselves. Their maps designate by quarter sections the lands on which valuable mineral deposits are found, so that the agricultural lands within the mineral region can now be offered for sale pursuant to law.

Dr. Owen, the geologist for Wisconsin and Iowa, has furnished all the data necessary to enable the Land Office to bring into market the mineral lands of the Chippewa District in Wisconsin, and he has extended his exploration and survey over not only the northern part of Iowa and Wisconsin, but Minnesota also as far north as the United States boundary line, and west a short distance beyond the Red River of the north. His report, which is in course of preparation, will, it is believed, be not only a valuable contribution to science, but contain also the best information which we have of the agricultural capabilities and the mineral wealth of the extensive district of country which he has explored. A further appropriation will be necessary to enable him to complete the analysis of minerals which he has collected and to prepare his report.

ROAD TO THE PACIFIC.

The population of California, already considerable in numbers, is rapidly increasing by immigration. Adventurers, attracted there in search of gold, are gradually forming a fixed population, and must, in the nature of things, soon draw after and connect with them the ordinary accompaniments of social life. Its mining will become a regular branch of protective industry, employing many hands and much machinery, and affording the necessary encouragement on the spot to the building up of work shops and the exercise of the mechanic arts. It has already a considerable commerce, which is constantly increasing and must soon become extensive, not only with our own country and Europe, but with China and the Pacific Islands, including Japan, whose ports it is believed will be opened to the admission of its gold. This concurrence of favorable elements, among which should be included the agricultural and manufacturing capacities of Oregon, will cause to spring up with a rapidity heretofore unexampled, large and prosperous communities on our Pacific coast.

Some means of communication across the continent, through our own territory, from the Atlantic to the Pacific, a road which can be passed over with reasonable speed and safety, is necessary to meet the wants of our citizens on either coast, and is equally necessary to aid the government in controlling the Indian tribes of the intermediate country, and in protecting from their depredations our two lines of frontier settlements, which will now gradually approach each other. Opinion, as expressed and elicited by two large and respectable conventions, recently assembled at St. Louis and Memphis, points to a railroad as that which would best meet the wants and satisfy the wishes of our people. But what that road will be, and where and by whom constructed, must depend upon the action of Congress, founded on such information as a careful reconnaissance of the country by a scientific corps may furnish.

Report of the Secretary of the Treasury.

TREASURY DEPARTMENT, }
December, 1849. }

The Secretary of the Treasury reports:

RECEIPTS AND EXPENDITURES.

The receipts and expenditures for the fiscal year ending June 30th, 1849, were:

Receipts from customs.....	\$28,346,738 82
“ “ public lands.....	1,688,959 25
“ “ miscellaneous sources	1,038,649 13
“ “ avails in Treasury notes and loans in specie.....	17,755,750 00
“ “ Do funded.....	10,833,000 00
	<hr/>
	\$59,663,097 50

Add balance in the Treasury, July 1, 1848.....	153,534 60
	<hr/>
	\$59,816,632 10

The expenditures for the same fiscal year were, in cash.....	\$46,798,667 82
Treas'y notes funded.....	10,833,000 00
	<hr/>
	\$57,631,667 82

Leaving a balance in the Treasury July 1, 1849.....	\$2,184,914 28
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as appears in detail by accompanying statement A

ESTIMATES.

The estimated receipts and expenditures for the fiscal year ending 30th June, 1850, are:

Receipts from customs	
1st quarter, by actual returns....	\$11,643,728 54
Receipts from customs—2d 3d and 4th quarters, as estimated.....	19,856,271 46
	<hr/>
	\$31,500,000 00
Receipts from public lands.....	1,700,000 00
“ “ miscellaneous sources	1,200,000 00
	<hr/>
	\$34,400,000 00

Receipts from avails of loans in specie	\$399,050 00
Receipts from do. in Treas'y notes funded.....	839,450 00
	<hr/>
	1,238,500 00

Total receipts.....	\$35,638,500 00
Add balance in the Treasury, July 1, 1849.....	2,184,500 28

Total means, as estimated....	\$38,822,464 28
-------------------------------	-----------------

EXPENDITURES, VIZ.

The actual expenditures for the 1st quarter, ending 30th Sept. 1849, were..... \$8,904,829 96

as appears in detail by accompanying statement B.

The estimated expenditures during the other three-quarters, from 1st October, 1849, to 30th June, 1850, are:

Civil list, foreign intercourse and miscellaneous...	10,330,116 62
Expenses of collecting revenues from customs.....	1,925,000 00
Expenses of collecting revenue from lands.....	113,850 00
Army proper, &c..	8,245,039 80
Fortifications, ordnance, arming militia, &c.....	1,997,420 93
Internal improve-	

ments, &c.....	77,079 30
Indian department.	859,963 73
Pensions.....	682,630 77
Naval establish'm't.	6,814,783 43
Interest on public debt and Treasury notes.....	3,700,878 40
	<u>43,651,585 94</u>

Deficit 1st July, 1850.....\$5,828,121 66

The estimated receipts and expenditures for the fiscal year commencing July 1, 1850, and ending June 30, 1851, are:

Receipts from customs.....	\$32,000,000 00
“ “ public lands.....	2,150,000 00
“ “ miscellaneous sources.....	300,000 00
Total estimated receipts.....	<u>\$34,450,000 00</u>

The expenditures during the same period, as estimated by the several departments of State, Treasury, War, Navy, Interior, and Postmaster General, are:

The balances of former appropriations which will be required to be expended this year.....	\$5,656,530 34
Permanent and indefinite appropriations.....	5,643,410 24
Specific appropriations asked for this year.....	33,697,152 15
	<u>\$44,997,092 73</u>

This sum is composed of the following particulars:

Civil list, foreign intercourse and miscellaneous.....	\$11,088,724 64
Expenses of collecting revenues from customs.....	2,750,000 00
Expenses of collecting revenue from lands.....	170,835 00
Army proper, &c.....	8,296,183 44
Fortifications, ordnance, arming militia, &c.....	2,015,446 00
Internal improvements.....	1,247,203 38
Indian department.....	1,912,710 53
Pensions.....	1,927,010 00
Naval establishment.....	11,353,129 64
Interest on Treasury notes and public debt.....	3,742,951 13
Purchase of stock of the loan of 28 January, 1847.....	492,898 97
	<u>\$44,997,092 73</u>

Deficit July 1, 1851.....\$10,547,092 73
Deficit July 1, 1850..... 5,828,121 66

Total deficit, 1850 and 1851.....\$16,375,214 39

Prior to the first of July last the expenses of collecting the revenue from customs were paid out of the accruing revenue at the several ports, and only the balance came into the Treasury; of course the receipts at the treasury, actual and estimated, were of the net revenue after deducting all expenses.

By the act of 3d of March last, the system was changed from and after 1st July, 1849, and, accordingly, the receipts, actual and estimated, from that date, are of the gross revenue, and estimates are submitted of the expenses of collection.

PUBLIC DEBT.

Annexed will be found a table marked (E) in compliance with the 22d section of the act of 28th January, 1847, containing the information required thereby respecting the issue, redemption, purchase, and sale of treasury notes.

As required by the first section of the act of 10th August, 1846, a statement is appended (marked E E) showing the amount of treasury notes paid within the preceding year under the provisions of that act.

Statement F shows the payments into the treasury on account of the loan of 1848.

The public debt amounted, on the 1st of October, 1838, agreeably to table O, annexed to the last report of my predecessor, to the sum of \$65,778,450, 41. Since that time, \$1,072,756 70 of the debt has been redeemed and extinguished by the purchase of stocks, &c. Of the amount thus redeemed and ex-

tinguished there were—on account of the debt of the cities of the District of Columbia assumed by the act of the 20th May, 1836, \$60,000 on account of the old funded and unfunded debt, \$5,089 58 of treasury notes purchased at par and received in payment for lands and customs \$2,450 of military bounty script, \$233,075; of the stock of 1842, \$80,700; of the stock of 4843, \$196,000; of the stock of 1848 \$26,050; of the stock of 1847, \$982,500; which last was paid for out of the land fund, and purchased by Hugh Maxwell, Esq., collector of the port of New York, with the aid (kindly afforded) of C. W. Lawrence, Esq., the late collector of that port, whose resignation had, at that time, just taken effect, and who had acquired some experience in similar operations, by having been employed in them by the government in the previous year.—See statement hereto annexed marked G.

The public debt now amounts to the sum of \$64,704,693 71, which will be redeemable as follows:

Parts of the old funded and unfunded debt on presentation.....	\$122,735 10
Debts of the District cities assumed by Congress, \$60,000 payable annually.....	960,000 00
Five per cent. stock, per act of August, 1846, redeemable 9th August, 1851.....	303,573 92
Five per cent. loan of 3d March, 1843, redeemable 1st July, 1853.....	6,468,231 35
Six per cent. loan of 22d July, 1846 redeemable 12th November, 1856.....	4,999,149 45
Six per cent. loan, of 15th April, 1842, redeemable 31st December, 1862.....	8,198,686 03
Six per cent. loan of 28th January, 1847, redeemable 1st January, 1868.....	27,618,450 55
Do. Do. Do. 149,828 00	
Six per cent. loan of 31st March, 1848, redeemable first July, 1868.....	15,740,000 00
Treasury notes issued prior to 1846, payable on presentation; if converted into stock, under the act of January, 1847, will be redeemable 1st July, 1868.....	144,139 31
	<u>\$64,704,693 41</u>

WAYS AND MEANS.

It will be observed that there is estimated a deficit on the 1st July next, of \$5,828,121 66, and on the 1st July, 1851, of \$10,547,092 73; making, in the whole, an estimated deficit of \$16,375,214 39, to be provided for, arising from the expenses of the war and treaty with Mexico.

In order to aid in forming an estimate of the expenses occasioned by the war with Mexico, I have directed a statement to be prepared, which is hereto annexed, marked (H.) showing the excess of the expenses of the army proper for three years from 1st April, 1846, to 1st April, 1849, over those for the three years immediately preceding; and the excess of the expenses of the Navy proper for two and a half years from 1st April, 1846, to 1st October, 1848, over those for the two and a half years immediately preceding.

The excess of army expenditures (thus ascertained), was.....	\$58,853,994 41
And the excess of navy expenditures.....	4,751,627 90

Making together the sum of.....\$63,605,621 31

The increase of debt by the loans and treasury notes, authorized by the acts of July 22, 1846, 28th January, 1847, and March 31, 1848, was.....	\$49,000,000 00
---	-----------------

The difference between these sums, viz.....\$14,605,621 31

was of course paid out of the revenue (including balance on 1st April, 1846, and \$563,061 39 premiums on loans) towards the extraordinary military and naval expenses of the war.

In addition to these expenses (without taking into the calculation sundry smaller items,) the number of military land warrants issuable under the act of 11th February, 1847, and the act of August 10, 1848, is to be taken into consideration. Under those acts, 65,171 warrants for 160 acres each, and 5,219 for 40 acres each, have already been issued. Claims

to the amount of 9,000 have been suspended or rejected, and it is estimated that the number of claims yet to be presented, will amount to 17,000. (See statement marked (I.) hereto annexed.)

The whole amount of warrants issuable under the act above mentioned, may, therefore, be estimated as equal to 90,000, of 160 acres each, which, at \$200 each, will amount to \$18,000,000. Of course, until these warrants shall be exhausted, a large proportion of the revenue from sales of public lands must be thereby diverted.

My predecessor estimated the revenue from public lands, for the last fiscal year, to be received at the treasury, at \$3,000,000.

The actual receipts at the treasury, from that source, in the year ending 30th June, 1848, were \$3,328,642 56.

During the calendar years 1847 and 1848, and three quarters of 1849, there were located for patents on military bounty land warrants 5,025,400 acres, amounting, at \$1 25 per acre, to the sum of \$6,281,750, viz:	
In 1847, 239,880 acres.....	\$299,850 00
In 1848, 2,288,960 acres.....	2,861,200 00
3/4 of '49, 2,496,560 acres.....	3,120,700 00
	<u>5,025,400 \$6,281,750 00</u>

See statement marked (J.)

The receipts at the treasury from sales of public lands during the last fiscal year were \$1,688,959 55.

It is not probable that additional sales would have been made to the full extent of the number of acres located under the military bounty land warrants, but I think it may be safely considered that this source of revenue may be taken at nearly \$4,000,000, of which a part is absorbed by the land warrants; a part, say \$1,657,050, (that being the amount paid and payable during the present fiscal year,) is applied to the payment of interest on the loan and treasury notes, under the act of January 28, 1847; and the remainder is pledged to the extinguishment of the debt created under that act. I estimate \$2,000,000 per annum of the revenue from lands as diverted by the land warrants and the extinguishment of debt.

During the last fiscal year there were paid, under stipulations in the treaty with Mexico, sums amounting in all to \$7,629,108.

Public debts to the amount of \$790,566 39 (including treasury notes received for customs and lands) were also paid off or purchased out of the general funds of the treasury and extinguished, besides \$382,500 of the stock and treasury notes issued under the act of 1847, purchased out of the land fund and cancelled. See statement marked (K.) Of these sums \$890,175 was new debt contracted since the commencement of the war.

The balance in the treasury on the 1st July, 1849, was \$2,184,964 28.

The aggregate of these sums, viz:	
Balance in the treasury on 1st July, 1849.....	\$2,184,964 28
Payments under the treaty.....	7,629,108 00
Payments out of general fund on account of debt.....	790,566 39
Land fund diverted.....	<u>2,000,000 00</u>

Amounts to.....\$12,604,638 67 and would have made a balance in the treasury to that amount on the 1st July, 1849, had none of them been applied to the extraordinary purposes above designated.

During the current fiscal year, there will be required, in May next, for the payment of an instalment to Mexico, \$3,540,000, and the land revenue, estimated as diverted, will be \$2,000,000—making together \$5,540,000, which, added to the aforesaid sum of \$12,604,638 67, would make \$18,144,538 67, from which, deducting the estimated deficit on the 1st July, 1850, of \$5,828,121 66, would have left an estimated balance in the treasury, on that day, of \$12,316,417 01. Adding to that balance the instalment to Mexico, due in 1851, \$3,360,000, and the revenue from lands diverted, \$2,000,000, would make an aggregate of \$17,676,417 01, from which deducting the estimated deficit on the 1st of July, 1851, \$10,547,092 73, would have made an estimated balance in the treasury, on that day, of \$7,129,324 28.

I have gone into this detail for the purpose of showing that the resources of the country are am-

ple, that the estimated deficit will have arisen from the extraordinary expenses of the war and treaty with Mexico, and that the justly high public credit of the United States, is not endangered by the fact that in this position of affairs, a new loan will be required.

Under these circumstances, I propose that authority be given to raise such sum, not exceeding \$16,500,000, as may be found necessary, from time to time, by the issue of stock or treasury notes, on such terms of interest (not exceeding six per cent.) and repayment, as the President, in his discretion, shall, previous to their being issued, think fit to order.

Authority has already been given by the act of March 3d, 1849, to issue stock for the \$3,250,000, appropriated to carry into effect the 15th article of the treaty with Mexico.

To be continued.

To the Citizens of North Carolina.

The undersigned having been appointed by the convention held in Greensboro', on the 29th ultimo, to address the people of the State, and of urging most earnestly, your co-operation, in order to secure the charter granted by the last General Assembly to the "North Carolina Railroad Company"—we shall, as we think, most usefully discharge this duty, by simply explaining the action, the present condition of things, and what is positively necessary, in order to organize the company and carry out the views and recommendations of the convention, for the accomplishment of this great State improvement.

The act granting the charter, requires a subscription on the part of individuals of one million of dollars, and the payment of the first instalment of five dollars per share, when the company shall be regarded as formed, and the stockholders are authorized to proceed to the election of a board of 12 directors, who are to elect a president, and have the general management of the affairs of the company. Whenever the president shall cause it to be certified, under the seal of the said company, that one million of dollars have been subscribed, and at least five hundred thousand dollars of stock actually paid in, then there is to be subscribed in behalf of the State, two million of dollars to the capital stock of said company. At the recent meeting of the convention, it was ascertained that upwards of two hundred thousand dollars of the stock had been taken; whereupon, in order to secure the amount necessary to make up the one million, it was resolved by the convention "that the president and directors, in letting out contracts for work and materials, shall, in all cases, give a preference to such stockholders as may propose or desire to become contractors." After the adoption of this resolution, it was proposed that a company of one hundred persons should take what might ever remain unsubscribed of the one million of stock, and thus secure the charter to a certainty. And we are happy to inform you, that 51 names have already been subscribed, requiring 49 more gentlemen of equal spirit, to put the matter beyond all doubt.

Since the adjournment of the convention, as we hear, some twenty or thirty thousand dollars have been taken in Alamance and other places, and it now remains to be seen, if the 49 gentlemen, with the aid of the positive subscriptions, cannot be found in the State, to take the balance. We flatter ourselves, the question has only to be stated to be answered affirmatively. To effect this object, and to give every possible information on the subject, railroad conventions are to be held in the respective counties through which the road is expected to pass, which will be attended by several intelligent gentlemen, and to which all are invited to attend who may take an interest in the matter. And as this may be considered as the last great effort for the improvement of the internal condition of the State, we confidently appeal to any one who may claim to be North Carolinians, and who feel any concern for the elevation of her character and the promotion of her prosperity, to come to our aid in the accomplishment of this great undertaking. We honestly believe those who may subscribe, or who may consent to become one of the company of one hundred for taking the unsubscribed stock, can run no possible risk or loss, or be put to the least inconvenience, beyond the payment of the five dollars

on the share, and the lending of their credit to the concern. We say this, as we doubt not that the board of directors will, in good faith, carry out the resolve of the convention in giving to the stockholders the contracts, or of allowing those who may not desire them, to transfer their stock, in part at least, to such as may wish to become contractors. This plan has been adopted by other companies, and has been found to operate most advantageously. In conclusion, we tell you the spirit of improvement by means of railroads, is abroad amongst our sister States; that the utility of the system is not only established by the experience of the prudent and practical, but its necessity is rendered absolutely indispensable to all who desire or expect to participate in the advantages of an early and certain market. We appeal then with great confidence to your interest as well as your patriotism, to exert yourselves in behalf of a measure which promises so much to the State, by stopping the tide of emigration, now carrying off so rapidly our most intelligent and enterprising citizens, and which shall vindicate the wisdom of the legislature in its support of a judicious system of internal improvements, and causing every native son to feel a pride in claiming to be a North Carolinian.

R. M. SAUNDERS,
ALEXANDRE McRAE,
JAMES GRISWOLD,
JOHN McLEOD,
WM. A. GRAHAM,
BENJ. TROLLINGER,
J. M. MOREHEAD,
J. W. THOMAS,
J. B. LORD,
C. J. FOX,
RUFUS BARRINGER,
D. L. SWAIN.

December 10, 1849.

Finances of Indiana.

We copy the following from the message of the Governor of this State, relative to its financial affairs. We have no fears but that as soon as the progress of the Western States shall enable them to make provision for the payment of the interest on their debts, all of them, even those whose condition is now the most hopeless, will do so. Time only is wanting to make the debt of Illinois as valuable in the market as that of Ohio:—

The message makes a very full exhibit of the financial condition of the State. In 1847, when the arrangement of the State's indebtedness was made with her creditors, the debt, exclusive of interest, was \$11,045,000; there has been surrendered and converted into new stock, to 1st of July last, \$9,530,000; since July 1st, \$33,000; making \$9,563,000; leaving yet to come into this arrangement, 1488 bonds, or 1,488,000.

The amount of revenue paid into the State Treasury during the last year, on all accounts, was \$411,650, which exceeds the amount paid the previous year, \$28,901. The assessment for State purposes for 1849, is \$508,537, and for county, road, school, and township purposes, collectively, \$630,570; adding to these sums the delinquencies of former years uncollected, amounting to \$163,093, and the whole amount on the duplicates for 1849, will be \$1,302,202. The number of polls returned for 1849 is \$143,720, being an increase over the returns of last year of 7,445.

The value of the entire property of the State subject to taxation, as returned for 1849, is \$133,419,056, which is an increase over last year of \$4,458,070. The State commenced paying interest with July, 1847, and to the present time has paid five semi-annual payments, amounting in the aggregate, to nearly half a million of dollars, meantime the State stock has been steadily and gradually advancing in value, until it now stands at seventy cents on the dollar, its full value, taking six per cent. interest per annum as the standard.

The semi-annual interest due to creditors, under the two acts of the Legislature of 1846 and 1847, providing for the settlement of the State debt, was punctually paid at the Indian Agency in the city of New York, on the 1st of July last, amounting to \$95,300, being 2 per cent. on \$4,765,000, the amount of the debt at that time under the arrange-

ment. A portion of this sum, say \$79,000, was borrowed of the Commissioners of the Sinking Fund and of the banks. On January, 1850, the interest due will probably reach \$100,000, as 230 bonds coming in from July to January will make up that amount. The ordinary expenditures of the State Government for the fiscal year ending on the 31st day of October, 1849, were \$74,469. The ordinary expenditures for the current fiscal year are estimated by the Auditor of State at \$72,000.

Indiana.

Evansville and Mount Carmel Railroad.—We are informed that the report of Judge Hull, president of the Evansville and Illinois Railroad Company, exhibits the affairs of that body in a prosperous condition. The entire cost of the road from Evansville to Princeton, a distance of 26½ miles, according to the estimate of the engineer, is \$239,007 79-100, equal to \$9,000 per mile. This includes the cost of ballasting the road bed with gravel from the Ohio river. The Company have the following means to pay for its construction:

Stock by Vanderburgh county.....	\$100,000
Stock by the city of Evansville.....	100,000
Individual stock taken.....	64,000

Making..... \$264,000

This sum, economically expended, will not only finish the road, but go far towards paying for locomotives, engine houses, machine shops, &c.

We are also informed that a contractor, of standing, has proposed to take the grubbing, grading, and bridging the road from Evansville to Princeton at the engineer's estimate, and complete the same, ready for the wooden superstructure in nine months.

Illinois.

Meredosia and Quincy Railroad.—This proposed road runs from Meredosia, on the Illinois river, to the city of Quincy, on the Mississippi, and embraces what is known as a portion of the Western part of the Northern Cross Railroad. The State recently sold out her interest in this portion of the road, and it is now in the hands of individuals, with reasonable prospects of being constructed at an early day. It passes through one of the richest agricultural districts of the State. We learn that J. J. Shipman has been engaged as chief engineer, and W. P. Whittle, as assistant, and that they will be in the field, in a few days, with a full corps of effective men, to survey the route and estimate the costs. From the facilities afforded for the construction of the route, by the ground, abundance of material, wealth and population along the line, we have entire confidence that it will be constructed at an early day, and prove a profitable investment to all concerned.

Tennessee.

Nashville and Chattanooga Railroad.—At the election at Murfreesborough, on the 12th inst., for directors of the Chattanooga Railroad, the following named gentlemen were elected, viz:

V. K. Stevenson, J. M. Bass, A. O. P. Nicholson, Alex. Allison, E. H. Ewing, F. B. Fogg, S. D. Morgan, of Davidson County.

John S. Neil, in place of John Eakin, deceased.

Jeremiah Cleveland, Bedford county.

A. M. Rutledge, Grundy county.

James C. Moore.

William Spence, in place of Levi Wale, declined, Rutherford county.

W. S. Watters, Coffee county.

Peter S. Decherd, Franklin county.

James A. Whiteside, Hamilton county.

The average vote per individual on each ticket, was for the old board 6:10, and a fraction—for the

opposition 769, and a fraction—the old board being elected by a vote of about 10 to 1, over the new. At the subsequent meeting of the board, the old officers were unanimously re-elected, viz: V. K. Stevenson, president; Orville Ewing, treasurer, and Jos. F. Gibson, secretary. The acting engineer, James H. Grant, was also unanimously elected chief engineer.

Georgia.

Savannah and Augusta Railroad.—We are gratified to announce that the president and directors of the above road have already purchased 2000 tons of railroad iron, or enough to reach to Waynesboro. A part of this iron has already arrived from Wales, and the rest is looked for soon. It is a beautiful T rail of 56 lbs. to the yard. The road will start from the 79 mile station on the Central road, and contracts will be made at once for the whole distance to Waynesboro. It is determined to finish the road to that point by the 1st of November next, and when finished, it will be incontestibly the best road in Georgia or in the South.—*Savannah Repub.*

Virginia.

Richmond and Danville Railroad.—At a general meeting of the stockholders of the Richmond and Danville Railroad, held at the office of the company in this city, on Friday evening last, Whitmel P. Tunstall, Esq., was re-elected president of the road by a large majority. The vote stood, for W. P. Tunstall, 1839; Lewis C. Harvie, 672; James C. Crane, 194. Messrs. A. F. D. Gifford and Horace L. Kent were elected directors.

Iowa.

The total value of property in this State, as ascertained by the assessment recently made, is \$18,479,751, being an increase of \$3,008,648. Upon this property, the State levies a tax of \$47,249 42. The number of acres of land assessed, is 3,150,494 upon which the valuation, with improvements, is put down at \$10,349,624; value of town lots and improvements, \$2,945,299; capital employed in merchandise, \$819,637; mills, manufactories, &c., \$319,211; value of horses, \$1,272,005; neat cattle, \$953,513; sheep, \$156,178; hogs, \$258,189; pleasure carriages, \$167,200; value of gold or silver coin, or bank notes, \$213,782; claim or demand for money or other consideration, \$540,577; money secured by deed or mortgage, \$108,692.

Pennsylvania.

Columbia Railroad.—From a statement of receipts and expenditures of the Philadelphia and Columbia railroad, for the fiscal year ending Nov. 30, 1849, we learn that
The total receipts were.....\$587,726 64
The total expenses.....250,544 28
Net profits.....\$327,182 36
This is equal to 8 per cent. on \$4,000,000, the cost of the road and machinery—a very handsome return for the investment.

New York.

Troy and Rutland Railroad.—We observe from the last Washington County Post, that the engineer, C. L. Prescott, who conducted the surveys of the two rival routes, from the village of Salem to the valley of the Hoosic, has decided in favor of the Cambridge route, upon the following grounds: 1. The Cambridge route, will cost 19 3-4 per cent. less money. 2. It has the advantage of 1-4 the curve, and two-sevenths more straight line. 3. It has an advantage of from 50 to 75 per cent. in grade. 4. It will accommodate the public better. 5. It can be built in much less time. 6. Its intersections are the most important.

From the Winchester Republican.

Some time since, I noticed the quantity of iron loaded by Mr. J. M. Newman, which notice would have been fuller had I known the quantity received by that gentleman from the furnaces during the month of November. It was 353 tons, 1 cwt. 1 qr. Since then I have also been informed, that those enterprising iron masters, Messrs. Penman, Thomson & Penman, have had a powerful galvanic battery attached to their furnace, which greatly improves the quality of their iron, chemically, instead of mechanically, combining the carbon with the iron. The use of the galvanic battery in the manufacturing of this staple article is said to be a great and decided improvement, and much credit is due to those gentlemen for their indefatigable energy and enterprise. This improvement in the manufacture of iron was discovered by Dr. Wall of England, and by him has been applied at Taylor Furnace. He has patented his invention both in England and this country. During the month of November, the railroad from this depot has forwarded—

Flour,.....15,193 bbls.
Merchandise,.....201,735 lbs.
Iron,.....369 tons, 10 cwt.
The agent at Harper's Ferry has received from all points of the road, for the same month—
Flour.....19,921 bbls.
Merchandise,.....652,892 lbs.
Increase of revenue above that of the same month 1848—over \$1000.
The wharf at Bull's Falls is already finished, and is covered with immense piles of iron ore, that has been boated down the river to that point for Messrs. Ellicott's. OBSERVER.

Steam Communication between Portland and New York.

The advantages of direct communication with New York, by a line of steamers built for Ocean navigation, have been frequently discussed by our business men, and the value to the interests of the city thereof, universally admitted. The question then arises, will it pay? Many of our best informed merchants, both at Portland and Eastward, express the confident belief that such an enterprise, if got up on the proper basis, would succeed. A merchant of New York, connected with one of the leading houses of that city, recently here, expressed the belief that the largest portion of the required capital would be readily subscribed in New York, provided the project was formed here. To carry out such a plan successfully, requires the concurring support of the mercantile interest of the two cities. Portland has a valuable trade to carry somewhere, and there is a strong conviction on the minds of our leading merchants, that Portland has the same advantages for the wholesale or jobbing business as Boston. The merchants of New York are ready to open a trade direct with Maine, whenever it shall please our merchants to go there for their supplies. The leading New York houses, engaged in the dry goods and grocery line, have signified their willingness to embark in the enterprise. Merchants of Bangor and other eastern cities, assert that their principal purchases would be made at Portland or New York, if the proposed line was established. Two good boats would be all that would be required at the outset, one leaving New York and the other Portland, weekly. The time required to accomplish the passage, may be reduced to 30 or 35 hours. Leaving Portland and New York, for example, at 4 o'clock P. M. of Saturday, they might be prepared to discharge cargoes at the port of delivery, on Monday morning. From Portland, by railway and steamboats, the

same goods might be delivered on Tuesday, at Eastport; Bangor; Bath. Waterville and intermediate places. The immediate effect of the carrying out of the proposed enterprise, would be the establishment of importing and jobbing houses in this city. Goods of every description, could then be furnished to the trading community of Maine, as cheaply as at Boston, if not at still lower prices. The trade of Maine is abundantly sufficient to build up a city equal to Boston, if inducements could be held out by our merchants to invite the trade of the State generally. Portland does not at present furnish a market equal to the trade of Maine, and without increased exertions, can scarcely hope to extend very widely her trade with the interior. It is believed that the most efficient movement to attain both these ends, would be the establishment of a line of steam packets direct with New York. P.

Hudson River Railroad.

SUPREME COURT.

Before Judges Jones, Edmonds, Hurlbut and Edwards.
Dec. 27.—The court delivered their decision in the following case:—*Hudson River Railroad.*—Judge Jones delivered a most voluminous opinion in this case, which was an application for an injunction to restrain the Hudson River Railroad Company from proceeding with their operations, and to compel them to remove so much of the line as they had already laid down. The learned Judge commenced by stating the provisions of the act, reading several of the sections in detail, and then proceeded to mention, *in extenso*, the grounds of the complaint made by the plaintiffs, and the answers thereto put in by the defendants occupied ground which belonged to the plaintiffs, either in fee or for a term of years; the answer to the objection is that no land had been taken for that purpose, but that which was occupied by and belonged to the municipal authorities of the city; that the plaintiffs had shown no title, in themselves, to any part of the land or soil. It is averred that the two plaintiffs, residing in Canal street, have no pretensions of claim; with respect to one of the other three plaintiffs, in Hudson street, it is stated that those under whom she derived had a lease prior to the grant to the corporation, but the co-assignees are not parties to the complaint, and she, by the terms of her acceptance, had extinguished her right. The city authorities would be equally unauthorised to close the streets, except on the authority of the law, and any obstruction would be a nuisance, punishable at the instance of those who might be specially grieved or damaged thereby. The corporation of the city have, by the ancient charter, never abrogated, and still enforce, the management and regulation of the public streets, and always have, and now are, exercising these powers; they prescribe the sidewalks, and direct the mode and manner of sewerage, &c., for various purposes, and for public and private use, and receive compensation for the use of the vaults under the sidewalks; it would seem that the legal title to the land and soil should reside in them. The court did not stop to examine the antagonistical allegations or claims; or whether the power of a new or an old charter apply to the constitution of the case; or whether it requires all the members of both branches of the corporation in order to make it effectual. These formalities apply to acts of Legislature, and they require, whatever form the by-law may assume, who has a right to complain, and require the defendants to remove the rails. The plaintiffs cannot complain that the defendants are trespassers on the land; nor require that compensation should be made to them. The rights of the corporation are the only rights which may be said to be usurped; but the corporation imputes no wrong, and takes no step against the railroad being laid down. They tacitly give their assent to the operation. The plaintiffs complain that their lots are injured, and claim compensation, and that the railroad company ought to be restrained until such compensation be made. The right of the defendants to lay down the line will not protect them

from the damages of the persons aggrieved. The plaintiffs insist that they are not to wait until the loss or damage is actually incurred, but that they are entitled to a protective remedy; and they, therefore, apply for an injunction. The injury of which the plaintiffs complain, is the impaired value of their property, by the alleged impediment of crossing the streets, and the desertion of their shops by reason of the danger and difficulty of access to them, and the danger to themselves and their families by the passing of the cars. Upon conflicting affidavits, the court are asked to form a conclusion whether the railroad in its occupancy is liable to the objections urged against it, or is subjected unjustly to these charges. The utility of railroads and their accommodation to the public at large admit of no doubt; but these considerations cannot authorize or justify any encroachments of individual rights; but the plaintiffs can claim no further use of the streets than all other citizens. The example of the Harlem Company shows that the use of railroads in the city, if properly guarded and regulated, is compatible with the simultaneous traffic of all other vehicles. If some inconveniences arise, they are not of such a magnitude as to induce the court to compel the defendants to remove the track already laid down, or restrain them from further proceedings. A much stronger case must be presented to their view, and more imminent danger be proved, to justify their interference.—The court, therefore, felt constrained to deny the injunction.

Judge Edwards said that he and Judge Edmonds agreed with the Chief Justice, and had written their opinions, which could be seen with the clerk.

AMERICAN RAILROAD JOURNAL.

Saturday, December 29, 1849.

Railroad to the Pacific.

We are gratified to find that those parts of the President's Message, and of the Report of Mr. Ewing, having reference to this project, occupy the same ground which we have maintained from the first. They admit the desirableness of the road, and also, that the question of route and of practicability must first be determined by a survey, conducted by competent engineers, the result of which must form the basis of future action. The recommendation for the appointment of a corps of engineers for a survey of the proposed routes will undoubtedly be sanctioned by Congress, and we shall soon be in possession of something beyond mere conjecture.

Declaration of Principles

Of the General Assembly of Illinois, in relation to Internal Improvements within the State.

The following resolutions, embracing a declaration of principles, drawn up by the Hon. Wesley Sloan, of Pope county, (Southern Illinois) were passed by the House on the 3d ult., by a vote of 43 to 27, and by the Senate with only 2 dissenting votes.

Resolved, That the geographical position of Illinois, considered in connection with the construction of railroads within her limits, is one of the greatest natural advantages which she possesses, and which must, under a judicious system of legislative policy, be very instrumental in promoting her general welfare as a state.

2d. That the prosperity of a state or nation consists, not only in the virtue and intelligence of a brave and energetic people—in the richness of her soil and mineral resources—but also in the number and extent of her flourishing towns, cities and villages.

3d. That any internal improvement, whether constructed under a general or special law, tending in its operation to impede the growth and prospects of cities, towns and villages, within our own borders, ought not to be encouraged.

4th. That the construction which should be given to the 6th section of the 10th article of the Constitution is, that the General Assembly shall encourage improvements that are of an internal cha-

acter and advantage, and not such as are mainly intended to promote external interests.

5th. That a railroad commencing at our Eastern boundary, running across the state and terminating at any point on the Mississippi river, opposite St. Louis, and also uniting with contiguous lines of railroad, extending eastwardly through our sister states, either to Cincinnati or the Atlantic cities, would be immensely advantageous to St. Louis, at the same time that it would impede the growth and prosperity of the cities, towns and other localities on the Illinois side of the Mississippi river.

6th. That the connection of the Mississippi river, by continuous lines of railroad, with the Atlantic sea board, is of vital importance to the whole Union; and we willingly invite the construction of railroads passing through the other states to our eastern boundary, promising to grant to them the right of way, and reserving to ourselves only the privilege of fixing the termini—a privilege we constitutionally claim, and which we are entitled to exercise by reason of our geographical position.

7th. That the construction of the great Central railroad is a subject of vast importance to Illinois; and all laws, having for their object the completion of the same on proper principles, ought to be encouraged; provided such laws do not infringe too much upon our natural advantages growing out of the geographical position of the state.

Above is the apology presented to the public for refusing a charter for a railroad across this State from Terre Haute to St. Louis. We presume it was not in the contemplation of the originators of this declaration, to make any other application of the principles set forth in it. Its object is to confine the trade of the State within its own limits, and indirectly to tax the travelling and business portion of the country for the purpose of building up commercial towns within its borders.

We have watched carefully the contest which has been going on in this State, and which has terminated as we have seen above. We are entirely satisfied that the principles upon which the declaration is founded are not only unconstitutional in their spirit, but will prove to be injurious to the State in their results, and must sooner or later be abandoned. In subscribing to this declaration, we think that this State has made another grand mistake in her internal improvement policy, of which her history presents such an array.

Every State is bound to do all it legitimately can for the promotion of the interest of its citizens.—But where public works are constructed, it is impossible that all should receive the same benefit from them. Those within reach of them are vastly benefited, while those at a distance, who may have borne equally the cost of their construction, derive no benefit at all. But as each man's location is a matter of his own choice, a person so situated has no cause of complaint, because if he wishes to be benefited by canals or railroads he must go within the sphere of their influence. The works cannot run by every man's door, and those who find themselves on routes that are impracticable have no right to complain of those, who, without reference to such works, find themselves occupying more favorable spots. It is impossible but that very unequal benefits should flow from works, the burden of which come equally upon all. But no sane man will denominate such inequalities injustice, nor think of urging such unequal benefits as a reason against a State embarking in works of public improvement.

But it is entirely a different affair to withhold from one section privileges which we confer upon another. A government that does this is no longer a republic. It is despotic. What is the whole case in Illinois fairly stated? A majority of her people are desirous of building up towns within its own

limits, which shall become the marts of trade for her own products, for the purpose of accumulating within herself the wealth which results from trade and commerce. In order to accomplish it denies to the inhabitants of an extensive portion of the State, privileges similar to those conferred on other portions, and refuses to them the right of availing themselves of the most approved means of transporting their products to the most profitable markets. The citizens of one part of the State are therefore directly taxed for the benefit of the other, and if the principles laid down in the declaration are correct, then of course there is no limit to their application but the will of the majority. The people of Southern Illinois are told that they shall not have the privilege of constructing a railroad to the Mississippi opposite to St. Louis, because this city would be enriched by the trade, instead of a town in Illinois. Why not refuse to the people of this section the right to construct an ordinary road to St. Louis, for over it would flow a large amount of trade, to prevent which, is the object of the above enactments. We can see no difference. If it is important that all the marketable products of the State should be sold within its limits, and if it is right and competent to refuse the right to construct railways to a certain portion, for the purpose of accomplishing this object, why not go still further and forbid the opening of all avenues, which will allow such products to go out of their States before they are sold for the benefit of the contemplated cities of Illinois?

We do not believe that the exercise of such powers as these are within the spirit of the constitution of Illinois, or of any other state in the Union. Such a principle is unjust and oppressive in its operation, and cannot of course be constitutional. As it is palpably unjust, it cannot be sustained; and this alone is sufficient reason against taking a step which must so soon be retraced. Public sentiment in this country becomes law, so soon as this sentiment is distinctly expressed; and unjust and partial legislation is sure to yield to its demands, however strongly such legislation may be sustained by force of interest or numbers. Again, the principles laid down in the declaration invade our rights as citizens of this republic. What right has the Legislature of Illinois, to say to a citizen of New York, "if you wish to go to St. Louis through our State, you must go by way of Alton." If this state may compel us to do this, she may with equal reason compel us to take Chicago in our course. If she may put travellers to the inconvenience and expense of passing through her leading towns for the benefit of her citizens, she may with equal justice levy a direct tax upon such travellers. Such a policy would at once array the different States against each other, and instead of presenting an union of States, we should be a mere aggregation of conflicting sovereignties. Suppose that the State of Indiana, for the purpose of building up Indianapolis, should enact that all railroads entering that State from the east should terminate at that point, and should refuse the right to construct a road from that point, to the Illinois State line; would not this latter State complain, and with justice, that Indiana had cut her off from the great lines of communication which are now opening throughout the whole country, and was enriching herself at the expense of Illinois? We think that they would complain, and in no very measured tones. We have no doubt but that this State would consider such a course on the part of Indiana, a good ground to resort to force, if redress could be obtained no other

way. The legislators of this State should have kept before themselves the story taught them in their first lessons. It may turn out that it is their bull which has gored their neighbor's ox. Again, this State is pursuing a mistaken policy, in a money-making point of view. Why do her citizens wish to go to St. Louis for a market? Because they can get a higher price for their products. If Alton offered superior inducements, no one would go to St. Louis. To build up Alton, therefore, those who wish to go to St. Louis, are taxed to the amount of the difference in favor of this city, as a market, in addition to the increased distance, etc. Now such a policy costs more than it comes to. Let us illustrate this matter. Portsmouth, New Hampshire, has a better harbor than Boston. Suppose that the people of New Hampshire in chartering their roads, had refused to charter any one that did not terminate at Portsmouth, for the purpose of building up that town. We ask a citizen of Illinois whether such would have been a wise policy? It is for the interest of but a small fraction of the inhabitants of New Hampshire to trade with Portsmouth. Boston offers a wider market and a higher price for their products. To render Portsmouth as good a market as Boston, would require a vast outlay, which would operate as a direct tax upon the industry of New Hampshire, and all spent in building up this town, would be so much lost. Who does not see that it is for the interest of that State that all her roads should tend toward Boston, though this city is vastly enriched thereby. Would any citizen of Illinois advise the people of New Hampshire to give any different directions to their road? We think not. The advantages of connecting them with Boston are too obvious to need any argument.

Now we undertake to say that it is just as unwise for the State of Illinois to refuse to her citizens the right to build a road from Terre Haute to St. Louis, as it would be for the State of New Hampshire to refuse a charter to any road having a direction towards Boston. Such policy is neither just nor politic. The true policy of Illinois is to encourage the construction of a road to St. Louis, as well as to Alton and Chicago; to provide every facility for getting to the best market, wherever it may be situated. She now occupies a false position which she must soon abandon. Such unwise legislation inflicts an injury upon that State, as it tends to destroy confidence in her legislation upon other subjects. But it is not to be expected that a State which has made such disastrous mistakes in her internal improvement policy, should grow wise at once. We must expect that she will oscillate from right to left, till a wider experience shall have taught her more wisdom.

Virginia.

We invite attention to the advertisement in another column for proposals for tunnelling the Blue Ridge. This great work will open a direct Atlantic outlet for the valley of Virginia.

We learn that the road from the tunnel to Stanton is making good progress. This portion of it is under the charge of T. C. Ruggles, Esq., of this city, a gentleman very favorably known in this section as a skillful and scientific engineer, and as possessing courteous and engaging manners.—We are happy to see by the responsible trusts confided to him, that he has made a very favorable impression upon the people of Virginia, and we have no doubt but that he will fully justify the impression he has made.

Massachusetts.

Western Railroad—Increase of Trade.—The president of the Western Railroad informs a writer in the Worcester Spy, that the receipts of flour at that place for the year ending December 1, 1849, were nearly double that of the preceding year, amounting in the aggregate to full 75,000 barrels, exclusive of 25,000 forwarded over the Nashua and Worcester Railroad.

Dividend.—The Fitchburg road has declared a dividend of 4 per cent., payable on the 1st of January, to holders of stock on the 15th inst. Also, interest on the new stock at the same time. After paying this dividend, the corporation has a surplus for the year of 50,000 dollars—making the whole amount of surplus on hand to be 90,000 dollars.

Railroad Fares.—It is proposed, on the 1st of January next, to advance the fare on the four railroads leading west and north from Boston, from 2 to 2 1-2 cents per mile, except for package tickets and steamboat competition. After the first of January, the rates on the seven railroads out of Boston, except for special trains, will average about 2 1/2 cents a mile.

The attention of railroad companies manufacturing their own cars, as well as car manufacturers is invited to the advertisement in another column of F. S. & S. A. Martine, importers and dealers in car and carriage linings, trimmings, etc. The extensive stock of these gentlemen embrace every article used by manufacturers, and we have no doubt but that our friends and the public will find it for their interest to favor these gentlemen with orders for such articles in this line as they may wish to purchase.

A New Mode of Casting Pipe.

In June last we gave a minute account of a new mode of casting iron pipe. We would now refer our readers to the proceedings of the Maryland Institute in relation to the merits of this new invention, which will be found in another column.

This mode of casting consists simply in pouring melted cast iron into a cylinder of any given size, to which is communicated a rotary motion. This distributes the metal equally over the whole inside cylinder. The centrifugal force communicated to the metal disposes of it with perfect regularity, and the moment the iron cools the whole process is accomplished.

Huntsville Railroad.

Delegation to Montgomery.

On Tuesday morning last, Messrs. Nicholas Davis, Judge Lane, D. B. Turner, Samuel Ragland and James S. Donegan, delegates appointed by the Huntsville convention to visit Montgomery and solicit aid from the Legislature, left this place on the cars for that city. We understood from them that it would be left entirely with practical engineers, at what point the road from Huntsville would intersect the Nashville and Chattanooga road. Two points were spoken of—one at Winchester in this State, the other at Bolivar in Alabama. But the stock which has been subscribed, and all that will be taken, has to be unconditional. The object of the company will be to connect with the road at the nearest practicable point, in the direction of the Southern Atlantic.

We are glad to see that our sister State has at length waked up to the importance of railroad improvements, and from the commencement made, and the wealth and character of the gentleman engaged in it, we may safely prophecy that the work undertaken will be speedily completed. We hope to live to see the day when we can get upon a railroad car at Chattanooga, and travel East, West, South or North—and, perhaps, to the Pacific ocean! —*Chattanooga Gazette.*

Massachusetts.

Old Colony Railroad.—The sixth annual report of the Old Colony Railroad Corporation has been received. From it we take the following abridgement:—

The revenue of the company, for the year ending November 30, 1849, has been: For transportation of passengers, \$184,669 50; for general freight, \$55,632 23; for gravel for city of Boston, \$16,282 71; mail, rents, and sundries, \$18,482 14; aggregate, \$275,066 58. The revenue for 1848, was \$227,350 27; and for 1847, 171,153 75.

Gross income of the year, \$275,066 58; expenses of running, 167,438 71; net income, 107,627 87. The balance for 1848, was 7,408 25; aggregate, 115,036 12. This income has been appropriated as follows, viz:—

To amount due for rent of Dorchester and Milton, paid 3,510, estimated at 3,800.....	\$7,310 00
To amount paid, and estimated due South Shore Railroad Company, to Dec. 1, 1849.....	14,967 24
Interest and extra interest on floating debt, due from Nov. 30, 1848, until Jan. 20, 1849, when debt was funded	18,014 93
Interest on new stock, Jan. 20, to July 1, 1849.....	2,975 02
Interest on bonds, Jan. 20, to July 1, 1849.....	6,476 26
Interest accrued on bonds, July 1 to Dec. 1, 1849, due Jan. 1, 1850.....	8,220 00
Interest on temporary loans, Jan. 20, 1849, to Nov. 30, 1849, balance.....	2,570 64
Balance of income.....	54,502 03
	<hr/>
	115,036 12

The expenses for transportation for the year, have been 167,438 71; increase from last year, 44,729 50. The miles run during the year, by the different trains, have been 174,558, and the cost of running has been 71 2-10ths cents per mile.

Finances of the Company.—The floating debt, which for several years past proved so serious an incumbrance to the company, is now funded. The capital of the company, as reported by the treasurer, is now represented by 19,651 shares at par, 1,965,100; bonds at five years, from Jan. 1, 1849, at par, 328,800; aggregate, 2,293,900.

A few outstanding claims for damages are still unascertained.

The floating debt of the company amounts to 50,572 90, to provide for which, we have in cash on hand 32,257 95, and other available assets, more than sufficient to meet the same.

The surplus property has cost over 175,000 and is worth at least that sum. As this property produces but little income, it will be politic to avail of the first favorable opportunity for its sale. The stock of fuel and materials for repairs is large, and in the account of stock just taken, is reported at—

Fuel and stock at stations, and machine shop.....	26,065 98
Gravel and turnout, &c., exclusive of Mount Hope.....	19,406 72

The company have earned 4,830 50 by the transportation of ice between Plympton and Boston.

The company own the Abington and Bridgewater Branch, 7 1/4 miles in length, and lease at 6 per cent., on the cost of the Dorchester and Milton Railroad, 3 1/4 miles long, and the South Shore, extending 12 miles from Braintree to Cohasset. These lines cost, exclusive of equipment:

Abington and Bridgewater, to Nov. 30, 1849.....	129,098 87
Dorchester and Milton, to June 1, 1849	119,663 47
South Shore, to Oct. 1, 1849, subject to some reductions for surplus land, &c.....	362,700 74

Receipts of the Old Colony Railroad Corporation, from passengers and freight, passing to and from the following branches, for six months, ending Sept. 30, 1849:

	Passengers.	Freight.	Total.
Abington & Bridgewater Branch.....	5,697 92	2,555 63	8,252 92
Dorchester and Milton Branch.....	6,916 37	504 62	7,420 99
South Shore Branch.....	1,474 70	1,956 00	21,430 70
The freight on the Abington and Bridgewater,			

and the passengers on the Dorchester and Milton are increasing.

The general rate of fare on the main line and branches, except the South Shore Railroad, has been about 2½ cents per mile. Package tickets sold at 2 cents per mile, for 12 miles out of Boston.

The proceeds of season tickets sold, for the year, have been 14,852; last year, 10,138 00.

The directors conclude with the announcement, which has already been made, viz:

After mature reflection, your directors have voted to carry the balance of income forward as a reserved fund in aid of future dividends, and to provide for future contingencies, after deducting from it the cost of the new engine Plymouth, 7,800 dollars, to meet deterioration of the line and its equipment. The income of the past half year has exceeded 150,000 dollars, and the income of the last half of each year on this line, has uniformly since 1845, been more than doubled by the entire year succeeding. The road has anticipated the future by a second track and branches, and stands in fear of no competing line. It commands already a business of 275,000 52.

BALTIMORE, NOV. 26, 1849.

To the Board of Managers of the Maryland Institute:

Gentlemen—The committee appointed to investigate Thomas J. Lovegrove's patent process for giving form to metallic substances while in a liquid or molten state, by centrifugal force or a revolving mould, beg leave to report:

It may be well for the inventor and the public to state that the machine was exhibited at our first annual fair held in September, 1848—lead being the metal used in the operation, but the test being unsatisfactory. At the request of the judge, the machine was removed to the establishment of the inventor, and operated with iron. Owing, however, to the machine being the first of the kind, and imperfect in many of its parts, they were unable to come to any satisfactory conclusion on its merits.

The inventor being anxious that the matter should be further investigated, and having built a more perfect one than that first exhibited, requested the appointment of a committee for that purpose.

This second machine is of a size suitable for making 4 inch pipe 9 feet long with a common socket joint, and was put in operation in the presence of your committee, who, after carefully and impartially examining the machine; the principle upon which it operates, and witnessing its performance, although under unfavorable circumstances (the improved machine being of rather temporary character, and driven by an engine of insufficient power) are confident that with two machines substantially built and properly arranged, with sufficient power to drive them, the ordinary cast iron water and gas pipes can be manufactured at the rate of one ton per day for each man employed in working the machine, it being understood of course that a sufficient number of men be employed in the work to manage the machines with facility.

Appended to this is the copy of a certificate from Uzziah Wenman, President Croton Aqueduct Board, New York. Signed,

C. W. BENTLEY.
JAS. MURRAY.
ROBERT EARECKSON.
ISAAC BROWN.

Committee.

OFFICE CROTON AQUEDUCT BOARD,
April 28th, 1849.

Mr. Thomas Lovegrove—Sir: At your request I had a number of your cast iron water pipes proved in our press at a pressure of 300 pounds per square inch, and the result was to my entire satisfaction. Respectfully yours,

(Signed,) UZZIAH WENMAN,
President Croton Aqueduct Board.

"Resolved, That in view of the favorable report made by the committee appointed to examine into the invention of Mr. Thomas J. Lovegrove, for making cast iron pipes by a revolving metallic mould, a diploma of the first class be awarded Mr. Lovegrove by the board, as a testimonial of their appreciation of the invention."

I hereby certify that the above is a true extract from the minutes of proceedings of the Board of

Managers of the Maryland Institute for the Promotion of the Mechanic Arts.

SAM'A SANDS, Sec. B. of Man.

PHILADELPHIA, DECEMBER 18, 1849.

To the Editor of the Railroad Journal:

In No. 38, of your Journal, Mr. Stratton, of the Novelty Works, brings a subject before your readers, which is not so simple as it appears at first sight. In No. 42, Mr. Detmold suggests an explanation of the fact in question, but I cannot agree to the sense of his interpretation. This subject has agitated the minds of many men, without leading to a satisfactory conclusion as to the cause of the apparent anomaly. The fact that cold cast iron will float on fluid cast iron is generally known, has very little bearing upon our practical manipulations, and is so far unimportant. It is a subject, however, which leads to the investigation on the nature of iron, and deserves on that account more attention than the practical workers in iron will give it credit for.

That cold cast iron sinks at first, at the moment of contact, in melted iron, as asserted by Mr. Detmold, is not quite correct. It may have happened, and happen still; this, however, can be at the best but an exception to the rule. We find generally that all cold cast iron, by putting it into a vessel and casting fluid iron on it, will keep at the surface and float upon it. Thin pieces of castings, or crystals of iron, often show an exception. The second argument of Mr. Detmold, that "crystallization" expands the iron and makes it float, "the same as water when it freezes into ice," is not conclusive; for many scientific men contend, that this specific quality is due to no other substance but water.—The assertion that the expansion—the effect of the crystallization—is the immediate cause of filling the minutest parts of the mould with metal is a theory which is by many, and also by Mr. Detmold, adopted; but which is not confirmed by close scrutiny. If the expansion caused by solidification is the cause of filling the minutest parts of the mould, why does it happen that white cast iron does not fill the finest parts of a mould? Or why does charcoal iron, and all the strong and pure kinds of metal, not fill the mould as well as weak, cold-short, iron? It is a well settled fact that all the strongest and purest kinds of metal do not fill the mould well. The most impure kinds of pig iron, which contain besides carbon, also phosphorus and silicon, are the very best for small castings, hollow-ware, etc. For these reasons, bituminous stonecoal iron, as Scotch pig, is the very best for small castings; anthracite pig is less useful, and charcoal pig the least. It is evidently not the expansion of congelation, which causes the mould to be filled, for pure, white plate iron crystallises more perfectly than any other, and still it does not make sharp castings. Very grey charcoal metal, of good quality does, to all appearances, not crystallise, at least its crystals are very minute, still it is not the very best iron for small castings.

If expansion of the metal, after assuming a permanent form, was the cause of filling the mould, any kind of cast iron ought to fill the minutest parts of the mould, because this specific quality of expansion is the property of all cast iron. By close examination, we find that foundry metal revived from ores which make good forge pig does not fill the mould well, no matter how grey it may be. To this class belongs all charcoal iron made from the magnetic oxides, spathic ore, the carbonates generally, from specular ore, and sulphurous ores. With

the exception of the latter, all the iron made from the above ores constitutes good forge iron, but is very seldom a good foundry metal. Sulphurous iron is neither good for the one nor the other. Pig iron, made from bog ores, or the hydrates of the coal formation, also the various kinds of hematite, constitutes the best foundry metal. These ores generally contain phosphorus, and the pig iron always more silicon, than the pig manufactured from primary ores. We find, further, that anthracite iron fills the mould better than charcoal iron, coke iron better than anthracite, and grey bituminous coal pig is the very best for fine castings. It is not the amount of carbon which qualifies the metal for castings, for the very whitest metal made from spathic ore contains more carbon and is more fusible, than the very greyest of the stonecoal iron,—There must be another cause for the iron filling the mould.

The expansion of iron in cooling is considerable, for the melted iron has a far smaller specific gravity than the congealed iron. The expansion of iron by heat is $\frac{1}{800}$ between the freezing and boiling of water, and as iron fuses at 2800°, one cubic foot of congealed iron will be expanded by that temperature to

$$180^\circ : 2800 = \frac{1}{800} : 15.5$$

$$\frac{1728}{800} 15.5 = 1761.5$$

cubic inches, which of course diminishes its specific gravity in the same proportion. According to this, cold iron cannot float on melted iron, which is actually the case, if the iron is very compact and broken into small pieces.

Mr. Stratton in objecting to Mushet's theory, is perfectly right; for in the speculations of this writer are contradictions incompatible with common sense. Mushet however is right so far as the fact is concerned that cold cast iron assumes a larger bulk than liquid iron; but he wisely does not say a greater specific gravity. If we distinguish between bulk and specific gravity, the solution of this problem is not so very difficult, and the apparent contradiction ceases.

Crude iron is a combination of iron, carbon, sulphur, phosphorus, silicon, silex, calcium, lime, manganese, etc. Among these substances the two first, namely, carbon and sulphur, can be evaporated. Phosphorus adheres firmly to the cast iron, and cannot be separated from it. In remelting crude iron, carbon, sulphur, silicon, calcium, etc., may be partly removed, but not so phosphorus; this will permanently remain with the cast iron if extraordinary means are not employed to remove it. Phosphorus never leaves the iron until most of the carbon and the whole of all other substances are driven off. Silicon and calcium will also remain along with the carbon. In remelting iron, either in a cupola or a reverberatory furnace, some of the carbon and other impurities are removed: and in observing the time or the degree of heat at which carbon is most easily expelled, we find that just at the time of transition from the congealed to the fluid state, and from the fluid to the state of congelation, the carbon is most easily expelled. This fact can be observed almost daily at the puddling furnace or the forge fire. Any kind of crude iron, if it is melted in too hot, in the puddling furnace or the forge, works slow, the carbon and other impurities will not separate from it. The workmen,

therefore, avoid melting the iron, they break up the crude iron before it melts. Iron worked in this way forms a pasty mass, in which state it parts more readily with its carbon. If it accidentally happens that the iron is melted, water or other cold substances not injurious, is thrown into the furnace, to cool the iron down to the point of congelation. The time and labor spent in cooling the furnace is generally considered as lost. The foregoing fact, which could be illustrated by many others of a similar nature, shows very conclusively that carbon will separate most easily when the iron is just at the point of melting, or at the point of congelation.

Carbon cannot be expelled from the iron in its pure state; it is to be combined first with oxygen, and then it will escape, either as carbonic oxide, or carbonic acid. The oxygen may be derived from the atmosphere, the decomposition of water, or from any oxidized matter, as silex, lime, which may be in the iron. The carbonic oxide gas thus formed cannot escape from the interior of melted iron, particularly if this is in the act of congelating, and will consequently form larger or smaller cavities in the body of cast iron. In white iron, or very strong pure iron, we frequently find large hollows, or cavities, from an eighth of an inch to several inches in diameter. In some kinds of grey cast iron we detect these hollows only by means of the microscope, in others they are perfectly invisible, but must be there, reasoning by analogy.

If the above is the true explanation of this apparent exception to a general law of nature, we are reconciled to the truth of expansion by heat. The expansion of cast iron at the moment of congelation is therefore a specific quality of cast iron, depending altogether on the carbon and sulphur combined with it.

The foregoing theory on the expansion of cast iron in cooling, explains very clearly and comprehensively why iron of great purity and cohesion is not qualified for fine castings. Such iron does not contain sufficient impurities to keep it for so long a time liquid as is necessary to fill the finer impressions of the mould. The impurities in such iron are chiefly carbon, which is quickly destroyed by coming in contact with the mould. The iron thus deprived of the means of continuing fluid, chills, or crystallizes, no matter how hot it may be. This however alludes to no other impurities than carbon and sulphur, because both are volatile. Impurities which increase the fusibility of iron, but are not volatile, cannot cause expansion, and are most effectual in retaining the fluidity of iron, and are on that account most advantageous for small castings. Impurities, which are not volatile and increase the fusibility of iron, are phosphorus, silicon, calcium, manganese; these are the most common; others are copper, tin, silver, and a few other metals. Zinc and antimony do not combine with iron.

The uncontrollable expansive or repulsive force, which is manifested in the passage of water into ice, may depend upon a similar cause to that of the expansion of cast iron, but it is not our province to speculate on this phenomenon. The particles of water hardened into ice, are, according to our prejudices, derived from common observations, in close contact, and still the specific gravity of ice compared with water is but 0.94.

It is an invariable law of nature that accession of heat increases the repulsive force of homogeneous atoms. It diminishes specific gravity, and

causes the changes from solid to liquid, and from liquid to aeriform. An exception to this law appears to be in the solidification of iron and water, but by close investigation we shall find it to be but a specific quality of a compound matter.

Respectfully yours,

FRED. OVERMAN.

To Contractors.

BLUE RIDGE TUNNEL.—The Contractor for the BLUE RIDGE TUNNEL, having failed to come forward and comply with his engagements, notice is hereby given that PROPOSALS will again be received at the Office of the Board of Public Works, until the 21st of January, 1850, for the construction of the Tunnel and approaches.

The Tunnel will be 4260 feet long, 21 feet high and 16 feet wide, with a ditch on each side; it will pass 700 feet under the top of the Mountain and decline from West to East at the rate of 70 feet to the mile. The approaches will be in the aggregate about 2000 feet long, and consist of deep cuts, high embankments, some walling and bridging.

Proposers who have not already examined the localities will do well to call at the office of the Engineer, on the spot, where they will obtain all necessary information.

The payments will be CASH, with a reservation of 20 per cent till the entire completion of the work; besides which, the contractor is required by law to give bond, with satisfactory bond and security in Virginia. The amount of the bond required will be thirty thousand dollars.

The best testimonials and an energetic prosecution of the work are expected: the contract and bond to be executed within ten days after the letting, and the work to begin bona fide within sixty days after the same period.

C. CROZET.

Engineer Blue Ridge Railroad.

Terms of proposals and specifications may be obtained at both offices.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 28 feet.
- 1 Wood dwelling house, 21 by 28 feet.
- 1 Brick block, six tenements, two stories.

A number of building lots. Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing, and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting a complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, Trustees
WALTER LESTER.

October 24, 1849.

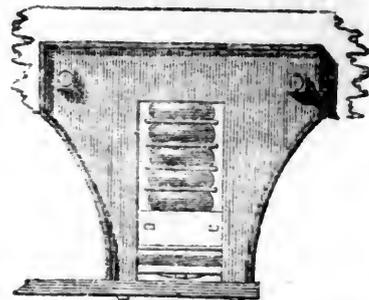
PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have all ways on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent.
Troy Iron and Nail Factory, Troy, N. Y.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability.—Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours."
JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

"I do not hesitate to allow you to say that I concur in Mr. M' Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M' Rae had seen your springs (as I believe) and entertain it still."
WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

Office B. & P. R. R. Co.,
Boston, 20th December, 1849.

"This company have cars fitted up with both Ray's and Fuller's Metallic India Rubber Springs, and I do not hesitate to say that Fuller's arrangement is very much superior to Ray's."

W. RAYMOND LEE, Supt.

The following result has been obtained by experiment upon one railroad.
A set of Trucks fitted with Steel Springs cost \$190.77 and weigh 2355 lbs.
The same with Fuller's Springs, 131.71 " 1911 lbs.

Difference, \$59.06 " 444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

G. M. KNEVITT, 38 Broadway, N. Y.,
General Agent for the U. S.

The Springs can also be had of
JAMES LEE & CO., 18 India Wharf, Boston, &
JAS. THORNLEY, 110 Chestnut St., Philad.

NOTICE.

TO BRIDGE BUILDERS, BRIDGE COMPANIES, and Other Individuals and Associations, who have constructed or used Bridges involving the combined principle of *Bracing, Counter-bracing* and *Trussing* by means of counteracting braces, keys, wedges, screws, etc., as set forth and explained in my Bridge Patent of 1830, in the words following, to wit: "A system of Counter-bracing, by means of which the truss frames are rendered stiff and unyielding, and the bridge kept in uniform action whether loaded or unloaded"—NOTICE is hereby given, that in all cases in which said combined principle has been introduced into bridges, without due license or authority from me, and without my having been duly remunerated therefor, will be regarded as infringements upon my rights and privileges, and that an amicable adjustment and settlement of all my claims in the premises may be effected by prompt application to my duly authorized Agents therefor, viz: Messrs. Clinton, Knight and Brother, of Cincinnati, Ohio, or Daniel A. Webster, Esq., 8 Pell street of the city of New York.

STEPHEN H. LONG, Patentee.
Louisville, December 10, 1849.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue Iron, Spring and Blistered Steel, Nail Rods, Best Refined Bar Iron, Railroad Iron, Car Axles, Nails, Stove Castings, Cast Iron Pipes of all sizes, Railway Chairs of approved patterns for sale by

COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

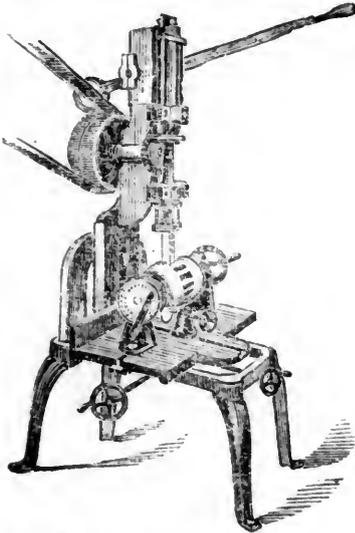
Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steam and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York.

October 27, 1849,

3m
**Capt. Alfred Swingle's
PATENT BORING
& MORTISING MACHINE.**



The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to H. B. TEBBETTS, 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15; 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849.

au7tf

M. M. White, Agent,
No. 74 Broadway, New York.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849.

3145

NOTICE TO**Superintendents of Railroads.**

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

Sia: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,
EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Banks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,
Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.,
Southwestern Railroad, Macon, Ga.

Higgins, B.,
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.,
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston.

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roebbling, John A.,
Trenton, N. J.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Seneca Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

George O. Robertson,
Broker in Scotch and American Pig Iron; Bar Iron,
Lead, Spelter, Tin, Copper, etc.,
NO. 4 LIBERTY PLACE, MAIDEN LANE,
(Near Broadway.)
NEW YORK

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

**Manufacture of Patent Wire
ROPE AND CABLES,**
For Inclined Planes, Suspension Bridges, Standing
Rigging, Mines, Cranes, Derrick, Tilters, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
IMPORTER OF THE
GENUINE WICKESLY GRINDSTONES,
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

**Railroad Car Manufacturer's
Furnishing Store.**
F. S. & S. A. MARTINE,
IMPORTERS AND MANUFACTURERS OF
**RAILROAD CAR &
CARRIAGE LININGS,**
PLUSHERS, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Bunting

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street
Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.
For particulars see Adv. in another column.

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. ma-
kers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.
S. C. HILLS, No. 43 Fulton street, New York, has
constantly for sale Steam Engines, Boilers, Lathes,
Chucks, Drills, Planers, Force and Suction Pumps;
Tenoning, Morticing and Boring Machines, Shingle
Machines, Bolt and Nut Machines, Belting, Oil, Iron
and Lead Pipe; Rubber, Percha and Leather Hose,
&c., &c.
S. C. H.'s arrangements with several machine shops
are such that he can supply, at very short notice, large
quantities of machinery.
November 23, 1849.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
Mr. M. BUTT HEWSON, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.
Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

IRON.

IRONDALE PIG METAL, MANUFACTURED
and for sale by the Bloomsburg Railroad Iron Co.
DUDDY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.
500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by
COLLINS, VOSE & CO.,
158 South St. 1m46
New York, November 17, 1849.

Railroad Iron.
THE Undersigned, Agents for Manufacturers, are
prepared to contract to deliver Rails of superior
quality, and of any size or pattern, to any ports of dis-
charge in the United States.
COLLINS, VOSE & CO.,
158 South St.
New York, November 17, 1849.

Railroad Iron.
1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ "
590 " " 53 "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immedi-
ate delivery, various patterns of Iron Rails, of
best English make, and manufactured in conformity
with special specifications.
They offer also to import and contract to deliver
ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.

Drawings and Patterns of the most approved
Rail—and specifications of quality and make of same,
are on hand at their office, for examination of parties
who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

CUT NAILS OF BEST QUALITY, BAR IRON
(including Flat Rails) manufactured and for sale
by
FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.
They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.
ILLIUS & MAKIN,
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Merritt & Co., New
York; E. Pratt & Brother, Es. Timere, Md

**LAP—WELDED
WROUGHT IRON TUBES**

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patente.
28 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.
THOMAS B. SANDS & CO.,
22 South William street,
New York.
February 3, 1849.

Iron Store.
THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Triadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1849.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills.

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
Card, Reed, Cotton-flax, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " " Roaring Run" Foundry Iron.
300 " Fort " " "
50 " Catactin " " "
250 " Chikiswalungo " " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x 1/2 Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York. 61 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catactin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catactin*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by
IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW
turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
October 30, 1849. 17 Burling Slip, New York.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.
100 " No. 2 do. do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do. do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Faggoting Iron, for shafts
Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
Do do Rounds and Squares, 1/2 to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted. Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel. Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,**
91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and whenever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,**
Albany Iron and Nail Works.

JOHNSON, CAMELL & Co's Celebrated Cast Steel,

AND ENGINEERING AND MACHINE FILES,
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMELL & CO.,
100 William St., New York.

November 23 1849.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE Department, and are prepared to execute orders for Locomotive Engines of every size and pattern—also Tenders, Wheels, Axles, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving Cotton, Woolen, or other Mills, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and Drilling Machines, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fish-kill Landing, or at 39 Pine street, New York.

WM. B. LEONARD, Agent.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows. The whole illustrated with 50 STEEL PLATES.

Published by **WM. MINIFIE & CO.,**
114 Baltimore St., Baltimore, Md.
Price \$3, to be had of all the principal booksellers.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1/2

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,**
Reading, Pa.

To Railroad Companies and Contractors.

FOR SALE—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Fire Brick.

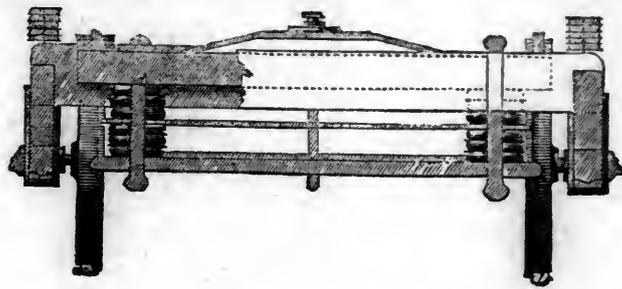
THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also, **COAL,** of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also, Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.
November, 23, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised.) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organized under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue further to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorized to supply the Springs are **G. M. KNEVITT,** 38 Broadway, N. York, General Agent for the U. S.; and **JAS. LEE & Co.,** 13 India Wharf, Boston. **JOHN THORNLEY,** Chestnut st., Philad.

Arch St. Machine Shop.

BIRKENBINE, MARTIN & TROTTER,

Makers of

STEAM ENGINES,

and

HYDRAULIC MACHINERY,

NO. 16 ARCH STREET,

PHILADELPHIA,

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc;

Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with

(BIRKENBINE'S PATENT VALVES.)

B., M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

J. E. Mitchell,

NO. 14 OLD YORK ROAD, PHILADELPHIA.

Importer and manufacturer of

- New Castle } Grindstones, of all sizes and grits.
- Nova Scotia } Millstones, made to order, with all the recent improvements.
- Wickersly } Fire Bricks and Tiles of various sizes.
- French Burr } Burr Blocks, Bolting Cloths, Mill Irons, etc.
- Cocahco }
- Cologne }
- American and }
- Patent compressed }
- Garnkrk }

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, **JOSEPH P. PIRSSON,** Civil Engineer, 5 Wall st.

To the Proprietors of Rolling Mills and Iron Works.

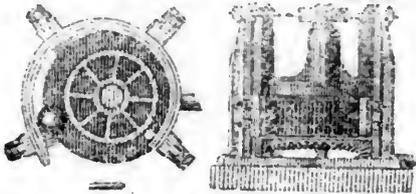
THE Under signed—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: **Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. E. Cannon, Hawkins & Atwater, etc., etc.**

F. & T. TOWNSEND,

Albany, August 18, 1849,

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.
Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR

WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

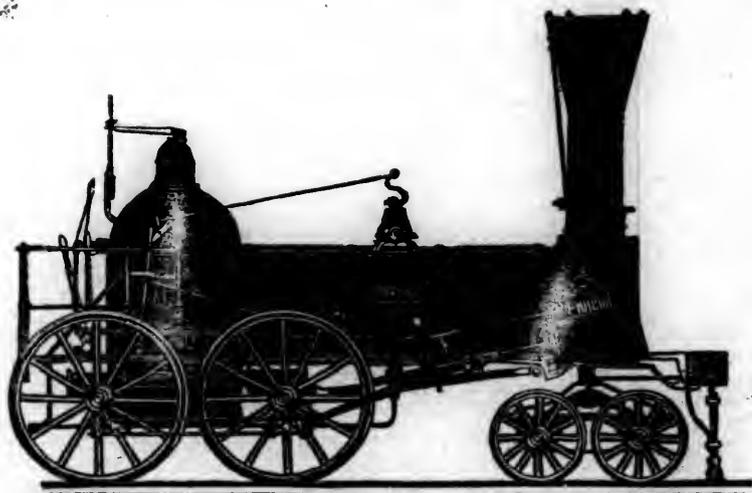
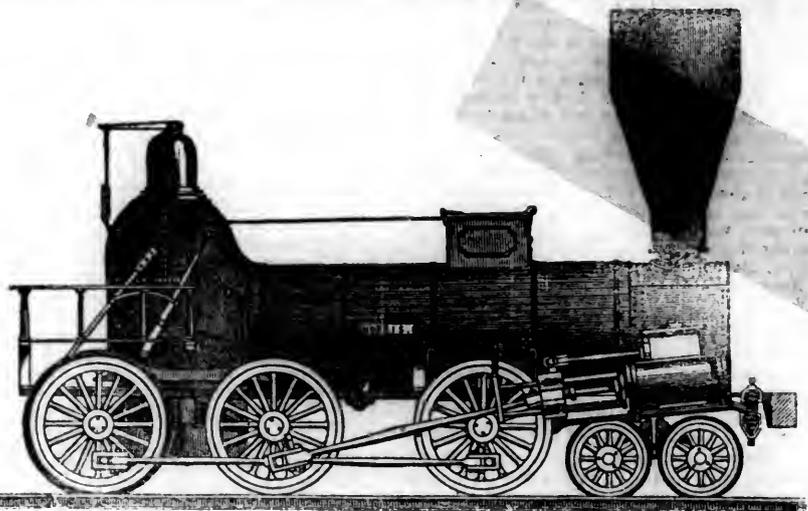
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speed execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

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